ENVIRONMENTAL LAW & POLICY CENTER
Protecting the Midwest's Environment and Natural Heritage

February 13, 2014

VIA E-FILING

Burl W. Haar
Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: In the Matter of Establishing a Distributed Solar Value Methodology under Minn. Stat. §216B.164, subd. 10 (e) and (f), PUC Docket Number/s: E999/CI-14-65

Dear Dr. Haar,

Enclosed herewith in connection with the above matter please find the *Joint Initial Comments of Environmental Law and Policy Center (ELPC), Fresh Energy (FE), Interstate Renewable Energy Council, Inc. (IREC), Institute for Local Self-Reliance (ILSR), Izaak Walton League of America (IWLA), SunEdison, LLC (SE), and the Vote Solar Initiative (VSI)*. Please do not hesitate to contact me with any questions.

Sincerely,

s/ Allen Gleckner_____
Allen Gleckner
Staff Attorney

Cc: Attached Service List

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PUBLIC UTILITIES COMMISSION

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In the Matter of Establishing a Distributed Solar Value Methodology Proposal under Minn. Stat. Section 216B.164, Subd. 10 (e) and (f)

Docket No. E999/CI-14-65

JOINT INITIAL COMMENTS OF ENVIRONMENTAL LAW & POLICY CENTER (ELPC), FRESH ENERGY (FE), INTERSTATE RENEWABLE ENERGY COUNCIL, INC. (IREC), INSTITUTE FOR LOCAL SELF-RELIANCE (ILSR), IZAAK WALTON LEAGUE OF AMERICA (IWLA), SUNEDISON, LLC (SE), AND THE VOTE SOLAR INITIATIVE (VSI).

We appreciate the opportunity to provide these joint comments on the proposed Value of Solar Methodology ("Proposed Methodology") submitted by the Department of Commerce ("Department") to the Commission on January 31, 2014.

Many of our organizations were actively involved in the development of Minnesota's value of solar legislation and all have been involved in the development of the draft methodology. Our organizations have also taken a strong interest in promoting best practices related to the valuation of distributed generation resources.

To assist stakeholders in developing study methodologies that comport with best practices, the Interstate Renewable Energy Council, Inc. (IREC) has developed two studies, both of which provide an objective overview of how regulators analyze the benefits and costs of net metering. The first study, *A Generalized Approach to Assessing the Rate Impacts of Net Energy Metering*, was commissioned by the U.S. Department of Energy's Solar America Board for Codes and Standards (Solar ABCs) and was prepared by IREC in 2012. This study presents an overview of the cost and benefit categories to consider and why they should be considered.[1]

The second study, *A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation,* builds upon the first study and explains how to calculate each

[1] Available at www.solarabcs.org/about/publications/reports/rateimpact/index.html.

benefit of distributed solar PV and why each should be evaluated.[2] The underlying premise of this paper is that, while the resulting values may differ, the approach used to calculate them should be uniform.

We appreciate the diligent work that the Department and Clean Power Research have put into developing the Proposed Methodology with extensive input from stakeholders via comments and workshops. We strongly support efforts to develop valuation methodologies that are inclusive, transparent and designed to bring all stakeholders together to develop a methodology, as such a process has the best chance at resulting in a robust and comprehensive methodology for determination of the value of distributed solar generation (DSG).

SUMMARY OF COMMENTS

As described in our detailed comments below, the joint parties:

- Express their confidence in the robust process that the Department used to arrive at its Proposed Methodology.
- Support the Department's proposed methodological approach for avoided transmission capacity costs, avoided distribution system capacity costs (including the quantification of location-specific avoided costs), avoided fuel costs (*i.e.*, avoided costs of price volatility risk), and all other specified value components – with the few exceptions noted below.
- Strongly support the Department's proposed use of (1) the federal social cost of carbon and (2) existing Minnesota externalities costs to quantify those sub-components of environmental value – with the expectation that those values will be updated to reflect current scientific understanding of the measurable and verifiable costs in the near future.
- Support the proposed inclusion of required presentation/ transparency elements (including the VOST Data Table and VOST Levelized Calculation Chart).
- Support the Department's proposed inclusion of "placeholder" value components for voltage control and solar integration.

In addition, we request that the Commission take the following actions:

- Modify the Proposed Methodology to recognize and compensate VOST generators for the avoided SES compliance cost benefit that statutory SREC transfer confers on the utility.

[2] Keyes, Jason B. and Rábago, Karl R., A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation, Interstate Renewable Energy Council, Inc. (hereinafter Regulator's Guidebook) available at http://www.irecusa.org/wp-content/uploads/2013/10/IREC_Rabago_Regulators-Guidebook-to-Assessing-Benefits-and-Costs-of-DSG.pdf.

- Identify actions necessary to provide greater transparency into utility derived Effective Load Carrying Capability (ELCC) values, which are often opaque to non-utility stakeholders.
- Modify the Proposed Methodology to include a mechanism to compensate DSG that can provide additional capacity benefits due to utilization of tracking systems or non-standard panel orientation (such as west facing).
- Modify the Proposed Methodology to include a "placeholder" for "market price reduction" (*i.e.*, utility avoided wholesale energy costs that can be attributed to DSG within the utility service territory).
- Incorporate additional environmental value sub-components (including avoided cost of water usage and land and ecosystem impacts) over time.

MINNESOTA STATE POLICY BACKGROUND

In May 2013, the Minnesota Legislature passed a law tasking the Department of Commerce with developing a distributed solar value methodology for review and approval by the Public Utilities Commission in the service of establishing a new "alternative" value of solar tariff (VOST) option available to Minnesota public utilities.

As set forth in statute, the resulting tariff should "compensate customers . . . for the value to the utility, its customers, and society for operation distributed solar photovoltaic resources interconnected to the utility system and operated by customers primarily for meeting their own energy needs."[3]

At the same time, the Legislature adopted a number of related policies intended to support the accelerated development of the state's solar photovoltaic (PV) market, prioritize that development relative to existing regulatory considerations, and increase the accessibility of solar PV for Minnesotans in general. The VOST statute should be viewed in the context of this comprehensive package. In addition to the value of solar "alternative tariff," these policies include:

- Minnesota's new solar energy standard, a separate, stand-alone requirement, distinct from the pre-existing state renewable energy standard, requiring investor-owned utilities to procure 1.5% of their eligible retail sales from solar generation by 2020;[4]
- a statutory goal that "by 2030, ten percent of the retail electric sales in Minnesota be generated by solar energy";[5] and

[3] MINN. STAT. 216B.164, Subd. 10.

