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AN ALLETE COMPANY

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March 25, 2021

**VIA E-FILING**

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

Re: In the Matter of a Petition of Minnesota Power for the Approval of the Acquisition of Solar Power to Support Economic Relief and Recovery  
**Docket No. E015/M-20-828**

In the Matter of an Inquiry into Utility Investments that May Assist in Minnesota's Economic Recovery from the COVID-19 Pandemic  
**Docket No. E,G-999/CI-20-492**

Dear Mr. Seuffert:

Minnesota Power (or, "the Company") has reviewed the March 15, 2021, comments by the Office of the Attorney General – Residential Utilities Division ("OAG"), the Department of Commerce ("DOC"), and the Laborers' International Union of North America - Minnesota and North Dakota ("LiUNA") regarding the Company's proposed 20MW of local solar projects in Northern Minnesota, in addition to public comments and letters of support submitted to the docket to date including a letter co-signed by four legislators – Senators Bakk, Gazelka, Tomassoni and Representative Lislegard, along with letters of support from the City of Duluth, the City of Hoyt Lakes, Region Five Development Commission, Cass County Economic Development, Hispanics in Energy, Range Association of Municipalities and Schools, GRACE Multicultural, and the BlueGreen Alliance. The Company respectfully submits to the Minnesota Public Utilities Commission ("Commission") the following Reply Comments.

Minnesota Power appreciates the opportunity to respond to comments in the above-mentioned dockets. If you have any questions regarding this filing, please contact me at 218.355.3186 or [arittgers@mnpower.com](mailto:arittgers@mnpower.com).

Sincerely,

A handwritten signature in black ink that reads 'Anne Rittgers'.

Anne Rittgers  
Public Policy Advisor

AR:sr  
Enc.

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**STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION**

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In the Matter of a Petition of Minnesota Power for the  
Approval of the Acquisition of Solar Power to  
Support Economic Relief and Recovery

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Docket No. E015/M-20-828  
**REPLY COMMENTS**

**I. INTRODUCTION**

In response to the extensive and far-reaching economic effects of the COVID-19 pandemic and the government’s responses thereto, the Minnesota Public Utilities Commission (“Commission”) opened a docket in May 2020 to investigate what types of investments utilities could make to assist in economic recovery in Minnesota.<sup>1</sup> In response, on June 17, 2020, Minnesota Power (or, “the Company”) proposed a comprehensive and community-focused package of activities that would support economic recovery within the Company’s service territory in northern Minnesota, including a proposal to accelerate the development of planned local solar projects. On November 13, 2020, the Company filed a request for an expedited procedural timeline to allow the Company to pursue approximately 20 MW of utility-scale solar projects, which was granted by the Commission in the January 20, 2021 hearing.<sup>2</sup> Full project details were outlined in the petition submitted on February 4, 2021.

Minnesota Power continues to believe these projects meet the requirements outlined in the Commission’s March 16, 2021 Order<sup>3</sup> and will help facilitate post-COVID-19 economic recovery by providing local job opportunities, investment in local products and services, and new tax revenue in the communities served by Minnesota Power. Furthermore, the addition of the new pollinator-friendly solar generation is consistent with

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<sup>1</sup> See *In the Matter of an Inquiry into the Financial Effects of COVID-19 on Natural Gas and Electric Utilities*, Docket No. E,G-999/CI-20-425, Order Approving Accounting Request and Taking Other Action Related to COVID-19 Pandemic (May 22, 2020).

<sup>2</sup> See *In the Matter of a Petition of Minnesota Power for the Approval of the Acquisition of Solar Power to Support Economic Relief and Recovery*, Docket No. E015/M-20-828.

<sup>3</sup> See *In the Matter of an Inquiry into Utility Investments that May Assist in Minnesota’s Economic Recovery from the COVID-19 Pandemic*, Docket No. E,G-999/CI-20-92, Order Accepting Economic-Recovery Investment Reports, Requiring Filings, and Encouraging Advancement of Diversity Goals (March 16, 2021).

the Company's last Integrated Resource Plan ("IRP") and will be used to meet Minnesota Power's remaining Solar Energy Standard ("SES") requirements by expediting planned solar projects to bring new carbon free energy to its customers in the region.

