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December 26, 2013

Burl W. Haar  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, Minnesota 55101  
RE: REPLY COMMENTS  
RENEWABLE DEVELOPMENT FUND CYCLE 4 SELECTION REPORT  
DOCKET No. E002/M-12-1278

Dear Dr. Haar:

I submit these further comments in the above-captioned matter. In general, as I have commented previously, the entire course of this matter, as managed by Xcel Energy, shows a failure to consider the inherent nature and merits of the proposals, failure to consider the public health and socio-economic impacts, and failure to consult the public in any meaningful way. In this regard, I feel critical of both the Company and the "Advisory Group."

**Request for further extension of public (reply) comment period:**

I request that the public comment period be further extended until at least January 15<sup>th</sup>. We continue to see public concerns coming in on this, and to end the public comment period between Christmas and New Years is not good from the standpoint of encouraging public participation. Further, it appears to me that basic systemic errors remain in spite of the various cycles of review so far carried out. Therefore, additional opportunity for public comment is needed.

**Absence of transparency in process:**

Transparency has been mentioned repeatedly, but the comments from applicants and others repeatedly allege an absence of transparency in process and results. Of particular concern to me:

The actual applications for funding do not seem to be part of the docket record. This leaves us dependent on the summaries prepared by Xcel Energy. In some cases the summary does not seem to match what others familiar with the applications have to say. For example, Rep. John Persell, in his recent comments supporting project EP4-44, mentions educational benefits and a "Rural Renewable Energy Alliance." There is no mention of either of these in the provided summary.

Of course, it may simply be that what seems important to Xcel, and/or the Advisory Group is different from what seems important to others. But that is the point: In order to form an opinion on the relative merits of the projects, access to the full applications is needed.

The PUC should cause the full text of the applications to be made available in the docket record, allowing a reasonable time afterwards for public comment.

**Concern regarding proposal RD4-5 from the University of Florida:**

The summary provided of this project is titled “...*conversion of Non-Agricultural Residues in Minnesota into Electricity.*” It should be obvious that “*residues,*” or any other matter, cannot be “*converted into electricity*” (electrons) by means other than nuclear reactions. Combustion as proposed does not convert matter into energy. This raises questions about the basic competence of the technical review of this and the other projects. This project should be moved from the “Reserve” category to the “Proposals Not Recommended for Funding” category.

**Concern regarding proposal RD4-1 from the University of Minnesota:**

*“Project Description: The University will investigate and develop a gasification method based on microwave heating to raise the process temperature and increase the heating rate. This new process will improve the conversion efficiency, syngas quality, and cleanness. The heart of the proposed microwave based heating method is the implementation of microwave subsectors (MWS)...”*

The proposal here, apparently, is that Xcel's ratepayers should pay 100 percent of the cost of a scheme of microwaving (preheating) “biomass” fuel. Using electricity (via “microwaves”) to preheat fuel to be used to generate electricity seems implausible economically and thermodynamically. The potential benefit to Xcel ratepayers seems remote, at best. This project should be moved from the “Reserve” category to the “Proposals Not Recommended for Funding” category.

**Concern regarding proposal RD4-11 from the University of Minnesota:**

The summary states:

*“Preferences Received: Project located within the Central Corridor”* [St. Paul]

But: *“The three skids of equipment will be erected at the Natural Resources Research Institute’s (NRRRI’s) Coleraine research facility.”*

Coleraine is, by road, over two hundred miles from St. Paul.

This suggests that serious, obvious scoring errors persist and that further work is needed to correct them.

**Concern regarding proposal RD4-8 from the City of Red Wing:<sup>1</sup>**

Information provided on this project is inconsistent.

For example, Xcel states “The RDR advisory group favored this product [sic] due to the end use

<sup>1</sup> The facility in question was built about 1947 and consisted of two traveling grate coal units rated at about 25 MW total. The facility was converted to burn “Refuse Derived Fuel” (ground up garbage) around 1984. For the most part, the facility burns garbage collected in Ramsey County, MN, ground up at a facility in Newport, MN—after grinding up, the garbage is called “refuse derived fuel”—and hauled by truck to Red Wing for burning. The facility is categorized by the US Environmental Protection Agency as a “Large Municipal Waste Combustor.”

product will be [sic] directly beneficial to the Xcel Energy Red Wing station.” What this means is unclear. Further on in the document Xcel states “The Company acknowledges advisory group concerns [sic] the use of refuse derived fuel as the feedstock and the research value but supports the project since it will directly benefit Xcel Energy ratepayers and it provides proficiencies [sic] into [sic] feedstock processing.” What this means is also unclear. Also unclear is the real position of the advisory group on this proposal.

I live in Red Wing and am an Xcel Energy gas and electric ratepayer. Just how our household, and the thousands of other Xcel ratepayers in the area, would benefit from breathing increased incinerator pollution is also unclear. From our point of view it seems unfortunate that the City of Red Wing did not instead seek funding for various solar PV projects it is considering.