[4] MINN. STAT. 216B.1691, Subd. 2f.

[5] MINN. STAT. 216B.1691, Subd. 2f (a), (c).

- development of a framework for the state of Minnesota to "transition to a renewable energy economy that ends Minnesota's contributions to greenhouse gas from fossil fuels . . . " with the aim of making ". . . Minnesota the first state in the nation to use only renewable energy."[6]

This legislation is consistent with and builds on several other existing Minnesota energy policy goals, including the following:

- A statewide global warming reduction goal across all sectors of at least 15% below 2005 levels by 2015, 30% below 2005 levels by 2025, and at least 80% 2005 levels by 2050.[7]
- "It is the energy policy of the state of Minnesota that the per capita use of fossil fuel as an energy input be reduced . . . and [that] 25 percent of the total energy used in the state be derived from renewable energy resources by the year 2025."[8]
- A statewide policy goal of "[reducing] the per capita use of fossil fuels as an energy input . . . by 15% by the 2015, through increased reliance on energy efficiency and renewable energy alternatives."[9]

Further, Minnesota law contains stated preferences for renewable energy generation and efficiency: "The state [of Minnesota] has a vital interest in providing for increased efficiency in energy consumption, the development and use of renewable energy resources wherever possible . . . ."

Perhaps most notably, the value of solar "Alternative Tariff" enabling language resides in Minnesota statute section 216B.164, governing Cogeneration and Small Power Production. The stated purpose and scope (subdivision 1) of this section directs that its provisions ". . . shall at all times be construed in accordance with its intent to give maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public."

We submit these initial comments with the purpose of realizing these stated energy policy goals and preferences of the state of Minnesota.

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6 2013 Regular Session, HF No. 729, Article 12.

7 MINN. STAT. 216H.02.

8 MINN. STAT. 216C.05.

9 MINN. STAT. 216C.05, Subd. 2.

COMMENTS

I. Overview

Having reviewed the Proposed Methodology, we believe it is generally well characterized and provides substantial guidance to all stakeholders, including the Commission, on how the value of solar should be calculated in the future. With a few exceptions noted below, the value categories in the Proposed Methodology are generally consistent with the category of benefits seen in prior studies as Rocky Mountain Institute summarized at the first workshop and those required by the value of solar statute.[10]

The Department deserves recognition for creating and managing an accessible, high-quality stakeholder process on this complex and important topic, including four daylong workshops (each of which was well attended) and multiple opportunities for written comments. We also recognize and appreciate that the Department developed and submitted the Proposed Methodology on time under significant time pressure.

The Proposed Methodology is largely sound. As recommended by our various parties, the methodology rightly includes a loss savings factor for each component value where those savings are applicable (including utility fuel cost, plant O&M costs, capacity costs, and environmental costs). Moreover, the methodology rightly specifies a 25-year valuation and contract horizon.[11] Additionally, we acknowledge and applaud the Department's determination that standby charges would not be appropriate under the VOST metering arrangement.

We support the inclusion of all of the Department-identified values (including the statutorily required environmental value) in the final methodology,

In addition, we offer the following comments highlighting important inclusions in the value component spread and regarding specific concerns we have with the methodology as proposed to the Commission by the Department.

II. Transparency

At a high level, we were pleased to see the Proposed Methodology requires common presentation elements for both the VOST Data Table and the VOST Levelized Calculation Chart. Transparency in how the methodology is utilized by utilities in Minnesota is just as important as transparency during the development of the methodology. Requiring a common framework for presentation of input assumptions and subsequent results will greatly

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[10] MINN. STAT. 216B.164, Subd. 10.

[11] As noted in previous comments, the longer contract provides a utility benefit – more certainty for a longer period of time – and matches well with solar panel warrantee periods. We have heard no credible arguments against a 25-year valuation.

facilitate stakeholder engagement in the future as utilities move forward with development of a value of solar tariff based off of the Proposed Methodology.[12]

We encourage the Commission to consider what actions are necessary to provide greater access to the utilities' typically confidential information and system modeling software to ensure transparency and a comprehensive understanding of the derivation of the contributing value streams as utilities calculate their VOST rates.

Transparency is especially important for the ELCC methodology and calculation, which plays a key role in the Proposed Methodology. The Proposed Methodology utilizes ELCC methodology to determine an effective capacity value ultimately used for calculating avoided generation capacity costs, avoided reserve capacity costs, avoided generation fixed O&M costs, and avoided transmission capacity costs (including O&M). It notes that the ELCC is calculated by averaging the PV fleet shape over the specified hours and then dividing by the rating of the marginal PV resource which results in a percentage value.

We appreciate that the methodology proposed by the Department no longer allows for use of an ELCC developed in a separate, existing proceeding to be used for this solar valuation methodology as well. With that said, we would like to point out that ELCC studies are frequently opaque to non-utility stakeholders and have run into situations in other states where the "fleet shape" was based on too few actual projects. It is important to note that use of a limited data set results in a loss of the smoothing effect of aggregating generation curves from geographically diverse PV system installations. We urge the Commission to pay special attention to this issue, particularly in the early stages of VOST development and implementation when the overall fleet is relatively small. Should the Commission feel that too few systems are included in the fleet, we recommend use of the solar generation curves that can be derived from the National Renewable Energy Laboratory's PVWatts system available on its website.

III. Avoided Transmission Capacity

We applaud the inclusion of avoided transmission capacity costs as a benefit in the Proposed Methodology. It is widely accepted that DSG located close to load in the distribution system lowers the overall need for transmission capacity to bring energy from distant generation facilities.[13] Therefore, the MISO OATT Schedule 9 Charge valuation metric, which measures this value for each year of the VOST contract, is an accurate approach that we support.

DSG avoids utility transmission capacity cost because it reduces transmission needs by being located on the distribution system close to load. DSG is also highly modular with regard to location and in-service timing as it can be deployed in relatively small amounts and

[12] *See also* Regulator's Guidebook at 15-16, 17 (discussing the need for transparency in modeling).

[13] *See* Regulator's Guidebook, at 26-29.

in much shorter timeframes than utility scale generation and transmission assets. Accordingly, DSG resources not only defer the need for future transmission capacity, but because it does so in an incremental, flexible fashion, DSG also allows ratepayer capital be deployed more efficiently by avoiding lumpy investments.

Furthermore, DSG opens capacity on existing transmission lines by reducing the load that the transmission system was designed to serve. In a distribution system experiencing growth, this results in a direct benefit to the utility through the deferral of transmission resources into future years, which has value at the present, as is captured by the characterization of avoided transmission capacity within the Proposed Methodology.

