STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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

PUC Docket Number: E-999/M-14-65
Comments of Union of Concerned Scientists

Introduction

The Union of Concerned Scientists ("UCS") is a national nonprofit organization dedicated to advancing responsible public policies in areas where science and technologies play a critical role. Established in 1969, UCS has created a unique alliance between many of the nation's leading scientists and thousands of committed citizens. The UCS Climate & Energy Program focuses on developing a sustainable energy system—one that is affordable and nondepletable, and that does not degrade natural systems or public health. UCS is headquartered in Cambridge, Massachusetts, where we have had 2.5 KW of photovoltaic (PV) generation on our roof since 1996, and also has offices in Berkeley, Chicago and Washington, D.C. UCS has participated in Minnesota proceedings on a variety of proceedings related to energy supply, transmission and air pollution emissions. In the Department of Commerce ("Department") process for development of the distributed solar value methodology, UCS submitted two rounds of comments and participated in a workshop.

The distributed solar value methodology proposed by the Department of Commerce complies with the requirements of Minn. Stat. §216B.164, subd. 10 (e) and (f)

The efforts and results of the Department to establish a distributed solar value methodology should be recognized as compliant with the requirements of the Minnesota statute enacted in 2013. The requirements of Minn. Stat. §216B.164, subd. 10 (e) and (f) direct the Department to include, at a minimum, the value of energy and its delivery, generation capacity,

transmission capacity, transmission and distribution line losses, and environmental value, and do so by January 31, 2014.

The Department made a filing with the Commission on January 31, 2014 that includes a well-developed understanding of solar resource characteristics, and methods for identifying the value of distributed solar energy production. The categories that the Department's methodology addresses are consistent and match the requirements set as a minimum in the statute. The Department has made a significant contribution to the stakeholders' and policymakers' categorization and analytical approach to the value of distributed solar. This process has served Minnesota well.

The proposed methodology is reasonable

The proposal filed by the Department established a reasonable distributed solar value methodology. The Department created a sound foundation for the methodology by establishing a standard solar photovoltaic (PV) rating convention, and methods for creating an hourly PV production time-series, load time-series, and characteristics of representing the marginal generating capacity corresponding to the output of a PV resource. The importance of this cannot be overstated. Only with such a foundation can the specific benefits and values for Minnesota be properly and accurately defined.

The Department took comments, held workshops, and examined the recommendations from a wide range of stakeholders and experts in this matter. Through this review, the Department expanded and updated the state of the industry's knowledge. The Department has not accepted elements of this method without diligent testing against various electric power industry practices and principles.

UCS is particularly supportive of the elements of the proposed methodology where UCS has expertise. These topics are the uncertainty in energy costs and thus the hedge value of the

fixed cost solar energy; the externality values for the pollution emissions from the fossil-fuel powered generation; and the value for transmission capacity. In all three of these areas, the Department's proposed methodology provides for the use of inputs that are directly relevant, that are vetted and published in an independent manner, and that can be found in the public domain. The Department's methodology to recognize the hedge value for the uncertainty of energy costs calls for the use of fuel prices shown in futures markets. The Department's methodology for externalities includes the published Social Cost of Carbon used by the Federal government. The Department's methodology is transparent and not overly complex. These are all reasonable sources, applied in a reasonable calculation or formula.

The approach to finding the value for contribution to transmission is comprehensive, transparent, and reasonable

The Department's methodology for the transmission value should be adopted, and the comments of Xcel on this value should not. The Department's decision to use the imbedded, average cost of transmission from the tariff of the Midcontinent Independent System Operator reflects the contribution that the PV has when distributed amongst the load centers. The Department's method also recognizes the incremental transmission construction is not matched to the incremental needs of the system, but rather is lumpy in size. In these aspects, the Department's proposal is superior to the alternatives suggested by Xcel.

Xcel proposes that the transmission investment that can be avoided is the transmission required for the next increment of generating capacity. In Xcel's comments of February 13, the transmission for a future proposed combustion turbine is suggested as a suitable basis for illustrating this approach. (See Xcel February 13 Comments, page 13.) Xcel suggests the transmission needed to accommodate that particular generator would be minimal (though unstated). Xcel is emphasizing locational differences in transmission need by citing the incremental transmission (which is shown as zero in Xcel's table of costs) for Black Dog 6

generator due to its proposed location. Xcel is saying that the location proposed for this generator is advantageous, "located at an existing site and would use existing transmission interconnection rights." (See Xcel February 13 Comments, page 13.)

In contrast, Xcel argues that there can be no recognition of the location of the PV. In fact, Xcel's argument over the value for transmission goes to a more fundamental disagreement with the Department's method. Xcel suggests that "solar generation cannot be accounted for as an offset to load, loads are not reduced." (See Xcel February 13 Comments, page 19). Peak Load Reduction is so relevant to the Department's proposed method that it appears in the first sentence of the Technical Analysis description. (Department Submittal to PUC, page 13).

Regardless of the semantics of the argument of whether customer load is or is not "reduced" by the introduction of PV at customer locations, the physical reality is that there is a source of energy injected at each of the locations where PV is installed. Xcel's proposal for the transmission component is to dismiss this physical injection without further consideration or comment. Xcel states "distributed solar will not materially change network flows"(See Xcel February 13 Comments, page 13) without a caveat or concession that there is some cumulative size or concentration of DPV where this would not be true.

We are left to guess why Xcel can conclude that there will be no material change to the network flows, and the best guess is based on size comparisons. This is another area where the Department's proposal and Xcel's proposal diverge. Xcel assumes that because the incremental transmission investments are lumpy in size, only enormous amounts of PV would be sufficient to cancel a transmission upgrade. It appears that Xcel's suggestion is that each incremental PV addition is individually too small to merit consideration in relation to the very large increments in transmission capacity. The Department's proposal operates on the basis that there are costs to ratepayers and wholesale customers based on the incremental demand for transmission service,

and that the price signal or value that reflects the incremental change to demand is reasonable and appropriate.

It is also reasonable to use the posted OATT rate for Network Transmission Service as an alternative to identifying the impact on a specific transmission line from a specific PV installation. The difficulties in modeling the powerflow impact of unknown location of future installations of very small generators make such an approach unworkable. Seeking the actual avoided transmission investment will require a powerflow model run for every substation in Minnesota, every year. We share with Xcel and the state a desire for "a clearly measurable, transparent and defensible value for the Transmission component." A different value for transmission resulting from a unique powerflow modeling exercise for each location would not meet this expectation. The proposal to use the posted OATT rate avoids the complexity of determining the different impact of DPV installations at different places, and the timing of transmission construction to meet future needs.

Conclusion

The Department took extensive efforts to comply with the legislated direction in setting out a methodology for a VOS tariff. The Department has created a reasonable and suitable method. We encourage the Commission to act to adopt the Department's recommendations.

Respectfully submitted,

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