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September 2, 2016

—Via Email—

National Association of Regulatory Utility Commissioners  
Attn: Rate Design Staff Subcommittee  
1101 Vermont Ave NW, #200  
Washington, DC 20005

RE: COMMENTS ON DRAFT MANUAL ON DISTRIBUTED ENERGY RESOURCES  
COMPENSATION

Rate Design Staff Subcommittee:

Xcel Energy appreciates the opportunity to submit Comments on the National Association of Regulatory Utility Commissioners (NARUC) Draft Manual on Distributed Energy Resources (DER) Compensation. The Manual provides a comprehensive overview of considerations and rate design methodologies for compensating DER customers. We appreciate the time that the NARUC Staff Subcommittee on Rate Design spent on this issue, which presents an emerging and evolving challenge and opportunity for our industry. When complete, the NARUC Manual will be a useful resource for regulators, utilities, and other stakeholders in designing appropriate rates for increased DER penetration on our systems. In these Comments we provide an overview of our principles related to rate design for DER, identify several specific issues to address in the Manual, and offer some examples from our experience with several rate design methodologies.

## INTRODUCTION

Xcel Energy is a major U.S. electric and natural gas company based in Minneapolis, Minnesota. We are a vertically integrated generation, transmission, and distribution utility with regulated operations in eight Midwestern and Western states - Colorado, Michigan, Minnesota, New Mexico, North Dakota, South Dakota, Texas, and Wisconsin. We are the ninth largest regulated power producer in the United States, and we provide a comprehensive portfolio of energy-related products and services to approximately 3.5 million electricity customers and 1.9 million natural gas customers.

## COMMENTS

The Company appreciates the NARUC Rate Design Staff Subcommittee's efforts to catalogue the various issues related to appropriate compensation for DER expansion, in a way that addresses the value of the technology while appropriately allocating costs and benefits among customers. We believe there is a role for DER on our system in the coming years to promote efficient system operation, reduce carbon emissions, and expand customer options. However, we also recognize that DER are not independent of the grid; in fact, rooftop solar, batteries, and other DER could not exist without the grid to support them, assure reliability at reasonable cost and, in some circumstances, provide access to energy markets.

We recognize that there is growing interest from customers in having more options and greater participation in how their energy is produced. We currently offer a portfolio of options for those customers interested in installing distributed generation that provide customers the benefit of connecting to the grid, and the opportunity to receive payment from the utility for excess production, and we are committed to including DER as part of our portfolio of customer options in the future. At the same time, we are making significant investments in our grid infrastructure to enable the integration of DER and to better understand the potential values and risks of increasing DER penetration on our system.

The pace at which our customers adopt DER will depend on the pace at which they become technically viable, cost-competitive, and have an established operational record. It will also depend on public policy and, in particular, rate design. When adding more DER to our system, we believe it is important to get the rules right in terms of the value, pricing, and rate design so that cost-causation principles are upheld and all customers are treated fairly. We support increasing customer options, but one set of customers should not be subsidized by other customers or, at the very least, such cross-subsidization must be transparent.

In light of these issues and others, we appreciate NARUC's efforts to promote better DER rate design and to provide its members with additional resources. In order to inform appropriate DER rate design, we believe that the NARUC Manual should address the issues outlined below.

### **A. Overall Rate Design Principles for DER**

As the Manual notes, it is important to identify the appropriate principles and objectives to assist regulators in determining whether a rate is efficient. The Company agrees, and recommends that regulators establish a core set of principles to serve as an objective framework for evaluating alternative rate designs for DER. There will

necessarily be some balancing that must be done among these principles as no one rate design will perfectly meet all objectives.

The fundamental principle that should rule rate design for DER is simple: customers should pay for the services they receive. In other words, a DER customer should be charged for service based on how the customer uses the system and contributes to system costs. Building on that fundamental concept, we have identified the following set of core rate design principles for DER customers:

- When a customer's DER provide a clear, predictable, quantifiable, and material benefit to the electrical system, that customer should receive fair compensation for the system benefit they provide. The same is true for cost, customers directly causing the need for system upgrades through their adoption of DER should be directly charged for the cost they caused.
- Any benefits or costs resulting coincidentally from individual DER customer actions that are taken for their personal benefit and outside an established program, request, or policy initiative should accrue to the individual taking the action. Other customers should not compensate that customer for an independent decision that does not provide system benefit.
- Current customers should not be compensated for speculative or uncertain future benefits that may accrue to future customers, such as potential investment deferrals or avoidance, unless perhaps in response to a specific request from the utility.
- Policy incentives (e.g., production incentives or rebates) may be a useful tool to promote adoption of new technologies. These incentives should be transparent, separate from rate design, subject to PUC oversight, and responsive to market changes.
- Technology advances are key to integrating more DER. It is therefore important that the level of technology maturity be considered in determining the capabilities that DER can provide, as they relate to rate design.