Because the transmission capacity made available to the transmission provider through reductions in load has value at present, the Proposed Methodology is right to quantify that benefit as such. One way to conceptualize this point is to consider a distribution system facing zero-load growth. In that situation, installation of DSG will free up capacity that has value to the transmission owner and non-transmission owning utilities alike. For example, in Xcel Energy's case, where it is both the load-serving entity and the transmission owner, reducing its load which, in turn, frees capacity on its transmission lines, allows it the option of charging other load-serving entities for use of its transmission. For utilities that do not own transmission, having reduced load lowers the amount of needed transmission services to serve its load, and therefore, lowers the amount of transmission services the utility must purchase.

Therefore, we support the Department's proposed methodological approach to value the avoided transmission capacity costs. The Proposed Methodology accurately accounts for the transmission capacity value component by including it from the start of the valuation period, including avoided transmission operation & maintenance costs, avoided congestion charges and penalties, and other transmission-related avoided costs. We believe that the 5-year average MISO OATT Schedule 9 charge metric fairly captures these values. Moreover, this OATT Schedule 9 charge metric is a practical choice because it is a charge applicable to all the IOUs eligible for the VOST and an input that is already readily available.

IV. Avoided Distribution System Capacity Cost

The Proposed Methodology presents two options for calculation of avoided distribution system capacity costs. In the first, utilities can calculate a system-wide "average" avoided cost. In the second, alternative option, utilities can calculate location-specific avoided costs.

We support quantification of the location-specific avoided costs that DSG can provide on to the utility due to its placement at specific locations in the grid because the statute specifically references the development of a credit for "systems installed at high value locations" and "other factors" as options.[14] We believe inclusion of this benefit is also

[14] MINN. STAT. 216B.164, Subd.10(f).

consistent with current policy in Minnesota requiring utilities to provide certain information to developers who request it regarding possible areas of the grid that could benefit from distributed generation.[15]

The phrase "high value locations" is undefined in the statute, but we believe it is a reference to the fact that distributed generation, when installed in specific grid locations, can defer or mitigate the need for a specific upgrade to the transmission or distribution system.

These benefits can be quite substantial. For example, the Long Island Power Authority (LIPA) recently recognized that distributed solar can defer approximately $84 million dollars in transmission upgrades east of its Canal Substation if enough solar energy systems are brought online in identified locations. In order to promote the installation of solar in these areas, LIPA is offering a cost-based adder of $0.07/kWh to installers who locate systems in those areas at a level sufficient to avoid the identified upgrades.[16] Avoiding similar upgrade costs in Minnesota while also achieving the state's goals for distributed generation represents an important opportunity to drive costs savings from deployment of distributed generation.

While we believe that recognizing location-specific avoided distribution costs will result in more-optimized DSG siting and thus the highest value to ratepayers, we understand that the framework for assessing such benefits and making that information available to developers could take time to develop. Accordingly, we support giving the utility a choice in how they calculate distribution system avoided costs as an interim solution given the fact that utilities may have very different distribution system planning frameworks and calculation of location-specific avoided costs may not be practical at present.

V. Avoided Fuel Cost: Avoided Cost of Price Volatility Risk

We strongly support the inclusion of the value of the avoided cost of price volatility risk – or the fuel price guarantee value – as part of the avoided fuel cost value component. It is very clear and intuitive that distributed solar generation reduces the need for the utility to generate or purchase energy from centralized power plants. Indeed, due to the solar generation occurring very close to the load, there are few, if any, losses in getting the power to the point of consumption, further increasing its value. In addition, utility fuel cost reductions are at the margin, *i.e.*, it is the last kWh generated that will be saved (plus losses) by the first kWh generated by distributed solar resources. However, forecasting future gas

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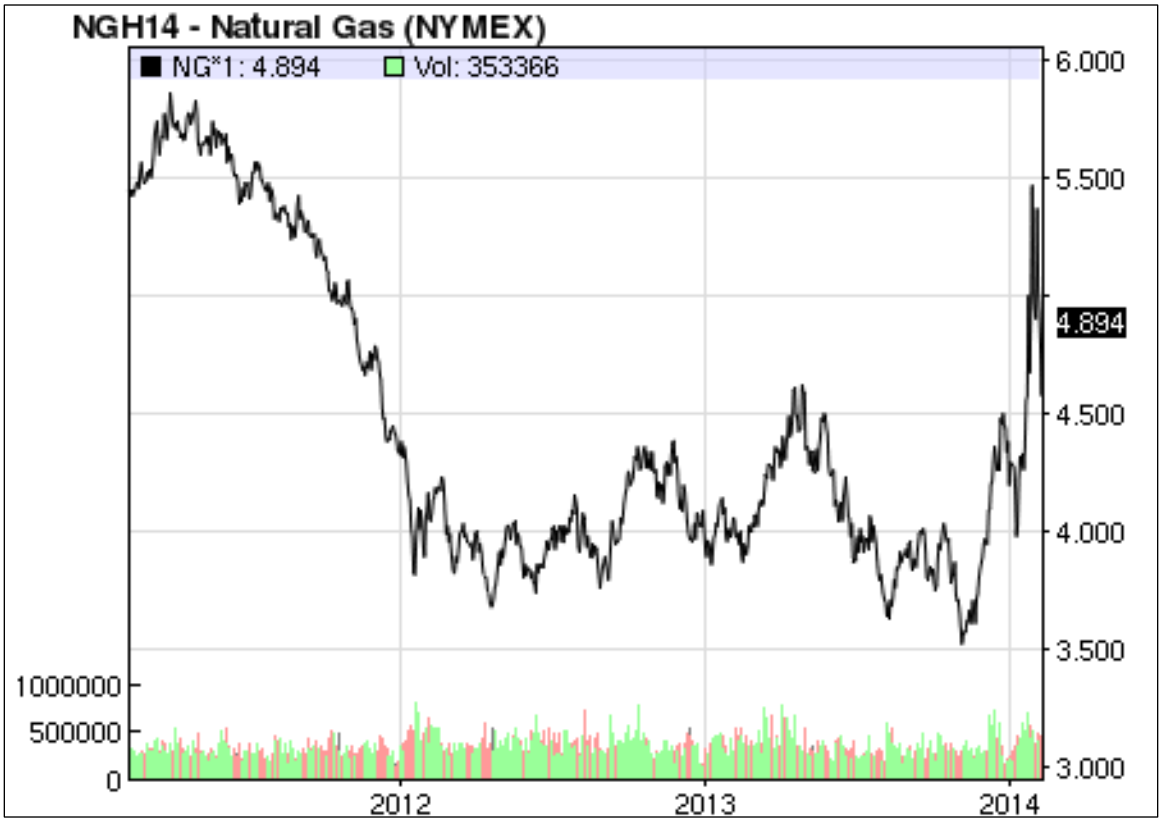
[15] *See In the Matter of Establishing Generic Standards for Utility Tariff's for Interconnection and Operation of Distributed Generation Facilities under Minnesota Laws 2001, Chapter 212*, Docket No. E-999/CI-01-1023, issues September 28, 2004, 2004 Minn. PUC LEXIS 133, at *54 ("Each utility should provide, upon request, a list of substation areas or feeders that could be likely candidates for distribution credits as determined through the utility's normal distribution planning process.") .

