July 21, 2017

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

Re: RESPONSE TO NOTICE
GRID MODERNIZATION
DOCKET NO. E999/ CI-15-556

Dear Mr. Wolf:

Alevo USA Inc., a manufacturer, project developer and systems integrator of lithium-ion batteries, submits its response to the Commission's April 26, 2017 NOTICE OF COMMENT PERIOD ON DISTRIBUTION SYSTEM PLANNING EFFORTS AND CONSIDERATIONS in the above-reference Docket. Per the notice's instructions, Alevo hereby responds to Section C, which is for all stakeholders.

Pursuant to Minnesota Statute Sec. 216.17, subd. 3, this document has been electronically filed with the Minnesota Public Utilities Commission, and copies have been served on all parties on the attached service list. Please contact me at ben.lowe@alevo.com or (704)-260-7405 if you have any questions regarding this filing.

Sincerely,

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State of Minnesota
Before the
Minnesota Public Utilities Commission

Nancy Lange	Chair
Dan Lipschultz	Commissioner
Matthew Schuerger	Commissioner
Katie Sieben	Commissioner
John Tuma	Commissioner

IN THE MATTER OF THE COMMISSION INVESTIGATION INTO GRID MODERNIZATION: FOCUS ON DISTRIBUTION SYSTEM PLANNING	DOCKET NO. E999/CI-15-556 **RESPONSE TO NOTICE**

COMMENTS OF ALEVO USA INC.

Alevo USA Inc. thanks the Commission for the opportunity to provide comments in response to the Commission's request to engage stakeholders to identify best practices for Distribution System Planning. As an energy storage manufacturer, developer and systems integrator, Alevo is keenly interested how utilities going forward will evaluate investment options for the benefit of their customers. Energy storage is a unique asset in that it can function as generation, transmission or distribution, and frequently requires that those multiple uses be quantified in evaluating it as a cost-effective investment option for the grid.

In preparing its comments, Alevo acknowledges that the Commission opened this docket in May 2015 and that the current inquiry could be guided by the output of the e21 Initiative, which was convened by the Great Plains Institute and the Center for Energy and Environment with

guidance from project partners that included Xcel Energy, Minnesota Power and George Washington University Law School.[1]

The e21 Initiative has had two phases so far. In the first phase, stakeholders agreed that Minnesota should move toward a more customer-centric, performance-based regulatory approach and utility business model. In Phase II, stakeholders provided detail on how to implement the goals of Phase I. Phase II whitepapers published December 8, 2016, focused on performance-based compensation, integrated systems planning and grid modernization. Alevo encourages the Commission and all stakeholders to utilize these documents as reference materials for this proceeding. Taking a holistic view of grid planning is necessary to maximize the impact of this proceeding for the benefit of electric customers in Minnesota.

The Commission segmented the current docket into three areas of inquiry. The Commission asked investor owned utilities to detail how they current plan their distribution systems (Section A) and to detail the status of their distribution investment plan (Section B). All stakeholders were encouraged to file comments responding to questions in Section C, which asks for ways to improve or augment Minnesota utilities' distribution system planning processes.[2] Alevo in these comments responds to questions posed in Section C, using utility responses to Sections A and B.

ABOUT ALEVO

Alevo is a vertically integrated manufacturer, project developer and systems integrator of lithium-ion batteries. Alevo's standard unit is the GridBank, a 2MW / 1 MWH battery that sits on

[1] http://www.betterenergy.org/projects/e21-initiative
[2] Notice of Inquiry, pages 7 to 8

a 40-foot concrete pad. Alevo is headquartered in Switzerland, manages research and development in Germany and manufactures its batteries in Concord, North Carolina.

CONTACT INFORMATION

Appearing on behalf of Alevo in this proceeding is:

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INTRODUCTION

As described in its notice of inquiry in this docket, the Commission recognizes that "growth in distributed energy resources (DER) will provide new benefits and opportunities, but also new challenges for Minnesota"[3] as utilities have additional tools to deliver safe, affordable and reliable electricity. The Commission stated that its goals are to improve forecasting and planning so that utilities can be increasingly accommodating to these technologies for the benefit of their customers. Section C accordingly invites all interested stakeholders (including Minnesota utilities) to discuss subjects that relate to the efficient and economic investment in technological advancements, infrastructure and integration of DER into distribution system planning and operations.