The project summary also states the project would “*Improve the economics of scale for Xcel Energy at the Red Wing Generation Station and improve efficiency due to reduced down time due to lack of fuel which occasionally occurs.*” It might be that burning more waste in Red Wing would increase Xcel's profits, or reduce its losses, from operating this facility, but this is NOT consistent with the intent of the “Renewable Development Fund.”

The air emissions permit for the Xcel Red Wing garbage burner expired on June 1, 2009, 4.5 years ago. The facility is operating under the old, expired permit. This permit allows higher emissions of Lead and Cadmium, toxic, cancer-causing heavy metals, than are allowed by EPA guidance for this category of existing facility.<sup>2</sup>

A newly constructed garbage burner would be held to tighter standards for dioxin, cadmium, lead, particulate matter, hydrochloric acid, nitrogen dioxide, and carbon monoxide.<sup>3</sup>

Also worth noting is that “refuse derived fuel” burners are held to looser standards for carbon monoxide emissions than are incinerators burning raw garbage. In other words, RDF is not a cleaner “fuel” than plain garbage, but the opposite.<sup>4</sup>

To summarize, here we have a 67 year old converted coal burner, with an expired permit, burning, in Red Wing, ground up garbage hauled from the Metro area. It must be obvious that increasing this activity is not consistent with the purposes of the Renewable Development Fund. This project should be moved from the “Reserve” category to the “Proposals Not Recommended for Funding” category.

### **PowerWorks and Bergey wind power proposals:**

I am largely in agreement with comments submitted by Mike Bergey of Bergey Windpower on December 11, 2013.

Bergey Windpower represents a segment of the wind industry made up of machines with an output of less than, say, 15 KW and potentially of a scale suitable for a household or small farm.

This segment of the wind industry has a long history in Minnesota (Jacobs, etc) Yet, the history of this industry has, overall, been somewhat troubled and has failed, overall, to develop. The reasons for this

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<sup>2</sup> See several sections of **40 CFR Part 60 and corresponding Minnesota Rules.**

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

are several:

- o Small wind turbines are a very difficult engineering problem—the machine is expected to operate for many thousands of hours with little if any maintenance, while experiencing energy inputs varying over several orders of magnitude (Wind power varies as the cube of the speed....).
- o The machines are expected to sell for low prices.
- o They have often been installed in a do-it-yourself fashion, and not infrequently in unsuitable locations.
- o Developers and vendors of machines in this category have very often been undercapitalized and have sold machines needing further development. They have lacked staying power in an unstable marketplace.
- o Until very recently, with the establishment of the Small Wind Certification Council (SWCC) (<http://www.smallwindcertification.org/>) there have been few if any meaningful standards purchasers could use to judge the adequacy of a product. (But it should be noted that participation in this certification program is voluntary, and the adequacy of the certification process has yet to be fully demonstrated.)

Mr. Bergey says there are three current manufacturers in Minnesota, but no Minnesota-based manufacturers seem to be listed as certified, or as applicants for certification, by the SWCC.

Over the last several decades, many products and many vendors have come and gone. As far as I know, Bergey Windpower is the single vendor to have maintained a continuous presence in the North American marketplace and to have continually developed the same basic product(s).

Therefore, Bergey is the single most credible vendor in this segment of the wind industry, at least as regards North American producers.<sup>5</sup>

It is true that the Cost of Energy from small wind machines tends to be high. On the other hand, the valuation of this energy should include spatial and temporal considerations and potential system benefits, as in the “Value of Solar” proceeding.

Overall, it appears to me that (1) this segment of the wind industry has the potential for significant further development, which should be encouraged, (2) much of Minnesota is potentially suitable, in terms of wind regime, for such projects, (3) wind machines in this category inherently constitute “distributed generation,” with the potential to benefit rural homesteads and small businesses, and (4) participation should probably be limited to equipment with SWCC certification—which Bergey has for the products proposed.

With regard to the PowerWorks proposal (EP4-33 PowerWorks Wind Turbines) to install used wind turbines removed from California projects: The proposal appears to be for installation of machines of being taken out of service elsewhere, perhaps with hundreds of thousands of hours of prior service. This model turbine uses lattice towers, rotates at 72 rev/min, and is a downwind design. There is potential for noise problems and high bird and bat impacts. It is possible that such a

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<sup>5</sup>I have no ties to Bergey Windpower or any of its employees.

project might make economic sense for the owners, but would not likely advance the state-of-the-art of “renewable energy” in Minnesota. Xcel Energy and the advisory group have likely made a correct decision in not proposing to advance this project.

Potential avian mortality, and potential noise nuisance, should be carefully and fully considered in the siting of any wind project at any scale.

Respectfully submitted,

Alan Muller