[16] *See* Proposal Concerning Modifications to LIPA's Tariff for Electric Service, at 4 (available at www.lipower.org/pdfs/company/tariff/proposals-FIT070113.pdf).

prices is always a difficult and controversial endeavor.

The Proposed Methodology does a good job of identifying and describing the differences between utility fuel (and especially marginal natural gas) costs which fluctuate and a 25-year contract (*i.e.*, VOST) at a non-fluctuating price. Indeed, natural gas costs have a history of volatility that continues even in this current time of seemingly abundant shale gas as the following chart[17] indicates.



The only fully comparable comparison between the fuel costs for the two resource types (natural gas and PV) would be a 25 year fixed price contract for natural gas. However, unlike the home mortgage market that allows and even encourages homeowners to refinance their homes when interest rates are low, long term fixed price contracts are rare in the power supply world.

In Colorado for example, Xcel's electric and gas operating subsidiary discussed this issue recently in testimony before the Colorado Public Utilities Commission (PUC). In Docket No. 13AL-0958E, a proceeding addressing the revision of avoided cost methodologies for small Qualifying Facilities, the Company's Director of Regulator Administration and Compliance Scott Brockett discussed hedging and long term gas contracts as follows:

[17] Source: http://www.nasdaq.com/markets/natural-gas.aspx?timeframe=3y

> While the Public Service electric department does have a hedging plan to protect customers against significant commodity price increases, we rarely execute long-term gas contracts at fixed prices. The premium required to secure such long-term price certainty is generally too high to justify such contracts. Consequently, for the most part, the fuel costs of our gas-fired generating units rise and fall with changes to the market price of natural gas.[18]

While intuitive, this testimony makes abundantly clear the cost (or value) difference between hedging fuel costs and a long-term fixed price gas contract. With that information in hand, how does one project the cost of a fixed price contract when such is not available? The Department of Commerce's VOST Methodology document generously offers three options.

First, it suggests the option of basing a firm price on the NYMEX futures market using a fixed escalation factor to turn the available 12-year NYMEX data into a 25-year virtual "contract." While certainly imperfect, this option provides transparency into the determination.

The second option allows obtaining an actual long term price quotation from a AA rate natural gas supplier. We believe this option is preferable if there is transparency. In other words, gas suppliers are sure to know that such a quotation will not result in an actual contract and may either underbid or overbid their long term prices depending on the outcome they deem most beneficial to them. Thus, without actual procurement occurring, it is not clear to us that this option will yield a credible projection.

Third, the document suggests the option of allowing the utility to guarantee the price projections that are used in the value calculation. Importantly coupled with this approach, however, is that the utility-guaranteed natural gas cost will also become a fixed price for the general body of ratepayers, thus removing the risk of volatility from ratepayers. This approach encourages utilities to "sharpen their pencils" and truly provide their best projections as they will be assuming the price risk going forward. This method has the advantage of beginning to introduce some market discipline into the fuel procurement practices of large utilities.

Though we are currently evaluating the details of these three proposed options, overall we reiterate our strong support for inclusion of this core source of DSG value in the VOS methodology.

Finally, the DOC Methodology document notes that the discount rate should take into account the nature of fuel cost recovery. Thus for the first two options we wholeheartedly support the use of a risk free discount rate based on the T-bill yield to reflect the lack of risk in avoided fuels costs. If, however, the utility takes on the 25-year risk for natural gas costs, then we would support the use of a higher utility discount rate for option three.

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[18] Colorado PUC Docket No. 13AL-0958E, Rebuttal Testimony of Scott Brockett, at 23, lines 14-20.

VI. Avoided Environmental Costs

Electric utilities currently enjoy an enormous cross-subsidy from non-customers and customers alike: the health and economic costs of greenhouse gas emissions, criteria air pollutants, and water consumption from fossil fuel extraction, delivery, and combustion.[19] A recent report estimates impacts to human health and the environment in Minnesota from electricity generation result in damages of $2.164 billion.[20] Distributed solar PV does not impose these costs on society. Thus, VOST generators will confer a benefit on society (including utility ratepayers) in the form of avoided environmental costs.

Recognizing this, the Minnesota Legislature explicitly specified that the VOST methodology "**must . . . account for** the value of energy and its delivery, generation capacity, transmission and distribution line losses, and **environmental value**."[21]

The fact that many of the avoided environmental costs accrue to society, rather than the utility, is explicitly recognized and embraced by the statute, which specifies that the VOST "compensates customers . . . for **the value to** the utility, its customers, and **society** for operating distributed solar photovoltaic resources interconnected to the utility system . . . ."[22]

For this reason, environmental costs are appropriately included as a "required component" in the Department's Proposed Methodology.[23] We support the inclusion of a value component for avoided environmental costs, as required by law and in support of the state's aggressive global warming reduction goals.

Moreover, we note that these costs are known and measurable. Indeed, in September 2013, economists at the University of Minnesota used several sources, including data from the National Research Council (an arm of the National Academies of Science) to develop a cost for each ton of various criteria air pollutants and carbon pollution in terms of environmental and health impacts. A table summary of those findings, taken from the report, is below.[24]

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[19] ILSR Initial Comments to the Department (Sept. 20, 2013), at 3.

[20] "Health and Environmental Costs of Electricity Generation in Minnesota," Andrew Goodkind and Stephen Polasky, Sept. 26, 2013, at 4.

[21] MINN. STAT. 216B.164, Subd. 10(f) (emphasis added).

[22] MINN. STAT. 216B.164, Subd. 10(a) (emphasis added).

[23] Proposed Methodology, at 39.

[24] "Health and Environmental Costs of Electricity Generation in Minnesota," Andrew Goodkind and Stephen Polasky, Sept. 26, 2013, at 6.

