September 27, 2018

Judith Judson
Chair, Energy Efficiency Advisory Council (EEAC)
Commissioner, Massachusetts Department of Energy Resources (DOER)
100 Cambridge St, Suite 1020
Boston, MA 02114

Re: NECEC Comments on 2nd draft three-year (2019-2021) energy efficiency plans

Dear Commissioner Judson and members of the EEAC:

Thank you for the opportunity to comment on the second draft of the three year (2019-2021) energy efficiency plans filed by the Program Administrators on September 14. We appreciate the leadership and guidance of the Department of Energy Resources (DOER) and the Energy Efficiency Advisory Council (EEAC) as Massachusetts looks to refine and improve the new plans to preserve and build upon the Commonwealth's nation-leading work on energy efficiency. We also thank the Program Administrators (PAs) for the ongoing work building out the draft plans, and we look forward to working with them and members of the Council to strengthen and improve the plans over the remaining weeks prior to submission to the Department of Public Utilities (DPU).

NECEC is the lead voice for hundreds of clean energy companies across the Northeast, helping to grow the clean energy economy. NECEC's mission is to create a world-class clean energy hub in the region delivering global impact with economic, energy and environmental solutions. NECEC 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. NECEC members span the broad spectrum of the clean energy industry, including solar, wind, energy efficiency, energy storage, combined heat and power (CHP), fuel cells, and advanced and "smart" technologies. Our members are already – or are very interested in – doing business in the Commonwealth and helping to grow our clean energy economy.

I. Embracing New Technologies & Recommitting to Existing Success

In our June comments, we wrote that Massachusetts' ability to preserve its energy efficiency leadership will hinge on our willingness to embrace new, innovative offerings and expand access to savings opportunities in an equitable manner. Since then, the Commonwealth's energy efficiency plans have been armed with a new quiver of policy authorizations designed to facilitate this very transition. As contained in Chapter 227 of the Acts of 2018,[1] which was enacted by the Legislature at the end of July and signed into law by the Governor in early August, the new energy efficiency provisions present new tools that have the potential to help improve the revised plans being drafted now. The new provisions incorporate new, innovative technologies into the programs, support greater flexibility in multi-measure and sector-level cost-effectiveness review, and target new categories of benefits and savings for customers to help back-fill the waning savings in "success-story" areas like high-efficiency residential lighting

[1] https://malegislature.gov/Laws/SessionLaws/Acts/2018/Chapter227.

adoption.

Now, as the Program Administrators embark on the final month of program development and refinement, it is critical that the finalized three-year plans make use of the new tools provided by the new statute and increase both their general recognition of eligibility for new and emerging technologies as well as specific, robust offerings for new additions to the programs. In parallel, Program Administrators should recommit to and strengthen planned investments in existing offerings across residential, income-eligible, and commercial channels, striving for finalized plans that reflect elevated investments in commitments to both existing and new technologies/offerings.

Across the board, NECEC urges that the finalized plans include substantially increased overall savings goals and corresponding investments. While the plans do propose to achieve 2.47% of annual electric savings, up from the 2.29% in the April drafts, we reiterate that the finalized plans should chart a course much closer to, if not meeting or exceeding, the 3% annual electric savings derived through the programs since 2016. On the gas side, while the September plans are closer to the Council consultants' recommendation (1.25%), we also urge continued focus on increasing savings for gas customers, especially through new and innovative technology offerings. There is significant opportunity to make up the gap in both electric and gas savings with strengthened commitments in existing, foundational areas of energy efficiency and with new investments in innovative technologies and measures, ensuring that we keep pace with historical rates of savings and investments and capitalize on the emergence of innovative technology applications. Strengthened overall savings goals will signal to energy efficiency providers – an increasingly robust and diverse pool of clean energy companies – that there will be a strong market for their products and services in Massachusetts for the next three years. And, perhaps most importantly, stronger savings targets will translate to deeper energy and monetary savings for customers and ratepayers in communities across the Commonwealth.

In the following comments, NECEC provides observations on the updated September draft plans and recommendations in several areas that are both critical to achieving such deeper savings and of high importance and interest to our member clean energy companies.

II. Continuing Innovation Under the Green Communities Act

We appreciate the PA's recognition of the new statutory authority providing for increased innovation under the Green Communities Act.[2] In particular, we emphasize the opportunities to deliver holistic energy efficiency services, pursue active demand reduction strategies (including energy storage), and pursue overall energy reductions through strategic electrification and conversions to renewable energy resources or other clean energy technologies. While we appreciate the acknowledgment of these components of the recently enacted statute, there would be benefit to further detail regarding how these strategies are and will be included in the plan and subsequent efforts, both in terms of identifying applicable new technologies and establishing discrete opportunities for demonstrations of new technologies and business models. In particular, providing clarity as to the PA's approach to implementing the "or other clean energy technologies" clause will be especially valuable to the market.

