August 17, 2021

Harry A. Lanphear
Administrative Director
Maine Public Utilities Commission
State House Station #18
Augusta, ME 04333-0018

RE: Inquiry into Rate Design Issues Associated with 2021 Legislation, Docket No. 2021-001198

Dear Director Lanphear,

The U.S. Energy Storage Association ("ESA"), Northeast Clean Energy Council ("The Council"), and Maine Renewable Energy Association ("MREA"), collectively "Clean Energy Associations," appreciate the opportunity to comment on the Maine Public Utilities Commission's ("Commission's") Notice of Inquiry into rate design issues with 2021 legislation LD 528 and LD 1431. In these comments, we address rate design considerations regarding the implementation of L.D. 528, or P.L. 2021, ch. 298, § 7 relating to energy storage systems.

ESA is the national trade association dedicated to energy storage, working toward a more resilient, efficient, sustainable and affordable electricity grid – as is uniquely enabled by energy storage. With more than 230 members, ESA represents a diverse group of companies, including independent power producers, electric utilities, energy service companies, financiers, insurers, law firms, installers, manufacturers, component suppliers, and integrators involved in deploying energy storage systems around the globe. Further, our members work with all types of energy storage technologies and chemistries, including lithium-ion, advanced lead-acid, flow batteries, zinc-air, compressed air, liquid air, and pumped hydro among others.

The Council is a clean energy business, policy, and innovation organization whose mission is to create a world-class clean energy hub in the Northeast, delivering global impact with economic, energy and environmental solutions. The Council is the only organization in the Northeast that covers all of the clean energy market segments, representing the business perspectives of investors and clean energy companies across every stage of development. The Council's members span the broad spectrum of the clean energy industry, including clean transportation, energy efficiency, wind, solar, energy storage, microgrids, fuel cells, and advanced and "smart" technologies.

MREA is a not-for-profit association of renewable energy producers, suppliers of goods and services to those producers, and other supporters of this industry. Our power producer members sustainably manufacture electricity from solar, wind, hydro and tidal. MREA leads the local and statewide policy debate on renewable energy generation in Maine, and works to ensure its efforts are united with those of its member companies.

I. Introduction

Energy storage is an integral component of an efficient, resilient, and clean electricity system, and can help deliver such a system at lowest cost to Maine ratepayers. Energy storage provides significant quantifiable system benefits, including avoided transmission and distribution costs, reduced peak capacity, reduced energy costs, and more. As the percentage of renewable energy on Maine's grid grows, energy storage – including longer duration storage – will become increasingly valuable to offset evening peaks and reduce high costs from traditional peaker plant ramping. Massachusetts' Department of Energy Resources *State of Charge* study found that the optimal deployment of energy storage would deliver Massachusetts ratepayers $2.3 billion, at a benefit-cost ratio ranging from 1.7 to 2.4.[1] However, in order to reach significant levels of deployment in the market, energy storage systems must receive value for the services they provide. Effective rate design can both reflect the cost of service and encourage the deployment of energy storage systems. In these comments, the Clean Energy Associations highlight major issues concerning rate design to maximize deployment of energy storage systems and ratepayer benefit for both behind-the-meter and front-of-the-meter systems.

II. Behind-the-Meter Rate Design

Rate designs play an important role in allowing behind-the-meter ("BTM") energy storage systems to capture the value of the services that the energy storage system provides to the distribution system, aligning the interests of the customer and the distribution grid. Importantly, BTM energy storage provides customer benefits beyond those accounted for in rates, including improved reliability. Rates should reflect the time varying, infrastructure and other long-term costs of service.

Residential Rate Design

Residential customers vary widely in their understanding of rate design and their own energy usage. Just because a residential customer installs energy storage, does not mean they are equipped to understand and appropriately respond to sophisticated rate designs. As such, and as has been long recognized by the Commission's rate design decisions, demand charges are not appropriate for residential customers due to the customer's inability to properly process and respond to those price signals. Time-of-use rates are appropriate, however, on an opt-in basis for residential storage customers[2] who may be able and willing to alter their energy habits though many residential storage customers may not have the desire or capability to absorb the risk associated with managing electricity consumption to respond to price signals. However, energy storage systems provide customers the ability to optimize in response to price signals and have the capability to be programmed or actively managed by a third party, allowing customers to opt-in if they so choose. An opt-in structure will allow customers with energy storage the ability to optimize their solar and storage, either through basic programming of the storage system or active management by a third party, if they so choose.

The best way to incentivize residential customers to optimize the use of energy storage is to implement an energy storage program that would compensate customers for using their storage to deliver grid and ratepayer benefits in response to utility-called events. This program structure can be complementary to

[1] Massachusetts Energy Storage Initiative, State of Charge https://www.mass.gov/media/6441/download

[2] An opt-in rate time-of-use design for Net Energy Billing customers is also necessary to ensure that the price signals to increase on-site consumption of renewable energy is not diminished.

existing solar programs and rate designs. While this type of program is likely outside the scope of this docket, we urge the Commission to ensure that any residential rate design changes do not conflict with potential future storage programs. For instance, an opt-out residential time-of-use rate may lock customers into a rate design that has high electricity rates during the hours that a future utility program determines as a beneficial charging window, thus putting these two use cases in conflict.