Table 1 – health and environmental costs per ton of pollutant emissions by Minnesota counties (2010 USD)

Pollutant	Urban[a] County Emissions Median (5^{th} – 95^{th} percentile)	Rural[b] County Emissions Median (5^{th} – 95^{th} percentile)
SO_2	$11,400 ($6,600 – $13,600)	$5,100 ($1,900 – $6,500)
NO_X	$3,300 ($3,000 – $3,400)	$2,300 ($1,300 – $2,900)
$PM_{2.5}$	$18,500 ($7,100 – $30,800)	$3,400 ($2,700 – $6,600)
PM_{10}	$1,100 ($400 – $1,600)	$200 ($150 – $350)
NH_3	$2,400 ($1,400 – $15,800)	$900 ($600 – $1,700)
VOC	$1,200 ($400 – $2,200)	$230 ($140 – $370)

a. Urban includes NCHS urban-rural county classifications: large central metro, large fringe metro.
b. Rural includes NCHS urban-rural county classifications: medium metro, small metro, micropolitan, noncore.

Under this approach, as Xcel Energy has noted, "the owners of solar systems will be the first energy vendor on the NSP system to directly receive an actual payment for their avoided carbon emissions."[25] This is in alignment with the overall philosophy behind value of solar, which is to compensate distributed solar generators for the value they deliver to utility ratepayers and society more generally.

The Proposed Methodology bases avoided environmental costs on the federal social cost of carbon emissions, plus the Commission-established costs for non-carbon emissions.[26] The methodology also specifies the use of an "environmental discount rate" of 3% (real terms) as an appropriate societal discount rate.

We support this carbon cost estimation approach.[27] The same September 2013 analysis of economic impact from Minnesota electric generation recommends using the federal social cost of carbon approach as well.[28] The Minnesota Pollution Control Agency (PCA) also recognizes the federal Interagency Working Group's social cost of carbon estimate as "representing **the best available estimate** of the environmental and other nonmarket costs of GHG emissions."[29] The PCA also stated that the Commission should

[25] Xcel Energy Initial Comments to the Department (Sept. 20, 2013), at 7. (The utility also noted that "stakeholders may wish to consider whether the appropriate environmental value today is zero.")

[26] Proposed Methodology, at 39.

[27] As recommended by ELPC, FE, IREC, and VSI in our October 8, 2013 comments in Response to Department of Commerce Questions, at 9 ("[W]e suggest . . . adoption of the federal interagency working group's social cost of carbon for the carbon cost component of VOS environmental value.")

[28] "Health and Environmental Costs of Electricity Generation in Minnesota," Andrew Goodkind and Stephen Polasky, Sept. 26, 2013, at 4.

[29] Comments of Minnesota Pollution Control Agency, Oct. 1, 2013, PUC Docket RP-13-368 *In the Matter of the Petition of Northern States Power for Sherco Units 1 and 2 Life Cycle Management Study* (emphasis added). *See also* MINN. STAT. 216H.06.

consider the use of the Interagency Working Group's cost number in "relevant future Commission proceedings."[30]

We also support the use of the PUC-established Minnesota externality costs with the expectation that these values will be updated to reflect current, better developed scientific understanding and evidence of the economic impacts of these externalities in Docket No. E-999/CI-00-1636. The most current externality costs should be used in the VOST Methodology. Further, we support the Department's specification of a "societal discount rate" (rather than the utility Weighted Average Cost of Capital) as appropriate for discounting societal benefits.[31]

Finally, we note that multiple stakeholders including ELPC, FE, IREC, IWLA, and VSI suggested in earlier comments that the proposed methodology should also account for the avoided costs of water consumption associated with the current use of fossil fuels and thermal generation, along with the avoided costs of land and ecosystem impacts. Although these environmental sub-components were not articulated in the Department's Proposed Methodology, we remain hopeful that these environmental values can be articulated and incorporated into the methodology in the future.[32]

VII. Avoided SES Compliance Costs (Solar Renewable Energy Credits)

The Proposed Methodology is, unfortunately, silent on value that VOST generators will provide to the utility in the form of avoided SES compliance costs.

The VOST statute "requires the transfer of all renewable energy credits associated with the energy generated by the solar photovoltaic device to the purchasing utility."[33] The Methodology does not, however, factor this SREC transfer into the calculation and, therefore, neglects to financially transact for the full value of the SRECs.

By definition, RECs are measurements of compliance with the SES and RES as well as representative of the environmental attributes/offsets of the renewable generation. These two value components must be acknowledged in order for the VOST to accurately account for the value the utility gains from procuring VOST SRECs, and to fairly compensate the distributed solar generator. Avoided environmental costs benefit society and would exist even without an SES compliance requirement. Avoided compliance costs, on the other hand, benefit utility ratepayers and may be expected to taper off as SREC supply scales up over

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30 *Id.*

31 *See* Initial Comments of ELPC and VSI to the Department (Sept. 20, 2013), at 5 ("the discount rate can have a significant impact on the results of the value analysis and should be given special attention").

32 *See* IWLA comments to Department (Sept. 20, 2013), at 2; Comments of ELPC, FE, IREC, and VSI in Response to Department of Commerce Questions (Oct. 8, 2013), at 12.

33 MINN. STAT. 216B.164, Subd. 10(i).

time to meet compliance demand. Thus, avoided environmental costs and avoided compliance costs are two distinct value components that must be accounted for within the final VOST methodology.

We recognize that current regulatory uncertainty around SREC valuation may pose a challenge to the Department's ability to characterize and specify a methodology for this value component. But the Commission is addressing SREC valuation issues across a range of solar-related dockets, and we expect this will lead to greater clarity around this value component in the coming months.

Thus, we respectfully request that the Commission modify the Proposed Methodology to recognize and compensate VOST generators for the compliance cost reducing benefit that statutory SREC transfer confers on the utility.

The inclusion of a value component for avoided SES compliance costs is authorized under the VOST statue, which states that:

> The department may, based on known and measurable evidence of the cost or benefit of solar operation to the utility, incorporate other values into the methodology, including credit for locally manufactured or assembled energy systems, systems installed at high-value locations on the distribution grid, or other factors.[34]

Specifically, the avoided compliance cost value comes in under the "other factors" clause. The Legislature appears to have anticipated that there may be relevant DSG value components that were not known or articulated at the time of statutory drafting. For this reason, the Legislature wisely kept the list of value components open, by allowing for the inclusion of other value components if relevant.

This avoided "cost . . . to the utility" will become "known and measurable" as the rules for SRECs are finalized by the Commission and as the states compliance and voluntary SREC markets take shape.