As mentioned previously, Alevo provides comments in this docket in the context of energy storage, specifically short term storage technologies such as batteries, that can be installed along

[3] See 2, page 2

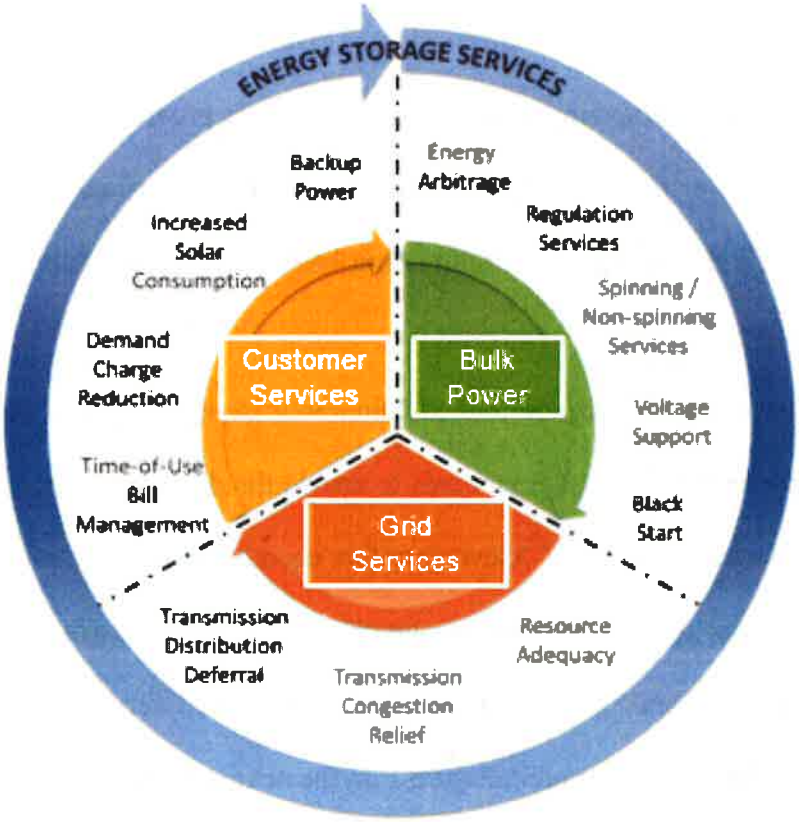
the electric value chain depending on need and use case. Energy storage is a unique asset because it does not fit neatly into traditional utility asset classifications: it can function similar to a generator when it injects energy; it can act as a transmission or distribution asset when it provides voltage support or voltage overload protection to substations; and it can provide value behind the meter to manage demand charges or store the output of on-site generation for later use. Several states as well as the Federal Energy Regulatory Commission have acknowledged these benefits and are modernizing energy market policies as a result.[4]

Moreover, several states in addition to Minnesota have recognized the need to update system planning process and analytical methods to enable the deployment of these resources for the benefit of their electric customers.[5] Alevo therefore encourages the Commission to utilize this docket to fold the output of this distribution planning docket into system planning efforts that enable utilities to identify and quantify the multiple, or stacked services, that energy storage technologies can provide, as illustrated in Figure 1 on the next page below.

[4] Examples include Maryland PC 44, Illinois NextGrid, Ohio PowerForward, New York REV, Washington, D.C. MEDISIS. For the Federal Energy Regulatory Commission, see Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery (Docket PL17-2); and Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators (Dockets RM16-23 and AD16-20)

[5] Detail for work done by Massachusetts, Oregon and Washington at footnotes 9, 10 and 11

Figure 1: Energy Storage Stacked Services



And so, while focusing on distribution system represents a good step forward, Alevo respectfully recommends that the Commission utilize this opportunity to develop a roadmap to achieve some of the Integrated System Planning principles articulated by stakeholders in the e21 Initiative, where one of the key recommendations was to "expand the scope of the planning process, to take more of an end-to-end systems approach" that would enable utilities to holistically plan the grid by simultaneously optimizing generation, transmission and distribution system investments.[6]

[6] e21 Initiative Phase II Report, page 49

COMMENTS

1) Evaluation of utility plans.