These principles should inform DER rate design that fairly compensates customers for actual benefits delivered to the system without shifting the cost burden to other customers. They recognize the value of grid service to DER customers, and the importance of the grid for enabling DER. Certain rate designs have resulted in hidden cost shifts and subsidies, market distortion, and uneconomic resource choices. Indeed, virtually all of the value of DER is available from universal wind and solar

resources, often at roughly half the cost to customers.<sup>1</sup> We therefore recommend that clear principles and objectives are articulated as part of the DER rate design process.

## **B. The Time is Right for Commissions to Address DER Rate Design**

The utility industry is in the midst of significant changes. Technology advancements are bringing new generation options directly to our customers and public policies are evolving to support more renewable and distributed generation resources. Our customers are expressing a greater desire for diversified services and products. At the same time, utilities, including Xcel Energy, are making significant investments in our grid infrastructure to continue to provide safe, reliable service, while also enabling the integration of new technology options. In the midst of these changes, it is appropriate for our regulatory structures to evolve as well. Some of our existing rate designs and regulatory paradigms are not reflective of or responsive to the current environment. We are seeing the emergence of DER rate design issues in our jurisdictions, and support NARUC's work to provide guidance and catalogue the options and considerations around these issues. Proactively addressing these issues would allow commissions to get the rules right early and resolve issues before they become problems.

While appropriate compensation for DER customers is important, the Manual should also reflect a fundamental reality of publicly regulated utilities. Utilities must serve everyone and therefore we must have a grid that is sufficiently robust to meet that challenge. Net metering as a rate design methodology allows certain customers to avoid paying for the grid that enables their choice. As indicated above, it breaks the connection between costs and causation and is unfair to those who must pay for what others do not. If a Commission agrees with us that net metering is a poor rate design, it faces the problem of what it should do about the existing net metered customers. Should they be grand-fathered in and continue to receive a subsidy, or should past commitments be broken? This issue came to a head recently in Nevada. It illustrates that the longer Commissions wait to deal with rate design issues surrounding DER, the more difficult and perilous addressing the issue becomes. For these reasons and others laid out in these Comments, Commissions should not delay in addressing this issue.

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<sup>1</sup> The Brattle Group, *Comparative Generation Costs of Utility-Scale and Residential-Scale PV in Xcel Energy Colorado's Service Area* (July 2015), [http://brattle.com/system/publications/pdfs/000/005/188/original/Comparative\\_Generation\\_Costs\\_of\\_Utility-Scale\\_and\\_Residential-Scale\\_PV\\_in\\_Xcel\\_Energy\\_Colorado%27s\\_Service\\_Area.pdf?1436797265](http://brattle.com/system/publications/pdfs/000/005/188/original/Comparative_Generation_Costs_of_Utility-Scale_and_Residential-Scale_PV_in_Xcel_Energy_Colorado%27s_Service_Area.pdf?1436797265)

### **C. The Definition of DER Should Be Inclusive**

Finding a single definition of DER, as the Manual recognizes, is difficult. However, which technologies are included in that definition may impact the resource treatment from a ratemaking perspective. We have developed the following definition for DER that matches our working understanding of the concept today:

Distributed energy resources (DER) are small, modular energy generation and storage technologies that provide electric capacity, energy, and/or load where you need it. DER systems can usually be sized to meet the particular needs of a utility and/or customer both on the utility side and the customer side of the meter. DER systems may be either connected to the local electric power grid or isolated from the grid in stand-alone applications. DER technologies include, but are not limited to: wind turbines, photovoltaics (PV), fuel cells, micro turbines, reciprocating engines, combustion turbines, electric vehicles, cogeneration/combined heat and power (CHP), demand response resources, and energy storage systems.

The Manual offers several examples of DER definitions, but in the description used for the Manual, there is a little specific mention of the non-renewable generation that may also be considered a DER. Fuel cells and gas-fired distributed generation resources should be included, as they may offer some of the same value and system benefits as a renewable energy option.

