



414 Nicollet Mall  
Minneapolis, Minnesota 55401

October 10, 2014

—Via Email—

Minnesota Department of Commerce  
Division of Energy Resources  
Attn: Ms. Jessica Burdette  
85 7<sup>th</sup> Place East, Suite 500  
St. Paul, MN 55101-2198

RE: COMMENTS ON COMBINED HEAT AND POWER STAKEHOLDER PROCESS

Dear Ms. Burdette:

Northern States Power Company (NSP), doing business as Xcel Energy, appreciates the opportunity to submit comments on the Combined Heat and Power (CHP) Stakeholder Process regarding issues and factors affecting CHP deployment in Minnesota. Xcel Energy commends the Department of Commerce, Division of Energy Resources for convening a diverse group of stakeholders and appreciates the analysis that the Department has undertaken to understand the potential role of CHP applications in the state.

#### COMMENTS

We believe there is a role for CHP in promoting efficient system operation, reducing carbon emissions, and expanding options available to customers. This is a timely issue that is related to broader conversations about Distributed Generation (DG), resource planning, and the changing regulatory environment. To ensure a rational and cost-effective expansion of CHP in Minnesota, we support further discussions and information-gathering to inform how best to move forward. We are currently analyzing the opportunities and challenges of providing customers with options to implement CHP systems at their facilities. The Company is interested in working with the Department and other stakeholders to consider options for implementing CHP that can benefit the overall electric system as well as participating customers. As we evaluate these options, we believe it is important to consider the currently unanswered

questions and identify potential unintended consequences before adopting a CHP implementation plan.

As a result of participating in the CHP stakeholder group and our analysis of this issue, as well as our experience in helping customers implement CHP, we provide the following comments. We hope these comments help facilitate discussion and assist the Department in refining the range of objectives for CHP applications in Minnesota. Our goal in offering these comments is to provide some guiding principles we suggest be considered in the process, respond to some of the Department's proposed comment topics, and share the results of a study we recently conducted to better understand the economic potential of CHP applications in Minnesota. We look forward to ongoing discussions.

## **A. CHP Guiding Principles**

We believe the following guiding principles are important considerations in any policy decisions about the expanded development of CHP in the state of Minnesota. The Company agrees that more clarification is needed as to how to successfully capitalize on the opportunities presented by CHP projects and we believe this clarification should be done through industry stakeholder workgroups.

- *Holistic and balanced approach to carbon reduction.* We believe a comprehensive approach is necessary to achieve the goal of reducing carbon emissions in the state. It is important to look at a variety of technologies that are available in the market to reduce emissions, including both gas and electric DSM programs, and supply side resources such as wind and solar energy and high-efficiency non-renewable DG resources. Some of these resources are less expensive than incentives that would be needed to promote CHP programs and can provide the same or better environmental and economic benefits, and therefore it is important to examine the cost and benefits of CHP policies against other resources.

There has been discussion that CHP applications could be helpful in meeting compliance requirements for new greenhouse gas (GHG) rules, as outlined in the Environmental Protection Agency's Clean Power Plan proposed rule (also known as EPA Section 111(d) regulation). While we agree this is a possibility, it is not currently clear how CHP will be accommodated in the proposed rule. We believe it would be appropriate to discuss state CHP policies when we are better informed about how CHP can be used for compliance with the EPA's rule.

- *Resources must be cost-effective.* We support the deployment of CHP in the state, as with all our conservation and carbon mitigation strategies, in applications that are proven cost-effective. Based on the nature of CHP technology, the determination of cost-effectiveness is most accurately done on a case-by-case basis, and should include all costs and energy uses. In some cases it is economically efficient to use the “waste heat” from a generator for some other purpose, but in other cases it is not a cost-effective strategy.

It is important that the technology options available for reducing emissions are compared against one another, to provide the maximum environmental benefit for the least customer impact. We believe that this comparison is best achieved through the resource planning process which will allow flexibility for the evaluations and recommendations to adapt to current conditions.