The acquisition of a REC (SREC or otherwise) for the environmental, as well as the non-environmental compliance attributes, is nothing new. Under current practice, Minnesota utilities currently pay a significant amount for DSG RECs. For example, as SunEdison described in its December 17, 2013 comments:

> [T]he Minnesota Solar*Rewards program currently provides $1.50/W-DC or approximately $50-55/MWh.26 The $1.50/W-DC, or approximately $50-55/MWh ($0.05-$0.055/kWh), Minnesota REC benchmark is derived from the Minnesota Solar*Rewards program for systems up to 20 kW.[35]

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[34] MINN. STAT. 216B.1641, Subd. 10(f) (emphasis added).

[35] SunEdison Comments (Dec. 17, 2013), at 10.

Indeed, the SES will create a substantial new market for SRECs. So investor-owned utilities will clearly benefit if the VOST allows them to reduce the number of SRECs they would need to otherwise procure. Moreover, utilities procuring additional SRECs through the VOST could sell excess credits to utilities in other compliance markets (not necessarily limited to solar).

When identifying the utility's avoided SES compliance costs, it is important to understand what is necessary to achieve compliance. With SRECs as the metric, the SES is a measurement of customer and utility *adoption* of solar. Therefore, the cost to comply with the SES is truly the cost of *adoption*. The 'cost of adoption' is a dynamic number as it is impacted by how much compliance has been achieved and should be based off the current market proxies, such as Solar*Rewards or other nationally established market proxies.

As we have seen in more mature REC markets, the 'cost of adoption' indexes off of the level of compliance achieved and we typically see the 'cost of compliance' trend down as compliance levels increase. Simply put, the 'cost of compliance' decreases as you get closer to the compliance target since, at that time, the REC market is more robust. Because SRECs are the metric by which compliance with the SES is measured, it is appropriate to apply the 'cost of adoption' as the applicable price indicator for the Minnesota SREC market.

Further, fully accounting for the IOUs avoided SES compliance costs in the VOST will encourage distributed solar by compensating customers installing distributed solar systems at a fair value for their SRECs. Minnesota statute section 216B.164 – which includes the new VOST statute – shall be "at all times be construed in accordance with its intent to give maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public."[36] The inclusion of the costs avoided for non-compliance with the SES meets this test: it encourages DSG with fair value and does not harm ratepayers as the utility payment for SRECs will simply be its avoided-cost compliance value, so there will be no unnecessary added costs to ratepayers (participating or non-participating).

Additionally, fair compensation for SRECs protects the members of the public and ratepayers who are installing DSG with their own capital by not transferring their SRECs to the utility without compensation. Allowing the utility to capture the compliance value of SRECs without compensation will simply be a windfall for ratepayers and/or utility shareholders. Moreover, utilities procuring additional SRECs through the VOST could sell excess credits to utilities in other compliance markets (not necessarily limited to solar).

For these reasons, we recommend that the Commission amend the proposed methodology to include a value component for the Avoided SES Compliance Cost that ensures customer-generators receive fair SREC compensation.

[36] MINN. STAT. 216B.164, Subd. 1.

VIII. Capacity Adder to Support Varied Panel Orientations and Tracking System

We support development of an adder or other mechanism in the VOST methodology that will compensate DSG that can provide additional capacity benefits due to utilization of tracking systems or a non-standard orientation (such as west facing).[37] It is current standard industry practice to consider tracking for most systems 750 kW and greater, as will be the case with many Community Solar facilities and commercial and industrial installations. Under the Proposed Methodology, the lack of such an adder puts both these systems at a distinct disadvantage.

First, systems utilizing a non-standard orientation, such as west-facing, can result in greater capacity benefits, but also less energy production. Because the Proposed Methodology only provides for development of capacity values based off of a Fleet Production Shape, western facing systems will be at a distinct disadvantage to other systems due to its lower energy production even though that orientation provides ratepayers with a greater capacity value.

Similarly, a tracking system can contribute greater capacity value by nature of optimizing maximum output (kW), not production (kWh). Such a system will generally produce less energy because it is optimized to maximize capacity and produce most during system peak however the capacity contribution is significant and important to maintaining system reliability. Unfortunately, the Proposed Methodology appears to recognize and reward only the former (energy), neglecting to value optimal capacity contribution. (The basic rate structure, which is denominated in $/kWh, directly rewards more energy production. More capacity, on the other hand, will only be rewarded to the extent that the Methodology directs and specifies the valuation of same.)

In both of these situations, the Proposed Methodology would fail to recognize the greater capacity benefit, sending an unintended financial signal to solar customers and developers: don't bother installing solar on trackers and west-facing roofs, despite the marginal capacity benefit that such systems may confer on the utility and ratepayers generally.

In general, it seems prudent to design an adder to the VOST methodology at the on-set that will provide support for systems that utilize tracking or non-standard orientations so that overall system benefits are maximized from the installation of DSG. We recommend the use of the National Renewable Energy Laboratory's PVWatts model to derive adders for categories of Southwest and West facing systems, and for tracking systems. It is simple, publicly available and easy to use. At a minimum, we believe a placeholder for this component should be added to the methodology for development at a future date.

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[37] *See* joint comments of ELPC, FE, IREC, and VSI in Response to Department of Commerce Questions (Oct.8, 2013), at 12 (regarding tracking and west-facing orientations, "the key point is to not preclude their development by not assigning any value to the additional capacity they can bring to the grid.").

IX. Additional Placeholder for Value of "Market Price Reduction"

The Proposed Methodology includes voltage control and solar integration as "placeholder" component variables for future years. We support the establishment of these important placeholders. Placeholders establish a path for future incorporation of additional relevant value components (*i.e.*, once they become measurable).

For this reason, we also recommend that the Commission include a third component "placeholder" for "market price reduction" — those utility-avoided wholesale energy costs that can be attributed to DSG within the utility service territory. As described in our earlier joint comments, this is a clearly articulated value component of potentially significant size.[38] The Commission may believe that data gaps and/or regulatory/market uncertainty prevent the development of a robust valuation methodology for this component at the present time. For that reason, we suggest the placeholder approach.

X. Other Comments

We also want to note our full and strong support for other elements embodied in the Proposed Methodology: the consistency of avoided costs among fuel costs, generation capacity costs, operating and maintenance expenses, and avoided emissions. This is wholly logical and fair.

XI. Conclusion

Our organizations, ELPC, Fresh Energy, IREC, ILSR, Isaak Walton League of America, SunEdison and the Vote Solar Initiative, appreciate the opportunity to provide these comments on the Department's proposed methodology submitted to the Commission on January 31, 2014.[39]

Each of our organizations has engaged actively in the development of the VOST methodology during the Department's stakeholder process. The development of the methodology in a transparent and public process has resulted in a methodology that, at a high level, addresses many important aspects of the value distributed generation can bring to Minnesota ratepayers and utilities. However, as described herein, the methodology would benefit from further specificity related to the benefits that distributed generation can provide.