Technology is a key part of the market adoption of DER, and the state of technology for rapid adoption of DER is not mature. For example, most utilities do not have the tools to conduct solar PV hosting capacity studies, which identify how much PV can be accommodated on a feeder. Our own capabilities for this type of analysis are still being established. The development of DER technology, as well as the grid infrastructure and tools to identify system value, benefits, and risks, will mature further over the next several years, and the Manual and related rate design considerations should be updated to reflect the current status.

### **D. Recognition of Fixed vs. Variable Costs**

Economically efficient decisions for DER investments require cost-causative pricing that accurately represents fixed and variable costs. Capital-intensive and vertically integrated electric utilities have a very large share of fixed cost relative to total cost. Once investments are made, they become part of the cost of providing service – they do not change over time and need to be recovered. While future expenditures may be influenced by a variety of factors, and could theoretically be considered variable, there is a difference between the economic theory and the reality of ratemaking practice

which is based on a shorter timeframe. Valuation of future costs is a concept that is more typically used in strategic planning, Integrated Resource Plans, and long-term planning. It introduces a host of issues to start applying in the 1-5 year timeframe of rate cases. A sound DER rate design would recognize the difference between fixed and variable costs, and provide customers with rates that recover them appropriately. Customers' bills should be built from a combination of fixed system charges; demand charges for generation, transmission and distribution; and variable fuel and energy charges. Customers would then have the right incentives to control their energy use and install DER that make sense for them.

## **E. Specific Examples and Lessons Learned from Application of Various DER Rate Designs**

In response to the request of the NARUC Staff Subcommittee, and in order to provide some more specific context for the Manual, we provide here several examples from our experience with the implementation of various DER rate design options considered in the Manual. We hope these specific examples could be used to help illustrate the concepts related to DER rate design that are addressed in the Manual.

### *1. Northern States Power Company – Wisconsin Rate Case proceeding*

The concept of fixed versus variable costs was illustrated in practice in the most recent rate case of our Northern States Power Company-Wisconsin operating company before the Public Service Commission of Wisconsin (PSCW).<sup>2</sup> In the PSCW Order dated December 23, 2015, the Commission agreed with the Company that the following cost components are reasonable to be included for consideration as fixed costs to serve the residential and small commercial classes: (1) administrative and general; (2) metering; (3) service drops-customer; (4) service drops-demand; (5) line transformers-customer (with the exception of the demand-related portion); (6) line transformers-demand; and (7) poles and conductors-customer. This Commission decision provides an example of pricing that more precisely reflects the different types of electric service costs, including fixed customer related costs and variable energy related costs.

### *2. Colorado Rate Design Settlement*

In Colorado, as part of a Phase II rate case, we proposed a long-term goal of transitioning customers to a four-part rate (fixed charge, generation/ transmission

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<sup>2</sup> Application of Northern States Power Company-Wisconsin for Authority to Adjust Electric and Natural Gas Rates, Public Service Commissioner of Wisconsin Docket 4220-UR-121.

demand, distribution demand, and energy). For the majority of customers without advanced metering, the Company also proposed to implement a tiered fixed charge as a "grid use charge" to mimic the distribution demand charge of the four part rate until advanced metering is installed. In August, we agreed to a settlement with the solar community and other stakeholders. Under that settlement, we agreed to drop the proposed grid use charge and put in place two opt-in pilots for customers with access to advanced metering – a time-of-use rate trial and the contemplated four part rate (known as a time-differentiated demand charge rate trial). The pilots would be available to up to 48,000 customers by 2019. The demand pilot will create two new residential demand charges – a distribution demand charge of \$3.65/kW/month assessed based off of a customer's around the clock demand and a generation/transmission demand charge that ranges from \$6.81/kW/month (winter) to \$9.73/kW/month (summer), assessed based off a customer's peak demand during peak hours. The settlement is now pending before the Colorado PUC

### *3. Minnesota Value of Solar proceeding:*

The Manual references the Minnesota Value of Solar (VOS) proceeding as an example of the debate around the benefits of DER. The primary advantage of a VOS tariff compared to net metering is that, if properly designed, the VOS tariff would level the playing field for distributed solar, such that the utility and customers are indifferent from a cost perspective as to whether their energy comes from distributed solar or from the broader energy mix. This advantage is realized only when the rate paid under the VOS tariff accurately reflects the true avoided costs and tangible benefits of distributed solar on a particular utility system. In our experience with the VOS proceeding, we agreed with most of the categories of values that were included in the methodology, but we disagreed with how many of those values should be calculated.<sup>3</sup> Our experience with the VOS has shown that the methodology for calculating avoided transmission and distribution costs is not well correlated with avoided transmission and capacity investments, and has produced volatile results in the last two years.