## **II. INITIAL COMMENTS FROM PARTIES**

The Minnesota Department of Commerce, Division of Energy Resources ("Department"), the Office of the Attorney General-Residential Utilities Division ("OAG"), and the Laborers' International Union of North America – Minnesota and North Dakota ("LiUNA") submitted comments on Minnesota Power's local solar projects proposal. The OAG and Department recommended denial of the petition for reasons that will be discussed in Section III of these reply comments. LiUNA recommended approval of the projects for direct construction job creation at a time when significant economic investments are needed for economic recovery.

Public comments and letters of support submitted to the docket to date include a letter co-signed by four legislators – Senators Bakk, Gazelka, Tomassoni and Representative Lislegard, along with letters of support from the City of Duluth, the City of Hoyt Lakes, Region Five Development Commission, Cass County Economic Development, Hispanics in Energy, Range Association of Municipalities and Schools, GRACE Multicultural, the BlueGreen Alliance, and MnSEIA.

## **III. MINNESOTA POWER'S RESPONSE**

First, Minnesota Power would like to recognize and thank all commenters for their thoughtful collaboration and continued discussion concerning how to recover from the economic implications of the COVID-19 pandemic.

The Company is grateful for and agrees with the recommendations from the parties listed above who submitted comments in support of the project. The support was based on the creation of local construction jobs using local labor at prevailing wages, use of Minnesota-made solar panels, creation of new tax revenue and the reinvestment in local host communities. The comments also highlighted the important timing of these projects – as construction could begin in 2021, significant economic benefits could be realized this

year. Others noted the changes in procurement processes the Company has undertaken to promote equity and diversity efforts, consistent with the Commission’s Energy Utility Diversity Group (“EUDG”) recommendations.

A. *A Principled Approach to Economic Recovery*

When the Commission first opened a docket to determine what utility investments could be made to assist in Minnesota’s economic recovery from the COVID—19 pandemic in May 2020, Minnesota Power took a thoughtful and principled approach to its response. Using the knowledge gained through the Company’s leadership role within the EUDG stakeholder process and leveraging an understanding of the northern Minnesota communities it serves, Minnesota Power offered to accelerate solar projects that met the complete list of criteria identified in the Commission’s May 2020 Notice and subsequently affirmed in its March 16, 2021 Order in the same docket.<sup>4</sup>

The local solar projects Minnesota Power proposed, first in June 2020 and then formally through the petition in this docket, reflect the Commission’s directive for utilities to propose projects that provide significant utility system benefits, are consistent with approved resource plans, reduce carbon emissions, increase access to clean energy, create jobs, assist in the economic recovery for Minnesotans, and use women, veteran or minority-owned businesses as much as possible. In fact, Minnesota Power intentionally and dramatically altered its procurement process to take action on every single recommendation in the EUDG report to increase supplier diversity. These solar projects, thoughtfully designed to meet the specific direction of the Commission, have broad community support as demonstrated by numerous letters filed in June 2020 in the Economic Recovery docket and the letters of support filed recently in this docket. The projects also represent a commitment to local labor, local manufacturing and reinvestment in utility host communities.

While considering what it can do to help spur economic recovery, Minnesota Power has also intentionally taken action to mitigate rate increases for all customers during the

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<sup>4</sup> Docket No. E,G-999/CI-20-492.

COVID-19 pandemic and beyond, and is grateful for the stakeholder and Commission support of such efforts like the resolution of its 2019 Rate Case<sup>5</sup> and approval of an extension of the Energy-Intensive Trade-Exposed rate for its largest customers<sup>6</sup>. Additionally, in late August 2020 the Company requested approval to begin the sale of land holdings along hydro reservoirs as a meaningful effort to continue to ensure its rates are affordable for customers.<sup>7</sup> This proposal received supportive comments from the Department on March 25, 2021, and is awaiting a Commission hearing.