Distribution plans should be one part of an integrated system plan submitted by Minnesota utilities. The integrated system plan should outline planned investments across generation, transmission and distribution assets, including cost-effectiveness tests for technology solutions such as energy storage or other advanced technologies. The integrated system plan should span at least a 15-year time horizon, which can then be broken up into five-year business plans that detail the cost and benefits of proposed investments and how those investments are in the best interest of customers. The plans should focus closely on grid symptoms and identify the best technologies to address those symptoms in a cost-effective manner. Regarding energy storage, for example, the integrated system plan should at a minimum evaluate and quantify the technology's ability to provide the following services:

a) Savings from Time Shifting of Energy
b) Savings from a Reduced Need for Peaking Power Plants
c) Ancillary Services Cost Reduction
d) Savings from Reduced Power Plant Ramping
e) Savings from Avoided T&D Investment, Including Locational Benefits
f) Savings from Improved Renewables Integration

The five-year business plan would then serve as the foundation for a multi-year rate plan to be evaluated and reviewed by the Commission. The integrated system planning process should include multiple opportunities for stakeholder feedback. This feedback, however, should be high level and avoid getting too deep into specific assumptions around resource cost. Instead, stakeholder feedback should be limited to priorities for

electric service (i.e. cost, environmental impact, reliability…), leaving utilities to bring back portfolios for subsequent stakeholder discussion.

The Commission should then evaluate the plan for its ability to satisfy the goals articulated by the stakeholder process, ensuring that the utility has considered and agreed to appropriate performance metrics.

2) Feasibility of Planning Enhancements

Alevo shares the view of Xcel Energy, that planning processes will have to become more granular if they are to fully capture the benefits distributed energy resources and energy storage can bring to the grid. Analytical models that rely on hourly data, for example, may not fully capture the values identified in response to question 1. So Alevo encourages the Commission to work with Xcel and other investor owned utilities to ensure that they are utilizing the most up to date planning models in order to optimize their grids for distributed energy resources.

"The lowest level of planning today is at the feeder level. DER is more granular, and may have a significant impact on available capacity at certain times, and in others be limited in its impact. Planning practices will therefore need to evolve to better anticipate net load and multi-directional power flows, for example, which will require increased understanding of the capabilities and predictability of various types of DER.

It will also require new or improved planning tools that are capable of integrating more granular details into system planning studies."[7]

The Commission can rely on best practices from other states as it decides what the appropriate level of detail is. Alevo recognizes that additional detail increases the complexity and administrative burden of system planning, Alevo also recognizes that, in Minnesota, utilities and regulators will also have to coordinate with the Midwestern Independent System Operator (MISO) in regards to transmission planning. Regardless of those very real challenges, conquering that burden is a necessary step to ensure that advanced technology such as energy storage is afforded an objective and fair opportunity to keep costs as low as possible for electric customers.

Policymakers in Massachusetts recognized this when they embarked on a state-wide evaluation of energy storage in the bay state: "...The interconnected nature of the electricity systems with hundreds of generators spread over a vast region and thousands of miles of transmission and distribution networks with system conditions is changing every minute and needs advanced analytics to model the systems of the future and to understand the changes over several hours to over several years to find the most optimal solution for a given system..."[8]

[7] Comments of Xcel Energy, page 4. Emphasis added.
[8] See http://www.mass.gov/eea/docs/doer/state-of-charge-report.pdf, page 79