- *Identify System Value.* Any evaluation of cost-effectiveness should recognize the reduced capacity avoidance that non-dispatchable generation sources at customer sites represent. In terms of generation capacity, these resources may still need to be accounted for in the Reserve Margin and the value of the avoided transmission and distribution investments of these installations may be reduced.
- *Find an incentive opportunity outside of Conservation Improvement Funds (CIP).* The Company has been a strong supporter of conservation efforts in the state of Minnesota for over 20 years. As a partner in achieving these goals, we understand CIP resources are a likely candidate for obtaining incentive dollars for technology improvements and energy efficient opportunities. As such, the heat recovery of CHP systems has found a place among the many efficient options incentivized through our Custom Efficiency Program. However, what belongs in CIP are these opportunities that allow for the conservation of energy and not the production of energy through an alternative generation resource, which may or may not save energy compared to other generation resources.
- *Reduce cross-subsidization.* Another consideration is the unbalanced distribution of dollars allocated toward a particular class versus another. CHP applications are not currently an economical option for residential customers but they would be paying for installations if offered through CIP given the magnitude of potential incentives at the levels presented by FVB Energy.<sup>1</sup>

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<sup>1</sup> For example, if a 20 MW CHP project were paid \$500 per kW, that plant would receive a \$10,000,000 incentive.

- *Appropriate allocation between energy source providers.* One challenge associated with CHP is how to allocate both costs for incentive programs as well as the associated environmental benefits. For example, in cases where additional generation from CHP does not provide emissions reduction, the environmental benefits and cost savings occur when the thermal energy captured from the CHP system displaces natural gas that customers would normally purchase.<sup>2</sup> This dynamic makes it complicated to determine whether gas or electric customers should pay for CHP incentives.
- *Flexibility.* In developing a proposed policy or plan for implementing CHP, we believe it is important to maintain flexibility to adjust CHP programs to reflect lessons learned along the way, react to customer interest, and incorporate changing market conditions. We encourage stakeholders to consider maintaining flexibility in any program to enable the examination of CHP applications on a case-by-case basis.

## **B. Response to Department’s Proposed Topics and CHP Policy Options**

During the CHP Stakeholder workshop on September 3, FVB proposed several policy options covering a variety of topics. Below we provide initial feedback regarding some of the FVB proposals as well as a few of the topic areas the Department suggested for comments.

### *1. CHP within the Conservation Improvement Program*

Minn. Stat. §216B.241 Sub. 10 describes the use of CHP facilities as attributed to a utility’s natural gas or electric energy savings goals, subject to department approval. As we noted in our principles, we feel that most CHP systems are generation resources and should be treated as such rather than receive additional CIP funding, beyond what is provided today with heat recovery in compliance with statute. Additionally, we distinguish between types of CHP systems to recognize that they provide varying savings opportunities.

The policies presented by FVB Energy did not distinguish between different types of CHP systems. Xcel Energy has two separate categories which impact whether a program is considered an energy efficiency effort:

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<sup>2</sup> To illustrate, the prime mover of a CHP system (such as an engine, turbine or fuel cell) displaces the electric utility’s system energy. Xcel Energy’s 2013 average carbons emission intensity was 1,041 lbs/MWh for the electricity sold to its customers. The power generation for a typical CHP system has a carbon intensity of 1,070 -1,200 lbs/MWh. Therefore, when CHP systems replace system energy they provide limited environmental benefits on the electric side for customers

- (1) *Topping-cycle*: Energy input is first used to produce power and a portion of the rejected heat is captured for useful thermal energy.
- (2) *Bottoming-cycle*: Energy input is first applied to a useful thermal energy application and the rejected heat is used for power production; depending how this energy is used (or recycled), it could be considered an energy savings opportunity.

We suggest that any reference to CIP include only those CHP efforts utilizing the bottoming-cycle approach and continue to use a source BTU approach. Most of these projects use heat recovery and can participate in CIP today. CHP systems using the topping-cycle are not in line with the mission of our CIP and should not be integrated into the Company's CIP portfolio as they are generation assets and not a source of conservation.

## 2. *CHP Financing*

We agree with the FVB study observation that utility WACC levels make investments in CHP more attractive and that utilities are more likely to be able to capture value from customer-sited CHP that may benefit the broader customer base overall. With respect to financing incentives, utilities are not always able to capture the benefit from incentives that are tax based, depending upon their tax situation at a given time. Therefore, we believe that any incentive considered not assume the utility's ability to benefit from tax credits or deductions.

## 3. *Standby Rates*

Issues associated with providing standby service and net metering for CHP or other technologies are being examined by the DOC in the generic standby service proceeding on a parallel timeline. These issues are founded on more complex circumstances than CHP alone and that proceeding is the best forum to explore what, if anything, needs to be done relative to standby service and CHP.