Minnesota Power has worked in good faith to implement the recommendations of the EUDG report and bring forward projects that reinvest in the communities it serves in northern Minnesota. As the energy industry continues to decarbonize, it is the Company's belief that a sustainable transition must include commitments to the climate, to customers and to communities holistically. The solar projects proposed in this docket will have a minimal (less than \$0.50 per month) impact on customer rates while reinvesting in communities as they recover from the effects of the COVID-19 pandemic – as the Commission stated was the intent behind issuing the Notice in Docket No. E,G-999/CI-20-492. The Commission's decision on these projects – which provide value in the form of local jobs, support local manufacturing, increase access to clean energy and provide more opportunity to diverse suppliers – will help prioritize the Company's commitments going forward, both in terms of project development and active engagement in stakeholder processes.

**B. A Response to Analysis Completed by the Department and OAG**

The OAG recommended denial and asserted the proposed PPA is not within the public interest as it is priced above the market rate for solar and the potential economic stimulus benefits do not justify the PPA premium. Additionally, the OAG stated that the Company's failure to solicit competing bids means that it should perform a new solar procurement, and recommended as such to the Commission. The Department argued for

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<sup>5</sup> E015/GR-19-442.


<sup>6</sup> E015/M-16-564.

<sup>7</sup> E015/PA-20-675.

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denial based upon the reasons that a competitive bidding process could have resulted in lower priced solar, and that Minnesota Power has no immediate need for solar to meet its SES and can wait until 2023. The OAG and the Department largely ignored the Commission's directive that utilities bring forward economic development projects as set forth in the Commission's May 2020 Notice.

i. OAG Power Purchase Agreement ("PPA") Analysis Rebuttal

The OAG argued that the proposed solar projects are not in the public interest based on a new levelized cost of energy ("LCOE") calculation done by the OAG. This calculation results in a higher cost than the Company's estimate provided in the petition. The OAG's calculation of the LCOE is fundamentally flawed as a result of not using the Net Present Value ("NPV") function to the payments or megawatt-hours ("MWhs") in Attachment A by Minnesota Power's rate making weighted average cost of capital ("WACC"). As a result, the OAG calculates a higher LCOE than calculated by Minnesota Power. The methodology the Company has used is consistent with previous dockets including Docket No. E-015/M-18-545. Minnesota Power provided the correct LCOE calculation in OAG IR 009 TS in which the LCOE is [TRADE SECRET DATA BEGINS  TRADE SECRET DATA ENDS].

ii. OAG Economic Analysis Rebuttal

The OAG appears to misunderstand some fundamentals of economic impact modeling, and the OAG comments do not accurately represent Minnesota Power's work on the issue.

The Company's response to OAG IR 008 explained the appropriateness of simulating the increased demand for racking piles, trackers, substation, and inverter skids despite these goods not being manufactured in the northeastern Minnesota region. The Company's response to this IR demonstrated Minnesota Power's modeling validation process, which examined the predicted volume of imports and found it to be extremely close to the total cost of racking piles, trackers, substation, and inverter skids. The

conclusion Minnesota Power drew from this validation is that Company's economic impact model (REMI) correctly inferred an appropriate volume of imported equipment (racking piles, trackers, etc.) and an appropriate volume of domestically produced equipment (photovoltaic panels).

The OAG seems to assert in its comments that non-domestically manufactured goods, such as racking piles, trackers, etc. should not be accounted for in the economic impact modeling at all, and that these imported components have no economic value to the region. However, the position the OAG supports could result in the outsourcing of the manufacturing of solar panels when a local solar panel manufacturer located in northern Minnesota is capable of providing panels needed for these projects. By the OAG's own logic, importing all major components would reduce the regional economic value of these solar projects to near zero and fail the OAG cost/benefit analysis for justifying the PPA premium. Minnesota Power's estimate of these solar projects' economic value is reasonable. The Company and residents of the region are in the fortunate position of having a domestic photovoltaic panel manufacturer, which allows the community to retain considerably more of the projects' costs as stimulate economic value. If the PUC were to follow the OAG recommendation and pursue a competitive bidding process for solar panels, the Company would revise its estimate of projects' economic value to reflect this foregone value from domestic panel manufacturing.