In order to ensure alignment with declining solar market prices, VOS calculation baselines should shift from a natural gas resources basis to a large-scale solar resource basis for avoided fuel cost values, which will offer a better relative value than natural gas when the cost of solar declines to the level of large-scale solar. The case for the shift to solar-cost-based pricing follows the theory that a customer should be indifferent from a cost perspective to central station solar generation or distributed

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<sup>3</sup> In the Matter of Establishing a Distributed Solar Value Methodology under Minn. Stat. § 216B.164, subds.10 (e) and (f), Minnesota Public Utilities Commission Docket No. E999/M-14-65.

solar. As solar costs decline, the shift to solar as the baseline would therefore ensure that the VOS compensates customers for the fair value of the costs they pay, and that they are indifferent to whether central station solar or distributed solar is procured. A request for proposals for large solar facilities in late 2014 yielded a levelized cost of solar of roughly 7.3 cent per kWh.<sup>4</sup> This cost compares to the current levelized VOS value of 12.39 cents per kWh for distributed solar. With continued price declines over the last 1-2 years, the time for a large-scale solar cost based VOS rate may already be upon us.

The Minnesota VOS methodology also recognizes and compensates the value of solar generation for a whole host of benefits that are also available through central station power and other generation, but no other resources are benefitting from that value being assigned to them. We found that the outcome of the VOS proceeding did not conform to the rate design principles outlined above in that some of the values included in the methodology were speculative or uncertain. By basing DER rates on facts and objective analysis, we can transition to appropriate levels of distributed resources while maintaining a reliable grid, offering affordable rates, and avoiding cost-shifts between customers.

#### *4. Community Solar Gardens*

The Company launched its community solar gardens (CSG) program in Minnesota in December of 2014.<sup>5</sup> The response to our program was immediate, with more than 400 MWs in applications submitted within the first hour. This number eventually ballooned to nearly 2 GW of applications. The Company raised concerns that the majority of proposed projects were not consistent with the Legislative intent which gave rise to the community solar gardens statute, the Commission's Orders, or the program rules.

The Company cited the purpose of the community solar garden legislation – to provide our residential and small business customers, who have limited land, capital and/or resources, access to distributed solar generation. Instead, two forces were stimulating the market's response: the size of proposed projects (some as large as 50 MW), and the administratively-established bill credit rate for participants. The bill credit rate, which ranged as high as \$0.15/kWh, was intended to allow small community projects to obtain financing.

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<sup>4</sup> In the Matter of the Petition of Xcel Energy for the Approval of a Solar Portfolio to Meet Initial Solar Energy Standard Compliance, Minnesota Public Utilities Commission Docket No. E002/M-14-162.

<sup>5</sup> In the Matter of the Petition of Northern States Power Company, dba Xcel Energy, for Approval of its Proposed Community Solar Garden Program, Minnesota Public Utilities Commission Docket No. E002/M-13-867.



In May of 2015, we quantified the rate impact of placing 646 MW of community solar gardens into service, the then-current size of the project queue. We estimated an \$80 million annual increase in rates, representing a nearly \$2 billion increase over the life of the community solar gardens contracts. We raised concerns about this customer rate impact, given that competitively bid “utility-scale” solar projects cost half the bill credit rate established for community solar.

Parties, including the Office of Attorney General, recognized that the program could allow participating customers to achieve significant savings by imposing higher costs on the rest of Xcel Energy’s Minnesota ratepayers. The Company entered into a Settlement Agreement later adopted by the Minnesota Commission to limit the size of eligible projects to 5 MW, with a schedule stepping eligible project size down to 1 MW.

Our experience with the community solar gardens program in Minnesota has illustrated why appropriate rate design is critical in determining DER pricing, and if done incorrectly, can impose extraordinary costs on customers.

### **CONCLUSION**

We appreciate the opportunity to submit comments and to offer some additional examples and considerations for the final version of the Manual. The final Manual on DER Compensation that results from these efforts should reflect DER rate design options that are realistic and equitable for utilities, ratepayers, and other stakeholders.

Sincerely,

/s/

DOUG BENEVENTO  
DIRECTOR, ENERGY POLICY