NECEC would strongly advocate for the enumeration of technologies already recognized in and supported by other state policies, such as RPS Class I resources, fuel cells, CHP/district energy

[2] http://ma-eeac.org/wordpress/wp-content/uploads/September-Plan-9-14-18.pdf, p. 15.

systems, microgrids, and others, that should be prioritized for consideration. It would also be valuable to directly address the integrated delivery of renewable/clean resource conversions with usual/existing Mass Save offerings, such as methods for customer education about solar during home efficiency audits. It is critical, however, that any such enumeration of new innovative technologies and/or delivery strategies must not be construed as exclusionary of any measures not named; in other words, any further specification related to the recently enacted statute should be framed as "including, but not limited to" to preserve maximum flexibility for emerging technologies over the course of the three-year plan. To be clear, this acknowledgement of new technologies and offerings should not in any way come at the expense of other more traditional energy efficiency offerings and other proposed investments, whose budgets and goals we reiterate stand to be substantially increased across the board to keep pace with existing levels of investment and outcomes.

a. Active Demand Management & Energy Storage

As we have previously outlined, our member companies have a strong interest in pursuing an expanded and improved role for active demand management (ADM) and energy storage offerings in the finalized plans. The inclusion of ADM in the April draft plans was an important first step for this newer category of offerings, and the more recent proposals of plans for a storage-as-a-service offering represent additional progress towards the goal of a workable framework of deployment at scale. Furthermore, there appears to be better recognition of the cost-effectiveness potential for demand management offerings, including and especially in the commercial sector (boasting an updated three-year benefit-cost ratio of 4.35). However, the scale and specificity of the latest proposed demand management investments must be substantially increased for such a workable framework to be attained. While we are generally open to the proposed approach, NECEC strongly recommends that the finalized plans augment the size of the demand management and energy storage commitments (both in MW savings and participant performance payment budgets) and provide greater visibility into the structure and mechanics of the proposed payment arrangement.

After a thorough review of the relevant demand management updates in the September draft plans, NECEC and our members wish to highlight the following areas of needed improvement:

Compensation Level: First, the draft plans do not contain sufficient details as to the expected/likely range of value associated with the energy storage compensation[3] and the C&I Interruptible Load curtailment offering. While there is a total amount of capacity provided for both programs, the plans do not provide the compensation for each individual offering. Market participants need to have an idea what the level of the performance payments would be to fully assess the workability of the proposed framework.

Regarding energy storage, our understanding is that the PAs will seek to have the storage dispatched for a significant number of hours per year (e.g., 100+). If the PAs are using the energy storage systems to reduce the ISO-NE Installed Capacity Requirement (ICR), the AESC study suggests the Capacity DRIPE benefits to be $156/kW-yr. While this is a significant benefit, if the storage is used to reduce the ICR, ISO-NE would prohibit the storage from also participating as a supply resource and capturing ISO-NE revenues. Moreover, demand charges

[3] While the PAs use the term incentive in the draft plans, we would generally prefer recognition that storage is being asked to provide a service that has direct system value, among other values, and is receiving *compensation* for that service.

are typically based on a customer's Non-Coincident Peak, meaning that using the energy storage system to reduce system peak could limit the storage's ability to reduce a customer's non-coincident peak. Therefore, the compensation level for the storage offering should be set to reflect the opportunity cost of foregone revenue streams that customers may lose access to as a result of participating in this offering, namely demand charge management and ISO-NE market participation. In other words, the compensation should not be viewed as a revenue stream that will be stack-able with other major revenue opportunities, which the September drafts assume, and the establishment of the compensation value should reflect this accordingly. We would support structuring the performance payments as a stream of fixed monthly or annual payments over a five- to ten-year term.

As the PAs work toward this or a similar model for the next iteration of the plans, key details to incorporate will include: compensation value and payment cycle by customer sector; number of expected call-events and/or hours per season and per year; duration of program participation; entity responsible for sending and receiving dispatch signal for devices; and, interaction with other programs (clarifying how customers will retain access to any SMART payments, bridging the revenue gap from lost stackable value, with recognition of forthcoming rules for net metering).