Also, the full context of Minnesota Power's analysis is important. The OAG selectively quotes the Company's response to OAG IR 8 and changes punctuation to suit the OAG's point. The OAG attributes the following to Minnesota Power: "the projects' racking piles, trackers, substation, and inverter skids will not be fully manufactured locally." Whereas the full sentence in the Company's IR response is: "No. the projects' racking piles, trackers, substation, and inverter skids will not be manufactured locally; **however, it's entirely appropriate to include these costs in its regional economic impact analysis for two interrelated reasons.**" The Company discusses these two interrelated reasons in detail in its response to OAG IR 08. To summarize though, the two reasons involve achieving an appropriate balance of imported value and domestically-produced value in a way that doesn't require reconfiguration of the economic impact

software or subjective modification of inputs from the objective estimates of projects' costs.

iii. OAG Size/Market Comparison Rebuttal

The OAG argues that the Company's project cost comparison uses comparison projects of inappropriate size. Minnesota Power disagrees with the OAG's recommended comparison project category. Minnesota Power's proposed projects are more appropriately compared to projects in the 5-20 MW category from the Lawrence Berkeley National Laboratory ("Berkeley Lab") report<sup>8</sup> as the proposal is a combination of three smaller projects, not one 20 MW project. The proposed projects are in line with these smaller Berkeley Lab report projects, and are very competitive with them considering that the Berkeley Lab report is a compilation of projects including projects using foreign modules and nonunion labor.

The OAG also argues that projects with a commercial-operation date ("COD") of 2019 is no longer relevant to compare with COD 2022 projects. The OAG states, "According to LBNL data, installed costs for 5–50 MW solar projects have fallen by nine percent per year on average over the past four years. Given this steady year-over-year decline in solar costs, it is not reasonable to compare Minnesota Power's proposal with projects that are three years older."

While the cost of solar panels have generally fallen over time, overall solar project costs have not decreased since 2019, and Minnesota Power believes it's appropriate to compare 2019 project cost estimates to the current market. Project costs and corresponding PPA pricing flattened in 2019 and increased in 2020 as reported in the LevelTen Energy,<sup>9</sup> North America Q4 2020 PPA Price Index, The LevelTen Index states that "in 2020 solar PPA offer prices increased every quarter, reversing a six quarter downward trend from Q3 2018 to Q1 2020." LevelTen reports that solar PPA pricing increased 11.5% throughout 2020. The below chart presents this data, which starts in 2018 as LevelTen Energy published its first PPA Price Index report in Q2 2018. The OAG

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<sup>8</sup> [https://eta-publications.lbl.gov/sites/default/files/2020\\_utility-scale\\_solar\\_data\\_update.pdf](https://eta-publications.lbl.gov/sites/default/files/2020_utility-scale_solar_data_update.pdf)

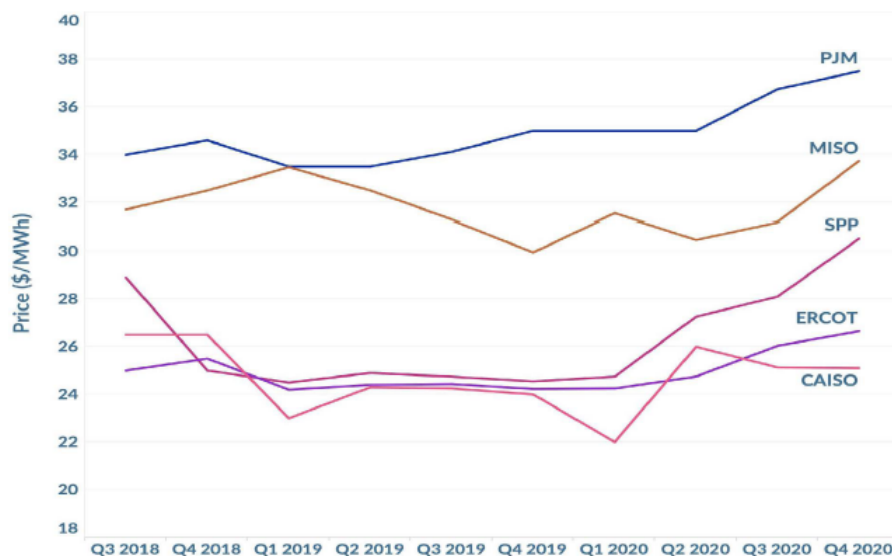
<sup>9</sup> <https://leveltenenergy.com/blog/ppa-price-index/q4-2020/> (download the full North American report)



cites other data from the LevelTen report, but did not reference this upward pricing trend. Similarly, the Berkeley Lab Utility-Scale Data Update: 2020 Edition referenced by OAG shows pricing falling from 2010 to 2019, but the report data ends in 2019, and inferring continued decline beyond 2019 is inconsistent with trends in commodity and component prices since 2019.

