March 13, 2023

Consumer Affairs Office
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul MN 55101

Re: Docket No. E999/CI-22-600, Commission Investigation into the Potential Role of Third-Party Aggregation of Retail Customers, Comments of RMI

RMI (founded as Rocky Mountain Institute), alongside the undersigned VP3 member organizations, respectfully submits the following comments regarding the above referenced matter pursuant to the notice of comment issued December 9, 2022, by the Minnesota Public Utilities Commission ("Commission").

RMI is an independent, non-partisan, nonprofit organization which works to transform the global energy system to secure a clean, prosperous, zero-carbon future for all. In January 2023, RMI launched an initiative known as Virtual Power Plant Partnership, or VP3. VP3 is a coalition of nonprofit and industry voices working to scale the market for virtual power plants ("VPPs") in ways that benefit communities and society. VP3 members span the automotive, building, energy service, software, and other sectors.

RMI defines VPPs as grid-integrated aggregations of distributed energy resources ("DERs"). VPPs have also been defined as aggregations of dispatchable energy assets. Both definitions of VPPs are broad and encompass demand response and demand flexibility. Demand response is one of the services that can be provided by a VPP. Beyond demand response, VPPs may also involve solutions that inject power into the grid such as solar, stationary battery storage, and emerging electric vehicle-to-grid solutions. VPPs can be designed to benefit the grid during normal operations, and provide resilient power to a microgrid, home, or business, when the grid is strained or down. Although the questions below focus on demand response, we urge the Commission to consider all ways VPPs can provide value, including supplying power into the grid.

In the January 2023 white paper, *Virtual Power Plants, Real Benefits* (Attachment A), RMI highlighted the opportunity for VPPs to advance power system performance across seven objectives: reliability, affordability, decarbonization, electrification, health, equity, and consumer empowerment. The paper

highlights the impact of just a few of the many successful operating VPPs. Additional VPP examples are mentioned in the context of our responses.

VPPs can help Minnesota achieve its near-term and long-term goals. In the near-term, VPPs are a proven solution for cost-effectively enhancing system reliability. This is particularly important, given capacity shortfalls and associated high prices in recent Midcontinent Independent System Operator (MISO) planning resource auctions,[1] and in light of MISO's upcoming transition to a seasonal resource adequacy construct.[2] Whereas new thermal capacity requires on average over four years to be developed, approved and built,[3] VPPs leveraging existing assets can be deployed in less than six months. VPPs can also provide reliability resources during any season of the year.

Over the longer term, VPPs will be a critical tool to help Minnesota cost-effectively achieve 100% carbon-free electricity by 2040, consistent with Minnesota's *100% Clean Electricity Law* (Senate File 4). VPPs provide the critical flexibility necessary to integrate high levels of renewable energy into the power mix. The potential impact of VPPs is directly proportional to available DER capacity, therefore any efforts to incentivize and enable DER deployment will support attainment of state-wide electricity decarbonization targets. DER deployment incentives should always be evaluated as a less costly alternative to traditional generation and grid infrastructure.

VP3 has an educational mission to increase understanding among policymakers of how virtual power plants can advance priority objectives in the power system. In addition to our responses below, we are available to provide a further briefing on these topics to staff.

1. Should the Commission permit aggregators of retail customers to bid demand response into organized markets?

Minnesota utilities currently aggregate demand from retail customers to provide for resource adequacy in the MISO market. RMI recommends the Commission also allow third-party aggregators of retail

[1] See MISO, *2022/2023 Planning Resource Auction (PRA) Results,* April 14, 2022, https://cdn.misoenergy.org/2022%20PRA%20Results624053.pdf

[2] Steve Boughton and Katherine O'Konski, "FERC Approves MISO Seasonal Resource Adequacy Requirements but Rejects Minimum Capacity Obligation", JD Supra, September 22, 2022, https://www.jdsupra.com/legalnews/ferc-approves-miso-seasonal-resource-5318446/

[3] "Average Power Generation Construction Time (Capacity Weighted), 2010–2018," International Energy Agency, November 22, 2019, https://www.iea.org/data-and-statistics/charts/averagepower-generation-construction-time-capacity-weighted-2010-2018.

customers to bid demand response into organized markets. The Commission may also instruct Minnesota utilities to expand their demand response offerings.

Third-party aggregators are non-utility service providers who enroll households and businesses into demand response programs or VPPs. Aggregators typically are responsible for interacting with the grid operator, dispatching VPPs, enrolling and communicating with customers, and communicating with the utility regarding customer billing and verification. The exact responsibilities of aggregators vary based on market requirements, system constraints, technology, and program design.

Aggregators empower individual customers to participate in VPPs and benefit the grid. Leading third-party aggregators bring innovative approaches, technologies, and solutions that enhance the customer experience, reduce system costs for all ratepayers, and help participating customers save money.

Utilities may wish to invest in expanding their tools and capabilities related to demand response participation in wholesale markets. Utilities may also wish to expand their programs to allow greater participation from small- and mid-sized retail loads, or to allow for demand response aggregations to provide a range of services to the MISO market.