We appreciate the opportunity to provide these initial comments to the Commission.

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[38] October 8, 2012 Response to Department of Commerce Questions, at 13-14 ("CPR (NJ/PA) 2012 determined this benefit to be valued at approximately 3-6¢/kWh for seven utilities across Pennsylvania and New Jersey.").

[39] Counsel for IREC has given undersigned counsel authorization to sign these comments on IREC's behalf.

Very truly yours,

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CERTIFICATE OF SERVICE

I, Allen Gleckner, hereby certify that I have this day served a true and correct copy of the foregoing document to all persons at the addresses indicated below or on the attached list by electronic filing, electronic mail, interoffice mail or by depositing said documents in the United States Mail, postage prepaid, in Chicago, Illinois.

In the Matter of Establishing a Distributed Solar Value Methodology under Minn. Stat. §216B.164, subd. 10 (e) and (f)

Docket Number E-999/M-14-65

Dated this 13th day of February, 2014.

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John	Kluempke	jwkluempke@winlectric.com	Elk River Winlectric	12777 Meadowvale Rd Elk River, MN 55330	Electronic Service	No	SPL_SL_14-65_Interested Parties
Thomas G.	Koehler	N/A	Local Union #160, IBEW	2909 Anthony Ln Minneapolis, MN 55418-3238	Paper Service	No	SPL_SL_14-65_Interested Parties
Mara	Koeller	mara.n.koeller@xcelenergy.com	Xcel Energy	414 Nicollet Mall 5th Floor Minneapolis, MN 55401	Electronic Service	No	SPL_SL_14-65_Interested Parties
Jon	Kramer	jk2surf@aol.com	Sundial Solar	4708 york ave. S Minneapolis, MN 55410	Electronic Service	No	SPL_SL_14-65_Interested Parties
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	SPL_SL_14-65_Interested Parties
Allen	Krug	allen.krug@xcelenergy.com	Xcel Energy	414 Nicollet Mall-7th fl Minneapolis, MN 55401	Electronic Service	No	SPL_SL_14-65_Interested Parties
Scott	Kurtz	Scott.J.Kurtz@xcelenergy.com	Xcel Energy	825 Rice Street St. Paul, MN 55117	Electronic Service	No	SPL_SL_14-65_Interested Parties
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	SPL_SL_14-65_Interested Parties

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Deborah Fohr	Levchak	dlevchak@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 585030564	Paper Service	No	SPL_SL_14-65_Interested Parties
Amy	Liberkowski	amy.a.liberkowski@xcelenergy.com	Xcel Energy	414 Nicollet Mall 7th Floor Minneapolis, MN 554011993	Electronic Service	No	SPL_SL_14-65_Interested Parties
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	SPL_SL_14-65_Interested Parties
Mark	Lindquist	N/A	The Minnesota Project	57107 422nd St New Ulm, MN 56073-4321	Paper Service	No	SPL_SL_14-65_Interested Parties
Matthew P	Loftus	matthew.p.loftus@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 5 Minneapolis, MN 55401	Electronic Service	No	SPL_SL_14-65_Interested Parties
Bob	Long	rlong@larkinhoffman.com	Larkin Hoffman (Silicon Energy)	1500 Wells Fargo Plaza 7900 Xerxes Ave S Bloomington, MN 55431	Paper Service	No	SPL_SL_14-65_Interested Parties
Rebecca	Lundberg	rebecca.lundberg@powerfullygreen.com	Powerfully Green	11451 Oregon Ave N Champlin, MN 55316	Electronic Service	No	SPL_SL_14-65_Interested Parties
Paula	Maccabee	Pmaccabee@justchangelaw.com	Just Change Law Offices	1961 Selby Avenue St. Paul, MN 55104	Paper Service	No	SPL_SL_14-65_Interested Parties
Casey	Maccullum	casey@appliedenergyinnovations.org	Applied Energy Innovations	4000 Minnehaha Ave S Minneapolis, MN 55406	Paper Service	No	SPL_SL_14-65_Interested Parties
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Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	SPL_SL_14-65_Interested Parties
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	SPL_SL_14-65_Interested Parties
Mary	Martinka	mary.a.martinka@xcelenergy.com	Xcel Energy Inc	414 Nicollet Mall 7th Floor Minneapolis, MN 55401	Electronic Service	No	SPL_SL_14-65_Interested Parties
Mike	McDowell		Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Paper Service	No	SPL_SL_14-65_Interested Parties
Natalie	McIntire	natalie.mcintire@gmail.com	Wind on the Wires	570 Asbury St Ste 201 St. Paul, MN 55104-1850	Paper Service	No	SPL_SL_14-65_Interested Parties
Dave	McNary	N/A	Hennepin County DES	701 Fourth Avenue South suite 700 Minneapolis, MN 55415-1842	Paper Service	No	SPL_SL_14-65_Interested Parties
John	McWilliams	jmm@dairynet.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817 La Crosse, WI 54601-7227	Electronic Service	No	SPL_SL_14-65_Interested Parties
Valerie	Means	valerie.means@lawmoss.com	Moss & Barnett	Suite 4800 90 South Seventh Street Minneapolis, MN 55402	Electronic Service	No	SPL_SL_14-65_Interested Parties
Brian	Millberg	Brian.Millberg@minneapolismn.gov	City of Minneapolis	350 South 5th St, #315 Minneapolis, MN 55415	Paper Service	No	SPL_SL_14-65_Interested Parties
Stacy	Miller	stacy.miller@state.mn.us	Department of Commerce	State Energy Office 85 7th Place East, Suite 500 St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-65_Interested Parties