In Oregon, Portland General Electric Co. (PGE) reached the same conclusion as Massachusetts regarding the need for advanced, sub-hourly analytics to evaluate energy storage technologies in an IRP or any system plan. "The primary challenge in accounting for storage systems in the IRP is that much of the value of energy storage resources is associated with very short timescale behavior that is not resolved by models that seek to characterize electricity system behavior and economics over several years and across a range of potential futures. Full consideration of an energy storage device and the value it brings to a system requires detailed modeling of complex operational constraints, representation of reserve requirements, and high resolution characterization of renewable integration challenges..."[9]

Similarly, the Washington State Utilities and Transportation Commission recognized the need for advanced analytics in order to identify the multiple, or stacked, benefits that energy storage and other distributed energy resources can deliver. "...Utilities must move beyond the historical view of storage and adopt planning practices that break down the traditional barriers of resources planning[10]...It is evident that traditional hourly IRP models are becoming increasingly inadequate as utility needs change and the demand for flexible resources grows. And while sub-hourly IRP models remain limited in that they do not consider a resource's distribution and transmission benefits,

[9] See https://www.portlandgeneral.com/-/media/public/our-company/energy-strategy/documents/2016-irp.pdf?la=en, page 235

[10] See Washington State Utilities and Transportation Commission Draft Report and Policy Statement on Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition, Dockets UE-15069 and U-161024, page 11

they enhance a utility's ability to model the sub-hourly system flexibility required by the increased deployment of clean energy resources..."[11]

5) Standards and Codes

Alevo recommends that the Commission consider battery flammability in setting standards for battery deployment in the state. Given the likelihood of batteries being installed in urban population centers, adjacent to /critical infrastructure, and even within buildings themselves, it would be prudent for the Commission to consider the flammability of energy storage devices to be deployed due to the well-documented risks of certain battery chemistries, particularly in light of the recent, high-profile recalls of certain consumer electronics and personal transportation devices due to battery fires.

6) Access to data

Alevo recognizes that the stakeholders have been discussing the pros and cons of third party ownership of utility assets. On the one hand, third party ownership may reduce cost and risk for electric utility customers, but on the other hand, the utility business model demands capital investment for profit growth. Moreover, there may be operational reasons – particularly as regulators require a central entity to manage the distribution-level grid – to maintain utility ownership and accountability to regulators. And so the need to have

[11] See 19, page 12

access to data for grid planning is a direct function of which ownership path the Commission chooses. Access to data will be very important if the Commission chooses to have third party ownership, less so if the Commission decides that utilities should own all grid assets. Alevo therefore respectfully asks that the Commission issue a policy statement on asset ownership as part of this docket. Once that is made, manufacturers and developers can then have the necessary second-order conversations regarding data needs.

8) Sample Distribution System Planning Outline

A distribution system plan is similar to an integrated resource plan, in that at its core a distribution system plan is an optimization subject to constraints. In this case, Alevo recommends that those constraints (rate trajectory and cost; emissions; level of DER installed) be subject to a stakeholder process prior to any analysis. Those constraints would then assist the utility in developing a distribution system plan because they will inform the trade-offs that stakeholders are willing to make.

Sample Distribution Plan Overview

1. Section 1 – Unifying theme: "A more affordable, customer-friendly, resilient, clean and flexible grid." Overview of the portfolio-based approach.

2. Section 2 – Tools and Options Available to Achieve It
    a. Rate Design
    b. AMI
    c. Solar, Storage and other DERs

3. Section 3 – Cost-Benefit Analysis of Portfolio Options and Resource Mix

4. Section 4 – Preferred portfolio (lowest present value revenue requirement to the extent all benefits can be quantified) and how it can be achieved

a. Interconnection
b. Asset ownership

CONCLUSION

Alevo applauds the Commission for opening this docket to consider best practices for utilities to leverage advanced technologies in the context of distribution planning. As mentioned previously, however, Alevo respectfully recommends that the Commission increase the scope of this effort to consider the end to end integrated system planning approach as outlined by the e21 Initiative. The interconnected operation of electric grids mandates that systems be optimized across the value chain, since investments at the distribution level can no doubt have implications for transmission and generation planning, and vice versa. Alevo believes that this total electric system view is doubly important when it comes to energy storage and other distributed energy resources given the need to quantify the stacked services they can provide.

Respectfully Submitted,

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