## 4. *Resource Planning*

In our next Integrated Resource Plan, the Company will include an analysis of the costs, benefits, and effects of including higher levels of distributed generation, including industrial-sized distributed generation, utility-scale solar, and combined heat and power.

## C. EPRI Study Results

As an outcome of our 2005-2018 Resource Plan<sup>3</sup>, we worked with Electric Power Research Institute (EPRI) and Resource Dynamics Corporation this fall to better understand the economic potential of CHP applications in Minnesota.<sup>4</sup> By using Xcel Energy-specific customer data, we were able to identify project opportunities by customer segment as well as identify the potential project sizes for each customer segment and the associated payback. We believe that this report is complementary to the work already conducted by the Department and its associated consulting partners. We expect the report (herein referred to as the “EPRI Study”) to be ready early next week and will provide a copy of it as soon as possible. For now, we highlight some of the findings below.

The EPRI Study estimates that the CHP economic potential in NSP’s territory is 305 MW. All of these projects have a payback between six and ten years. No projects were in the most attractive payback range of six years or less and only 132 MW of the projects have a payback of between six and seven years. The potential pool of 305 MW includes two CHP projects that are already in the planning stages (based on conversations we have had with these customers) totaling approximately 71 MW. It is possible that these two projects would be implemented before any additional CHP policies are established, and may not apply toward any new goals or carve-outs. When these two projects are taken out of the pool, only 234 MW or 75 percent of the 305 MW of potentially economical projects (with a ten year payback or less) remain. The EPRI Study also found that removing standby rates did not have a huge impact on improving the economic potential.

The EPRI study also examined the effect of cutting the CHP system capital costs (perhaps by providing incentives). CHP system capital cost reductions of 20 percent, 30 percent, 40 percent and 50 percent were analyzed. At a 40 percent cost reduction, large industrial sites begin to see payback periods under five years, but impact on economic potential is minimal. While the sensitivity to capital costs appears to be the greatest of the variables evaluated, the economic potential under the 50 percent capital cost reduction case only increases by 15 percent to 356 MW. The likelihood of various facility owners to install a DG system also varies, given a certain payback period for their investment. The greater the payback period, the lower the actual customer adoption rate will be. The report indicates that the economics for 1 MW and smaller CHP systems are not likely to meet a ten-year payback investment criterion, and with

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<sup>3</sup> Order Point 25

<sup>4</sup> *Docket No. E-002/RP-04-1752 (In the Matter of Northern States Power Company d/b/a/Xcel Energy’s Application for Approval of its 2005-2019 Resource Plan): Order Point 25*

the low adoption rate at this payback level, it will be difficult to determine an achievable carve-out target.

The report is informative in helping us further understand the CHP opportunities within our service territory. We submit the results here since the report is relevant and helps provide insight into the process but acknowledge that there is still more to learn.

## CONCLUSION

Xcel Energy is dedicated to offering customers choices. As such, work continues to identify opportunities for new customer alternatives, generation partnership options within the regulatory environment, carbon emissions reduction across our portfolio, and innovative pricing choices for at-risk customers in order to encourage adoption of both renewable and non-renewable DG and CHP. However, we must also ensure that our prices correctly reflect our costs, by function, and that rules are in place to protect remaining customers from cost shifts. We continue to monitor key consideration related to CHP including cost effectiveness, cross subsidization, allocation of costs and benefits by customer class, system value, penalties, incentives, and flexibility.

We agree that CHP and, more broadly, distributed generation, is a timely topic, particularly given the new opportunities presented by low natural gas prices. We are interested in continuing a constructive dialogue with stakeholders regarding the design of an appropriate regulatory structure that addresses the value of CHP, while maintaining a financially sustainable regulatory model for all utility customers. We believe that utilities should be involved as key stakeholders in this process to help address the uncertainty and unintended consequences. We welcome the opportunity to help determine the principles that should guide this discussion and design an appropriate CHP program for Minnesota.

Please contact me at [paul.lehman@xcelenergy.com](mailto:paul.lehman@xcelenergy.com) or 612-330-7529 if you have any questions.

Sincerely,

/s/

PAUL J LEHMAN  
MANAGER, REGULATORY COMPLIANCE AND FILINGS