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David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	SPL_SL_14-65_Interested Parties
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	SPL_SL_14-65_Interested Parties
Martin	Morud	mmorud@trunorthsolar.com	Tru North Solar	5115 45th Ave S Minneapolis, MN 55417	Electronic Service	No	SPL_SL_14-65_Interested Parties
Ben	Nelson		CMMPA	459 South Grove Street Blue Earth, MN 56013	Paper Service	No	SPL_SL_14-65_Interested Parties
David W.	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	Suite 300 200 South Sixth Street Minneapolis, MN 55402	Electronic Service	No	SPL_SL_14-65_Interested Parties
Michael	Noble	noble@fresh-energy.org	Fresh Energy	Hamm Bldg., Suite 220 408 St. Peter Street St. Paul, MN 55102	Electronic Service	No	SPL_SL_14-65_Interested Parties
Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220 Minneapolis, MN 55407-1229	Electronic Service	No	SPL_SL_14-65_Interested Parties
Kate	O'Connell	kate.oconnell@state.mn.us	Department of Commerce	Suite 50085 Seventh Place East St. Paul, MN 551012198	Electronic Service	No	SPL_SL_14-65_Interested Parties
Nick	Paluck	nick.paluck@xcelenergy.com	Xcel Energy	7th Floor 414 Nicollet Mall Minneapolis, MN 554011993	Electronic Service	No	SPL_SL_14-65_Interested Parties
James	Pearson	james.g.pearson@xcelenergy.com	Xcel Energy	414 Nicollet Mall Minneapolis, MN 55401	Electronic Service	No	SPL_SL_14-65_Interested Parties

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Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	Suite 801 25 West Main Street Madison, WI 537033398	Electronic Service	No	SPL_SL_14-65_Interested Parties
Donna	Pickard	dpickard@aladdinsolar.com	Aladdin Solar	1215 Lilac Lane Excelsior, MN 55331	Electronic Service	No	SPL_SL_14-65_Interested Parties
Charlie	Pickard	cpickard@aladdinsolar.com	Aladdin Solar	1215 Lilac Lane Excelsior, MN 55331	Electronic Service	No	SPL_SL_14-65_Interested Parties
Joseph V.	Plumbo		Local Union 23, I.B.E.W.	932 Payne Avenue St. Paul, MN 55130	Paper Service	No	SPL_SL_14-65_Interested Parties
Gayle	Prest	gayle.prest@minneapolismn.gov	City of Mpls Sustainability	350 South 5th St, #315 Minneapolis, MN 55415	Paper Service	No	SPL_SL_14-65_Interested Parties
Kent	Ragsdale	kentragsdale@alliantenergy.com	Alliant Energy-Interstate Power and Light Company	P.O. Box 351 200 First Street, SE Cedar Rapids, IA 524060351	Electronic Service	No	SPL_SL_14-65_Interested Parties
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John C.	Reinhardt		Laura A. Reinhardt	3552 26Th Avenue South Minneapolis, MN 55406	Paper Service	No	SPL_SL_14-65_Interested Parties
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Paper Service	No	SPL_SL_14-65_Interested Parties
Enio	Ricci	ericci@invenergyllc.com	Invenergy LLC	17830 New Hampshire Ave Ste 300 Ashton, MD 20861	Paper Service	No	SPL_SL_14-65_Interested Parties

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Trudy	Richter	trichter@rranow.com	Minnesota Resource Recovery Assn.	477 Selby Avenue St. Paul, MN 55102	Paper Service	No	SPL_SL_14-65_Interested Parties
Michelle	Rosier	michelle.rosier@sierraclub.org	Sierra Club	2327 E. Franklin Avenue Minneapolis, MN 554061024	Paper Service	No	SPL_SL_14-65_Interested Parties
Craig	Rustad	crustad@minnkota.com	Minnkota Power	1822 Mill Road PO Box 13200 Grand Forks, ND 582083200	Electronic Service	No	SPL_SL_14-65_Interested Parties
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Raymond	Sand	rms@dairynet.com	Dairyland Power Cooperative	P.O. Box 8173200 East Avenue South LaCrosse, WI 546020817	Electronic Service	No	SPL_SL_14-65_Interested Parties
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Kevin	Schwain	Kevin.D.Schwain@xcelenergy.com	Xcel Energy	404 Nicollet Mall Minneapolis, MN 55401	Electronic Service	No	SPL_SL_14-65_Interested Parties
Dean	Sedgwick	N/A	Itasca Power Company	PO Box 457 Bigfork, MN 56628-0457	Paper Service	No	SPL_SL_14-65_Interested Parties

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Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	Ste 122 9100 W Bloomington Frwy Bloomington, MN 55431	Electronic Service	No	SPL_SL_14-65_Interested Parties
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Doug	Shoemaker	dougs@mnRenewables.org	MRES	2928 5th Avenue South Minneapolis, MN 55408	Paper Service	No	SPL_SL_14-65_Interested Parties
Mrg	Simon	mrgsimon@mrenergy.com	Missouri River Energy Services	3724 W. Avera Drive P.O. Box 88920 Sioux Falls, SD 571098920	Electronic Service	No	SPL_SL_14-65_Interested Parties
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Beth H.	Soholt	bsoholt@windonthewires.org	Wind on the Wires	570 Asbury Street Suite 201 St. Paul, MN 55104	Electronic Service	No	SPL_SL_14-65_Interested Parties
Chanti	Sourignavong	chantipal.sourignavong@honeywell.com	Honeywell	1985 Douglas Drive North MN10-111A Golden Valley, MN 55422-3992	Paper Service	No	SPL_SL_14-65_Interested Parties
Ron	Spangler, Jr.	rlspangler@otpco.com	Otter Tail Power Company	215 So. Cascade St. PO Box 496 Fergus Falls, MN 565380496	Electronic Service	No	SPL_SL_14-65_Interested Parties
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Thomas P.	Sweeney III	tom.sweeney@easycleanenergy.com	Clean Energy Collective	401 Tree Farm Drive Carbondale, CO 81623	Paper Service	No	SPL_SL_14-65_Interested Parties
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Steve	Thompson		Central Minnesota Municipal Power Agency	459 S Grove St Blue Earth, MN 56013-2629	Paper Service	No	SPL_SL_14-65_Interested Parties
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Lise	Trudeau	lise.trudeau@state.mn.us	Department of Commerce	85 7th Place East Suite 500 Saint Paul, MN 55101	Electronic Service	No	SPL_SL_14-65_Interested Parties
Darryl	Tveitbakk		Northern Municipal Power Agency	123 Second Street West Thief River Falls, MN 56701	Paper Service	No	SPL_SL_14-65_Interested Parties

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Daniel	Williams	DanWilliams.mg@gmail.com	Powerfully Green	11451 Oregon Avenue N Champlin, MN 55316	Electronic Service	No	SPL_SL_14-65_Interested Parties
Steven	Wishart	steven.w.wishart@xcelenergy.com	Xcel Energy	7th Floor 414 Nicollet Mall Minneapolis, MN 554011993	Electronic Service	No	SPL_SL_14-65_Interested Parties
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	SPL_SL_14-65_Interested Parties
Thomas J.	Zaremba		WHEELER, VAN SICKLE & ANDERSON	Suite 801 25 West Main Street Madison, WI 537033398	Paper Service	No	SPL_SL_14-65_Interested Parties