Commercial and Industrial Rate Design

The Clean Energy Associations recommend time-of-use rates as the default option for C&I energy storage customers. Large commercial and industrial customers have the capacity and significant financial incentive to invest in energy management. The Clean Energy Associations recommend that all large commercial and industrial customers have access to a time-of-use rate.

Time-varying rate designs motivate BTM C&I storage customers to charge during periods when demand and prices are lowest ("off-peak") and discharge during periods when demand and prices are highest ("peak"). The more accurately that customer prices reflect real costs, the clearer the price signal to operate the energy storage system in the manner that is most beneficial to the electric grid.

In addition to time-varying rates, modest demand charges can provide an important price signal to electric customers, reflect cost causation, and can provide value for BTM C&I energy storage owners. In seeking to reduce the customer's demand charge, a BTM storage system may smooth the customer's demand through charging during periods of lower on-site consumption and discharging during periods of higher demand.

III. **Front-of-the-meter Rate Design**

Energy storage systems that are connected directly to the distribution system in front-of-the-meter ("FTM") can provide significant benefits to the system. In addition to peak demand reduction and load shifting, FTM energy storage systems often provide additional grid services such as voltage support, grid stability, and smoothing of generation from intermittent renewable energy. These benefits are shared by all ratepayers through avoided electric distribution company costs. However, rates that are designed for customer loads often treat the energy storage system as a cost on the system, not a potential benefit.

Two characteristics in particular make FTM energy storage systems fundamentally different from customer loads or distributed energy generation connected to the distribution system. These characteristics necessitate specific treatment in tariff design.

1) **Storage is dispatchable.** FTM energy storage resources are completely controllable by the operator of the system and are operated to maximize value to the system rather than to serve a specific customer load. Therefore, rates assigned to FTM storage should not assume that the storage will be operated in ways that will increase system costs and be in direct conflict with value maximization. In fact, given appropriate price signals, operators of energy storage systems will operate the storage system to provide net benefit to the distribution system, not net cost.

2) **Storage is bi-directional**. Storage acts both as supply and load on the distribution grid. Combined with the dispatchability, bi-directionality allows an energy storage system to act as either load or supply, *whenever it is most beneficial to the grid*. Thus, FTM energy storage systems are an asset, not a cost, to the distribution system, and tariff design should reflect that.

Existing rates can pose significant barriers to front-of-the-meter storage

FTM energy storage systems provide the most benefit to the distribution system when they are given the flexibility to deliver their full range of services to the grid. However, rate designs that treat energy storage as conventional load do not necessarily facilitate the optimal delivery of those services. For example, Central Maine Power applies retail tariff rates to FTM storage projects and these rates can have extremely high on-peak demand charges of up to $17.82 per kW per month,[3] while giving no consideration for the grid services that an energy storage system may potentially provide. Charging during the peak hours of 7:00am – 12:00pm or 4:00pm – 8pm in order to provide capacity services to ISO New England, however, may create greater ratepayer value than avoiding charging during these hours and, therefore, *not* providing capacity services. Additionally, energy storage can provide high-quality frequency regulation to the ISO-NE wholesale market, however, this product requires storage operators to commit to charging and discharging the battery at full nameplate capacity when providing the service. This nuance is not recognized when FTM storage is treated as conventional load.

Recognizing these concerns, regulators across the region have recently taken steps to reform tariffs for FTM storage systems. In July, the Connecticut Public Utilities Regulatory Authority found that demand charges were a barrier to deployment and directed electric distribution companies to replace demand charges for FTM energy storage systems with revenue-neutral tariffs.[4] Last November, the New York State Department of Public Service produced a white paper[5] on allocated cost of services in which it recommended that standalone energy storage systems be exempt from demand charges.

The Clean Energy Associations recommend that the Commission investigate revising tariffs in order to value the full range of grid services and unique characteristics of FTM energy storage systems.

IV. Conclusion

The Clean Energy Associations thank the Commission for its inquiry into rate design issues associated with energy storage. Maine has significant opportunity to benefit from the deployment of energy

[3] Central Maine Power pricing, https://www.cmpco.com/wps/wcm/connect/www.cmpco.com10190/6265cd5f-65d1-4509-88d9-12cb62c95536/lgsptou.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE.Z18_31MEH4C0N8JA30AVT8DPRB2O26-6265cd5f-65d1-4509-88d9-12cb62c95536-nHTWS3Z

[4] Public Utilities Regulatory Authority, Docket No. DOCKET NO. 17-12-03RE03 Final Decision http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/38cb46347a645ee585258720004d0e3e/$FILE/171203RE03-072821.pdf

[5] New York Department of Public Service Whitepaper on Allocated Cost of Service Methods Used to Develop Standby and Buyback Service Rates https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={5A84360D-4093-4F1E-83D2-475143ADD169}

storage as it pursues its energy goals, and we look forward to continuing to participate in the Commission's investigation into rate designs that support such deployment.

Sincerely,

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State Policy Director
Energy Storage Association

/s/ Sean Burke
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/s/ Jeremy Payne
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