## Q3 2018 to Q4 2020 Solar P25 Price Indices by ISO

Quarterly Price Indices P25-Solar



The OAG argues that a competitive small-solar price should be \$47.81/MWh levelized based on scaling up pricing from a LevelTen Energy data point of \$35/MWh. The LevelTen Energy PPA Price Index reports prices that project developers have offered for PPAs available on the LevelTen Marketplace. Price data from LevelTen Energy<sup>10</sup> is aggregated and reported in percentile buckets, where the “P25” bucket refers to the most competitive 25th percentile offer price. It is unclear if this price is first year or levelized. The LBNL qualifies their use of LevelTen data in their 2020 report noting, “We also

<sup>10</sup> <https://leveltenenergy.com/blog/ppa-price-index/q4-2020/>

present LevelTenEnergy data on PPA offers; these are often for shorter contract durations, and levelization details are unclear.” It is also unclear if the pricing includes interconnection costs and network upgrades, and would not include Locational Marginal Price (LMP) differentials. The OAG’s characterization of \$47.81/MWh as a competitive small-solar price is unrealistic in that its assumptions are biased to achieve a lowest possible comparable price. In addition to assuming \$35/MWh is an all-in levelized price, the OAG scales this price up based on construction costs for 20-50 MW projects rather than 5-20 MW projects. The OAG also argues that the Sylvan project should have a similar price to Otter Tail Power Company’s 49.9 MW Hoot Lake project because they are at the same latitude and therefore should have a similar solar resource. The solar resource is likely similar, but the OAG fails to consider the size difference of the projects and also any differing tax treatments in reaching the conclusion that they should have a similar price.

The solar projects being proposed to provide a locally sourced clean energy are economic, competitive and provide valuable benefits to the region they will serve. Project costs for solar arrays across the United States vary widely primarily due to economies of scale of larger projects, but also due to available solar resource, regional construction factors and site conditions. The table below presents a summary of market data compared to the proposed projects, which shows that the package of projects in the petition is competitive with the market for similar sized projects.

## Project Cost Comparison Table

Project	COD	Size (MW)	Cost (\$M)	\$/W(ac)
<b>Berkeley Lab 2020 Report</b>				
Average of 20 US projects	2019	5 - 20		\$ 1.88
Average of 13 US projects	2019	20 - 50		\$ 1.53
Average of 13 US projects	2019	50 - 100		\$ 1.35
Average of 5 US projects	2019	100 - 200		\$ 1.12
<b>Energy Acuity Database</b>				
Average of 116 US projects	2016-present	1 - 20 (average 4.7)		\$ 2.36
Average of 25 US projects	2018-present	3 - 10 (average 6.4)		\$ 2.04
Average of 9 US projects	2019-present	3 - 10 (average 6.6)		\$ 2.24
<b>Recent Northern Midwest Projects</b>				
Madison Gas and Electric (Dane County Airport)	2020	9	\$ 16.8	\$ 1.87
City of Madison (Rodefild Landfill)	2021	8	\$ 15.3	\$ 1.91
<b>Proposed Local Solar Projects</b>				
Sylvan	2022	10	\$ 19.6	\$ 1.96
Laskin	2022	9.6	\$ 17.4	\$ 1.81
Duluth	2022	1.6	\$ 3.9	\$ 2.44
Sylvan & Laskin	2022	19.6	\$ 37	\$ 1.89
Sylvan, Laskin & Duluth	2022	21.2	\$ 40.9	\$ 1.93

### iv. Rebuttal to the Department's Analysis of Solar Need

The Department stated in initial comments that Minnesota Power has no immediate need for solar generation to meet the Company's SES requirements. The Commission has recognized Minnesota Power's need to obtain an additional 22 MW of solar power by 2025 to meet its SES requirements, and has directed the Company to continue to evaluate additional solar as a cost-effective resource for customers. In Minnesota Power's most recently approved IRP, the Commission found:

The Commission concurs with Minnesota Power and the Department that the Company should acquire 11 MW of solar generation by 2016, 12 MW by 2020, and 10 MW by 2025 to meet its SES obligations. But the Commission also agrees with the Department and the Clean Energy Organizations that

additional solar generation is likely a cost-effective resource for Minnesota Power's system.<sup>11</sup>

Consequently, the addition of the proposed 20 MW of local solar is supported by relevant Commission orders. As noted in Minnesota Power's April 28, 2020 letter,<sup>12</sup> the Company had planned to move forward with a 10 MW PPA with Cypress Creek. Cypress Creek was ultimately unable to meet the established PPA terms and terminated the project.

Minnesota Power is in compliance with the SES's requirement that 1.5 percent of its retail sales is served by solar power in 2020.<sup>13</sup> To meet SES compliance requirements beyond 2020, however, the Company plans to use banked Solar Renewable Energy Credits and approximately 21 MW of additional solar capacity, about 20 MW of which would come from the local solar projects proposed in this petition.<sup>14</sup> Without the addition of the 20 MW of local solar projects, Minnesota Power would have insufficient Solar Renewable Energy Credits starting in 2022. By expediting these projects, Minnesota Power will bring new carbon free energy and capacity to its customers and the region ahead of schedule.

#### IV. CONCLUSION

Minnesota Power would like to again recognize and thank all commenters for their thoughtful collaboration and continued discussion concerning recovering from the economic implications of the COVID-19 pandemic. Broad support for these projects across Minnesota Power's service territory is well demonstrated in the docket. Minnesota Power has followed a principle-based approach for adding new power to its system, reflecting the Company's long-held resource planning principles of sustainable

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<sup>11</sup> *In re Minnesota Power's 2016-2030 Integrated Resource Plan*, Docket No. E-015/RP-15-690, at 10-11 (July 18, 2016).

<sup>12</sup> *In the Matter Minnesota Power's Petition for Approval of a 10 MW Blanchard Solar Power Purchase Agreement*, Docket No. E015/M-18-401 (April 28, 2020).

<sup>13</sup> *In re Minnesota Power's Annual Report on Progress in Achieving the Solar Energy Standard*, Docket No. E999/M-20-464, at 3 (June 1, 2020).

<sup>14</sup> *Id.*

commitments to the climate, customers, and communities. The projects proposed in this docket were a direct response to the Commission's May 2020 Notice and meet every one of the criteria outlined in the Notice and reaffirmed in the recent Commission order. These local solar projects would provide economic relief to northern Minnesota in the form of investments in local products and services, the creation of new jobs, and long-term increased tax revenue and consumer spending while ensuring the competitiveness of electric rates for customers during this challenging time. Additional local benefits include safe harbor module storage at a shuttered former retail space in a local community, and using a pollinator seed mix for vegetating all of the solar sites. Finally, the new pollinator-friendly solar arrays are consistent with previous IRPs and will also be used to meet Minnesota Power's SES requirements, adding new carbon-free resources to the Company's system and for customers in the region. With Commission approval to proceed, Minnesota Power will initiate these projects as soon as possible in order to provide much needed investment and jobs within its service territory.

March 25, 2021

Respectfully,

A handwritten signature in black ink, appearing to read "Anne Rittgers". The signature is fluid and cursive, with a long horizontal stroke at the end.

Anne Rittgers  
*Public Policy Advisor*  
*Minnesota Power*

**State of Minnesota  
Office of The Attorney General  
Utility Information Request**

*In the Matter of Minnesota Power's Petition for Approval of the Acquisition of Solar Power to Support Economic Relief and Recovery*      **MPUC Docket No.**      E-015/M-20-828

**Requested from:** Minnesota Power

**Requested By:** Andrew Twite

**Date of Request:**  
**Due Date:**

February 19, 2021  
March 3, 2021

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Reference: MP's February 4, 2021 filing, Appendix B, pages 4-5.