RMI urges the Commission to adopt rules that empower residential, commercial, and industrial customers to provide demand response into organized markets through a demand response provider of their choice, including utilities and third-party aggregators. The Commission should ensure a level playing field between utilities and third-party aggregators who wish to provide similar services.

The Commission should avoid minimum load requirements, and onerous metering requirements, which can discourage participation by residential and small commercial customers. To help avoid such impediments and promote a more efficient, and thus expeditious, rulemaking, RMI encourages the Commission to precede its initial rule drafting with informational stakeholder workshops.

Aggregators of retail customers are already benefiting grid operators and rate payers in other organized wholesale markets:

- OhmConnect operates VPPs in California's and New York's wholesale electricity markets, comprised of more than 210,000 members with 250,000 dispatchable devices.[4] During a nine-

[4] "OhmConnect Paid Members $2.7M and Saved 1.5 GWh of Energy During Recent California Heat Wave,"PR Newswire, September 29, 2022, https://www.prnewswire.com/news-releases/ohmconnect-paidmembers-2-7m-and-saved-1-5-gwh-of-energy-during-recent-california-heat-wave-301636415.html.

day 2022 summer heatwave in California, OhmConnect's VPP dispatched member devices 1.3 million times in response to real time grid signals, saving 1.5 gigawatt-hours (GWh) of energy. This had the effect of removing one million homes from the grid for one hour. In return, OhmConnect delivered $2.7 million in rewards to its members.[5]

- In 2022, Sunrun's New England VPP exported over 1.8 GWh of solar energy to the grid during the peak demand summer afternoon window, relieving stress on the ISO New England grid and reducing generation from fossil fuel power plants.[6]
- SwitchDin is the key solution provider for Project Symphony, Australia's largest orchestration of distributed energy in a multi-gigawatt-scale grid. This $35.5 million partnership with the government of Western Australia (WA), utilities, and market operator is a market platform for network services, combining central dispatch with local coordination and site-level optimization.

2.Should the Commission require rate-regulated electric utilities to create tariffs allowing third-party aggregators to participate in utility demand response programs?

Yes, RMI recommends that the Commission require rate-regulated electric utilities to create tariffs allowing third-party aggregators to participate in utility demand response programs and any other programs with similar aims. In addition, the Commission should require utilities to create programs or tariffs that allow customer-sited DERs to provide grid services as part of a VPP.

Ideally, any tariffs or programs would provide a streamlined customer experience and be technology neutral. By technology neutral, we mean that they would incorporate not only demand response, but also solutions that export electricity to the grid such as solar, battery energy storage, and future electric vehicle-to-grid solutions.

RMI recommends that the Commission implement technology-inclusive customer load management approaches that allow for load reduction and electricity export. Relevant examples of programs, tariffs, and frameworks from other states include:

[5] *Ibid.*

[6] Anne Fischer, "Sunrun completes successful residential virtual power plant in New England", PV Magazine, October 12, 2022, https://pv-magazine-usa.com/2022/10/12/sunrun-completes-successful-residential-virtual-power-plant-in-new-england/.

- National Grid's ConnectedSolutions program in Massachusetts compensates customers for their thermostats, batteries, and EVs in the VPP program, enabling batteries to feed the grid. In 2020, the VPP reduced summer peak demand by 0.9%.[7]
- The Battery Bonus Program from Hawaiian Electric includes an initial payment in addition to recurring monthly payments to customers to participate in demand response. Customers can operate their batteries to either offset their own consumption, or export excess power to the grid.[8]
- Texas's Aggregate Distributed Energy Resource (ADER) Pilot allows customers "with any combination of generation, energy storage technologies, or controllable load with the capability of 1 MW or less to participate in the ERCOT wholesale markets."[9]
- PSEG Long Island's Commercial System Relief Program provides performance-based compensation to customers who agree to provide a minimum of 50 kW of load relief.[10]
- Arizona Public Service's Cool Rewards Program has enrolled 60,000 thermostats and has helped shed almost 100 megawatts (MW) during summer 2022.[11]
- The Emergency Load Reduction Program (ELRP), administered by Olivine Inc., is a pilot emergency DR program in California that has several options to utilize multiple technologies and allow for counting grid exports. Participation options include direct or aggregator enrollment, and specific aggregator pilots for VPPs (storage with or without solar) and electric vehicles. Including the residential Power Saver Rewards program that many customers are defaulted onto, over 6 million customers are enrolled in ELRP with an estimate of up to 1 GW of load reduction potential.

RMI recommends that the Commission advance customer participation in VPPs both through participation in wholesale markets (see Question 1) and through utility programs. The Commission will need to consider how these types of programs work together and avoid providing double compensation

[7] ConnectedSolutions: A Program Assessment for Massachusetts, Applied Economics Clinic on behalf of Clean Energy Group, 2021, https://www.cleanegroup.org/wp-content/uploads/ConnectedSolutions-An-Assessment-for-Massachusetts.pdf.
[8] Hawaiian Electric, Customer Renewable Program, Battery Bonus https://www.hawaiianelectric.com/products-and-services/customer-renewable-programs/rooftop-solar/battery-bonus.
[9] Issue for the ERCOT Board of Directors, ERCOT, https://www.ercot.com/mktrules/pilots/ader
[10] "Frequently Asked Questions", PSEG Long Island, 2023, https://www.psegliny.com/businessandcontractorservices/businessandcommercialsavings/csrp/faq
[11] "APS Virtual Power Plant Benefits Customers, Smart Grid & Environment," APS, November 8, 2021, https://www.aps.com/en/About/Our-Company/Newsroom/Articles/APS-Virtual-powerplant-benefits-customers-smart-grid-environment.

for identical services. Simple dual participation rules exist in other regions and may be adopted to prevent customers from being paid more than once for the same grid service.