Performance-Based Only: We are open to a performance-based compensation arrangement, as described above, though we will note that offering *exclusively* performance-based payments for capital-intensive demand management measures may not yield as much deployment as models that provide some form of upfront payment or rebate. Nonetheless, setting performance payments at a fixed monthly or annual rate will greatly improve the predictability and finance-ability of a performance-based model. We also note that performance-based requirements will be easier to fulfill if participation is allowed with portfolio-level performance measurement (e.g., allowing MW reduction from a fleet of systems) in addition to system-by-system participation and performance, which we hope the finalized plans can explore. If the PAs do choose to pursue a performance-based only approach, the annual payments will need to total a higher additional amount than under an upfront rebate to account for the unknown risk of receiving the payments and the significantly higher upfront capital and financing costs. Based on the avoided costs in the AESC study, an annual payment for five years at or around $200/kW-year should be sufficient to drive deployment while maintaining cost-effectiveness.

We strongly support the proposal to make battery storage eligible for the HEAT Loan,[4] though we note that developers and customers may still contend with high upfront capital costs and related financing challenges, especially for projects above the HEAT-Loan size/cost threshold.

For residential customers, we recommend that the storage performance offering be adapted to include program elements that allow for "bring your own battery"-based customer participation via third party aggregators and individual residential customers, as recommended in comments submitted by Sunrun, Inc. A program design that incorporates aggregator participation will help reduce administrative costs, enhance program marketing, and encourage competition – all while providing performance with the cost and risk of financing being born by the competitive market; each of which will contribute to the success of the Program in the near

[4] We would recommend, however, that program participation not *require* customers to make use of HEAT Loan financing, to provide flexibility for a variety of customer- and third party-owned financing models.

term, while at the same time creating a framework for customer participation in other complementary programs through the aggregator model. Customers participating through an aggregator would also be able to access alternative financing from their chosen developers, allowing more customers to participate and improving cost-effectiveness of the energy storage programs.

Program Size: While the size of the demand management and storage commitment is not immediately clear from the September plans,[5] overall program size remains well below potential. A fixed payment stream for energy storage will meaningfully expand the potential number of customers that can participate, especially when considering the substantial pool of customers who have installed solar and other forms of distributed generation (DG) to date but have not yet pursued energy storage. Allowing customers to participate through a third-party aggregator will also expand program access to more customers as aggregators can help customers access additional revenue streams. Under reasonable assumptions for compensation payments reflecting system benefits and foregone revenue opportunities, we would estimate that the addressable customer/market opportunity is at least 125 MW, achievable across all customer segments over the three-year term of the plans. We reiterate again that the size of the addressable market will be contingent on the structure and duration of the performance payments. We look forward to further discussions with DOER, the Consultants to the EEAC, and the PAs to work out these and other details of the offering.

For C&I load curtailment, a useful input for program size is the amount of Massachusetts-based demand response participating in the ISO-NE market (220 MW participating in 2021), reflecting the scope of customers willing and able to reduce their load when dispatched. Not every customer in the ISO-NE market may wish to participate in the PAs' C&I Interruptible Load Curtailment /storage programs, but there could be many new customers willing to participate given proper program design. A program size of 175 MW of C&I load curtailment is therefore a more appropriate target, though this potential will remain dependent on program design and compensation levels. We note that any unused capacity could be shifted to/made available for other cost-effective active demand management offerings, including the energy storage offering above.

Residential Sector Opportunity: Downward revisions in residential active demand reduction cost-effectiveness and commitment diverge starkly from mounting interest in residential resilience and "Bring Your Own Device" programs that have proliferated around the country. Residential storage deserves greater attention as an opportunity for ADM in the three-year plan, and the reductions in proposed budgets ($12.2m over three years) should be reversed and the lowered benefit-cost score (1.49) revisited. Residential storage can provide numerous benefits to ratepayers broadly, helping to avoid grid infrastructure investments and provide load management and system relief, reducing costs for customers while enabling higher levels of renewable energy consistent with state goals – without disruptive rate design changes. Recent storage deployment totals suggest that states will overlook residential storage at their own peril: after a record-breaking first quarter of 2018, GTM Research reported that 57.5 MWh

[5] Based on a review of the updates Statewide Electric tables released on September 14, it appears that summer capacity savings from C&I demand reduction begin at 97 MW in 2019 and ramp up to 135 MW in 2020 and 165 MW in 2021 (see Tab "DR Savings," Column D). This does not appear to be consistent, however, with the capacity savings identified in the overall "Savings" Tab. Furthermore, it is not clear exactly where storage-specific initiatives are accounted for, based on the note in Tab "DR Savings" ("The active demand reduction core initiatives may include other, non-demand response measures such as storage that are included in the previous savings table.") In addition, the EEAC Consultants' slides for the September 27 meeting suggest that the plans include 38 MW of BTM storage.

of energy storage were deployed in the residential grid-connected segment of the U.S. in the second quarter, surpassing both C&I and front-of-meter storage deployments with tenfold year-over-year growth.[6] The rapid growth in residential storage installations reflects a mounting desire for the resilience benefits that storage can provide alongside and in parallel with ADM-oriented performance/operation. We appreciate the PA's recognition of the lack of time-variant rate structures (namely, demand charges) and the resulting implications for net metering customers (p. 64), but performance-based storage payments can be structured and modified to overcome any rate signal ambiguity or dissonance customers might otherwise experience, without disruptive rate design changes. Finally, we would suggest that greater consideration be given for upfront/front-loaded payments for residential and income-eligible storage customers due to generally lower payback period and financing risk tolerances, along with a plan for delivering this offering to income-eligible and other under-served populations.