In the "Materials and Equipment" section of Appendix B, the Company states it included in its economic analysis "Fabricated metal product manufacturing [...] to simulate purchases of racking piles." In addition, the company also includes an amount "to simulate purchases of trackers, substation, inverter skids, etc."

- A. Does MP expect the racking piles, trackers, substation, and inverter skids to be manufactured within its service territory?
- If yes, provide (separately for each component): the name of the company that MP plans to purchase the component from, the location of the manufacturing facility, and the projected contract price.
  - If no, explain why MP believes it is appropriate to include these costs in its regional economic impact analysis.
- B. Provide an updated version of "Table 1: Economic Impacts of three solar projects totaling 20 MW in 2021" that excludes "racking piles" and "trackers, substation, inverter skids, etc."

**Company Response:**

- A. No, the projects' racking piles, trackers, substation, and inverter skids will not be manufactured locally; however, it's entirely appropriate to include these costs in its regional economic impact analysis for two interrelated reasons:

First, modeling increased demand within the Minnesota Power region for racking piles, trackers, substation, and inverter skids within REMI does not mean they're assumed to be manufactured within the region. The REMI model can discern between general categories

**Response by: Benjamin Levine**  
**Title: Utility Load Forecaster Senior**  
**Department: Customer Experience**  
**Telephone: 651-558-1923**

of goods that can be produced domestically and goods that must be imported. The REMI model is customized to Minnesota Power’s regional economy using publicly available economic data from the Bureau of Labor Statistics and Bureau of Economic Analysis (among others), and the model uses this information on to map local industry composition and ability to produce and supply specific goods.

Minnesota Power chose to model the materials and equipment associated with this project as an increase in regional demand for Fabricated Metal Products and Electrical Equipment, Appliance, and Components. REMI was allowed to discern what impact this had on domestic production and imports of final and intermediate goods required to meet the modeled increase in regional demand.

The table below compares the model inputs representing equipment purchases during procurement and construction (2020 & 2021) to the model’s estimated change in imports. The results of simulating “PV Modules & Equipment” costs show REMI is correctly inferring a significant portion (about 40%) of all module, equipment, and materials value is imported, and about 60% is produced within the region. This 60% is not equal to the share of costs related to PV Modules, which represent about 50% of material costs, but it’s a reasonably close approximation. The same cannot be said for the results of a simulation where equipment costs are excluded and only PV Module costs are simulated, which highlights the second reason Minnesota Power included equipment costs its regional economic impact analysis.

**Equipment Spend vs Simulated Imports in 2020 and 2021 (Nominal Dollars)**

	<b>PV Modules &amp; Equipment*</b>	<b>Just PV Modules</b>
Model Input: Plant PV Module Procurement	9,704,373	9,704,373
Model Input: Other Equipment and Materials Procurement	9,794,283	-
Modeled Increase in Import of Manufactured Goods**	7,925,126	3,973,870
Inferred Value of Domestically Produced Equipment	12,031,622	5,988,747

\*Racking piles, trackers, substation, inverter skids, all other equipment

\*\*Closely related goods such as machinery, fabricated metals, and electrical equipment

Secondly, the REMI model is not granular enough to model procurement from a specific local PV Module manufacturer, and will infer a significant portion of the PV Modules’ value is actually imported if PV Module costs are the only modeled input. The REMI model still assumes about 40% of all module, equipment, and materials value is imported, and about 60% is produced within the region. By not simulating an increase in demand for *all* equipment and materials, the REMI model will underestimate the regional economic impacts by understating domestic production. Also, by excluding the equipment spending, the model will infer a smaller overall capital project requiring fewer imports, less transportation resources, and less taxable economic activity.

The Company recognizes real-world conditions will differ considerably from detailed model specifications or assumptions, and will always review results for reasonableness when there’s a possible discrepancy. In this case, the simulated economic impacts are

**Response by: Benjamin Levine**  
**Title: Utility Load Forecaster Senior**  
**Department: Customer Experience**  
**Telephone: 651-558-1923**

reasonable since the model is inferring roughly the correct mix of imports and domestic product.

- B. Per the OAG request, Minnesota Power re-ran the economic impact simulation in REMI, but excluded any increased regional demand for ‘racking piles’ and ‘trackers, substation, inverter skids, etc.’