In follow up discussions with Commission staff, RMI is happy to elaborate on how regulators in other states and regions have established both pathways for retail customers to offer services to wholesale markets and required utilities to create tariffs that enable participation of customer-sited distributed energy resources. Prior to filing any tariff, the Commission should direct utilities to participate in workshops with and consider input from potential aggregators to improve the odds that the tariffs will enable successful third-party aggregator involvement in any demand response and VPP programs. To ensure the broad circulation of the workshop announcement, the Commission should consider hosting any such workshop.

3.Should the Commission verify or certify aggregators of retail customers for demand response or distributed energy resources before they are permitted to operate, and if so, how?

Before establishing a new verification or certification process, the Commission should carefully review existing processes created by MISO. The Commission should avoid creating new processes if existing processes are adequate.

Having completed that review, the Commission may wish to put in place an aggregator verification process run by a third-party program administrator (i.e., not the utility or the Commission). A verification and certification process should ensure all aggregators can deliver services reliably and benefit customers. At the same time, the Commission should avoid setting requirements that discriminate against any qualified vendors.

Any verification and certification processes should be designed to ensure third-party aggregators have all requisite technical capabilities to optimally deliver demand response services. At a high level, aggregators need to be able to: receive and process signals from the grid directly or via a program administrator; communicate with customers and dispatch DERs; and communicate with the utility program administrator regarding verification, payment, and dispatch.

Any Commission requirements should enable participation by all qualified organizations, including organizations that may not have a long track-record as aggregators. The VPP industry is dynamic and characterized by many relatively new entrant organizations. Many of these organizations are advancing innovative technologies and solutions which can uniquely benefit customers and the grid.

As the Commission develops verification and certification processes, it should look to the experience of other states, such as California, Massachusetts, New York, and Texas. Development of such processes should include input from potential aggregators to ensure that any program requirements do not unreasonably impede their participation. The Commission should host informal stakeholder workshops at the outset to encourage open discussion of relevant issues.

4.Are any additional consumer protections necessary if aggregators of retail customers are permitted to operate?

The Commission should first review existing consumer protections in Minnesota state law to decide if any additional protections are necessary. Having conducted that review, the Commission may wish to adopt additional consumer protections that safeguard consumers but don't prevent aggregators from participating and functioning optimally by imposing overly burdensome or restrictive requirements.

Consumer protections may attempt to advance a few objectives including:

- Ensuring customers fully understand program requirements and potential bill impacts
- Providing recourse for misleading communications
- Clarifying for consumers the relationship between utilities and aggregators
- Avoiding misuse or abuse of customer data

Any protections should be developed with careful consideration of the impact for low-income and disadvantaged customers.

As with certification and verification, the Commission can build on best practice from other states. The Commission should encourage open and frank discussion about potential consumer protection requirements through informal stakeholder workshops.

Conclusion

RMI appreciates the opportunity to submit comments for consideration by the Commission. We would like to reiterate our offer to provide a further briefing on these topics to staff.

Respectfully Submitted,

/s/ Kevin Brehm
Manager, VP3
RMI
22830 Two Rivers Road
Basalt, CO 81621
(805) 807-4711
kbrehm@rmi.org

/s/ Adam L. Benshoff
Director of EV Policy
Ford Motor Company
801 Pennsylvania Ave. NW Suite 400
Washington D.C., 20004
(617) 290-0334
abenshof@ford.com

/s/ Travis Kavulla
Vice President, Regulatory Affairs
NRG Energy, Inc.
1825 K. St., NW, Suite 1203
Washington, D.C. 20006
(406) 788-3419
Travis.Kavulla@nrg.com

/s/ Cliff Staton
Head of Government Affairs and Community Relations
OhmConnect
371 3rd Street, 2nd Floor
Oakland, CA 94607
(415) 203-2471
cliff@ohmconnect.com

/s/ Suzanne Leta
Senior Director, Head of Policy and Strategy
SunPower
1414 Harbour Way South, Suite 1901
Richmond, CA 94804
(503) 709-4482
suzanne.leta@sunpower.com

/s/ Amy Heart
Vice President, Public Policy
Sunrun, Inc.
2309 S. Mount Prospect Rd.
Des Plaines, IL 60018
(414) 510-8965
amy.heart@sunrun.com

/s/ Andrew Mears, PhD
CEO & Founder
SwitchDin Pty Ltd
Level 1, Building B, 91 Parry St
Newcastle, Australia 2302
+61(0) 421131550
andrew.mears@switchdin.com