Interpretation of New Statute: The updated plans reflect an inaccurate and problematic interpretation of the new statutory provisions on energy storage. In a footnote on page 15, the PAs suggest: "The new law also requires that energy storage supported under the energy efficiency programs provide sustainable peak load reductions. Acts of 2018, c. 227, § 20." In our read, this "sustainable peak load reductions" language is only a requirement for energy efficiency funds used to promote storage in furtherance/achievement of the 1,000 MWh target by 2025 (Section 20 of the recent legislation). This language does *not* accompany the general provisions in the new legislation that makes energy storage eligible under the EE plans (Section 2). So, the finalized plans should be updated to remove any screening constraint related to the provision of sustainable peak load reductions, or, at a minimum, should be updated to include a definition and specific criteria for how various storage use-cases would or would not meet this standard and qualify to receive support under the energy efficiency programs.

b. Fuel Cells

NECEC also strongly recommends that the Program Administrators include all-electric fuel cells as one of the "other clean energy technologies" allowed to participate in the program under Green Communities Act, subject to the Program's cost effectiveness requirements. This would enable customers without a consistent thermal load to benefit from efficient onsite generation and aid in the deployment of more microgrids within the Commonwealth. Because the technology can be co-deployed with energy storage, it can also significantly contribute to peak load reductions and help minimize the use of distillate fuel oil for electricity generation.

It is important that this change be stated specifically in the report in order to give customers and financiers that are unfamiliar with this relatively new technology and have been exposed to recent instability in the Alternative Portfolio Standard (APS) market an assurance that the energy efficiency program will in fact be open to clean and efficient distributed generation that is cost-effective.

c. Cogenerated District and Microgrid Energy Systems

In addition, NECEC strongly recommends that the Program Administrators update the three-year plans to enumerate cogenerated district thermal energy and microgrid thermal energy systems, as "other clean energy technologies" now allowed to participate in the program.

[6] https://www.greentechmedia.com/articles/read/residential-batteries-almost-beat-utility-scale-deployments-last-quarter#gs.Yb=HUkw.

Including these technologies would support the deployment of more microgrids in the Commonwealth and enable facilities with a consistent thermal load (e.g. chilled water, heat, process load) to benefit from cogenerated thermal energy. A particular opportunity for deployment is at facilities with a consistent chilled water thermal load. These facilities could benefit from cogenerated thermal energy through the use of absorption cooling. This type of cooling technology can be integrated with on-site electric chilled water generation and advanced optimization and dispatch controls, which will significantly support peak load reductions, grid modernization and greenhouse gas reduction while also increasing infrastructure resiliency.

d. Additional Benefits in Cost-Effectiveness Screening

Deployments of both active demand management solutions like energy storage, fuel cells, and district/microgrid energy systems avoid significant emissions of criteria air pollutants like NOx, PM, and SO2 and would make significant contributions to cleaner air throughout Massachusetts. Numerous studies have shown that the impacts of these pollutants are disproportionately borne by low income communities and communities of color. While the current BCR rules do not consider this benefit when evaluating cost-effectiveness, the recently enacted legislation enables Program Administrators to consider "other benefits" in cost effectiveness tests going forward. NECEC encourages the Program Administrators, the Council, and the DPU to consider the impact of avoided criteria air pollutants in future cost test studies.

III. Performance Incentive Metrics

Finally, we urge the PAs to adopt the recommendation for specific performance incentive metrics tying financial consequence/reward to the realization of targeted benefits from active demand management, heat pump adoption, and underserved populations (as discussed at the August EEAC meeting). We believe performance incentive mechanisms can be a valuable tool to promote beneficial behavior and outcomes, but any increases in performance incentives must be tied to increased benefits and savings for customers, which does not appear to be the case in the most recent plans. We support designing PIMs to align the PAs' incentives with promoting benefits in the areas outlined by the Council's consultants, but it is also equally important that the underlying offerings and delivery strategies be improved to create defined pathways to progress in ADM, heat pumps, underserved communities, and other areas.

Conclusion

Thank you for your consideration of our comments. Please do not hesitate to contact us if you have any questions or we can provide any assistance.

Sincerely,

Peter Rothstein
President

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Cc: Jamie Dickerson, NECEC