**Appendix B, Table 1 revised to exclude spending on all equipment other than PV modules**

20 MW of New Solar in 2021		Construction					Operating										
Category	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total Employment (Individuals)	Individuals (Jobs)	6	64	5	4	2	1	1	1	1	1	1	1	1	1	1	1
Gross Domestic Product (\$1000)	Thousands (Nominal \$)	1,889	6,190	214	175	93	54	38	34	38	43	50	56	60	63	64	63
Population (Individuals)	Individuals	2	23	18	15	12	10	9	8	7	6	6	5	5	5	4	4
Local Government Spending (\$1000)	Thousands (Nominal \$)	114	489	293	183	123	90	71	61	54	50	47	45	43	41	39	37
Empl. - Natural Resources	Individuals (Jobs)	0	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	-
Empl. - Construction	Individuals (Jobs)	0	40	1	0	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
Empl. - Manufacturing	Individuals (Jobs)	1	1	0	0	(0)	(0)	(0)	(0)	(0)	0	0	0	0	0	0	0
Empl. - Retail and Wholesale	Individuals (Jobs)	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empl. - Transport and Utilities	Individuals (Jobs)	0	1	0	0	0	(0)	-	0	0	0	0	0	0	0	0	0
Empl. - Finance, Insurance,...	Individuals (Jobs)	0	1	(0)	0	0	0	-	0	0	0	0	0	0	0	0	0
Empl. - Services	Individuals (Jobs)	2	11	0	1	0	0	0	0	0	0	0	0	1	1	1	1
Empl. - Government	Individuals (Jobs)	1	5	3	2	1	1	1	1	1	1	1	1	1	1	1	1
Empl. - Farm	Individuals (Jobs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Economic impact modeling is a balance of art and science, and Minnesota Power recognizes results may vary depending on modeling assumptions and techniques. The results above in the revised Table1 are plausible, and simply excluding the added regional demand for ‘racking piles’ and ‘trackers, substation, inverter skids, etc.’ associated with these projects is a valid approach to modeling economic impacts when the expectation is that all equipment will be imported.

However, the detailed model results discussed in part A of this response suggest this approach would likely underestimate the solar projects’ economic impacts since the model inherently assumes much of the PV Module’s value will be imported and not produced domestically.

**Response by: Benjamin Levine**  
**Title: Utility Load Forecaster Senior**  
**Department: Customer Experience**  
**Telephone: 651-558-1923**



**OAG No. 009**

**State of Minnesota  
Office of The Attorney General  
Utility Information Request**

*In the Matter of Minnesota Power's Petition for Approval of the Acquisition of Solar Power to Support Economic Relief and Recovery* **MPUC Docket No.** E-015/M-20-828

**Requested from:** Minnesota Power

**Requested By:** Andrew Twite

**Date of Request:**

March 2, 2021

**Due Date:**

March 12, 2021

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Reference: MP's February 4, 2021 filing at page 31.

On page 31 of the February 4, 2021 filing, the Company states "The 25-year PPA will be escalating at [TRADE SECRET DATA BEGINS ██████████  
██████ TRADE SECRET DATA ENDS]; the levelized cost of the project is [TRADE SECRET DATA BEGINS ██████████ TRADE SECRET DATA ENDS]."

Provide the levelized PPA cost calculation in an Excel spreadsheet with all links and formulae intact.

**Response:**

Please see OAG IR 009.01 Attach TS, which is designated trade secret in its entirety.

**Response by:** Justin Filzen  
**Title:** Financial Analyst Senior  
**Department:** Investments & Analysis  
**Telephone** 218-355-3540

STATE OF MINNESOTA    )  
                                  ) ss  
COUNTY OF ST. LOUIS    )

AFFIDAVIT OF SERVICE VIA  
ELECTRONIC FILING

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Susan Romans of the City of Duluth, County of St. Louis, State of Minnesota, says that on the **25<sup>th</sup>** day of **March, 2021**, she served Minnesota Power's Reply Comments in **Docket Nos. E015/M-20-828** and **E,G-999/CI-20-492** on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The persons on E-Docket's Official Service List for this Docket were served as requested.



\_\_\_\_\_  
Susan Romans

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