



Via electronic submission: MA-EEAC@mass.gov

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

RE: NEEP Comments on 2nd Draft Three-Year (2019-2021) Energy Efficiency Plans

Dear Commissioner Judson and members of the EEAC:

On behalf of Northeast Energy Efficiency Partnerships (NEEP), I am pleased to submit comments relative to the second draft 2019-2021 Energy Efficiency Plan for the State of Massachusetts. NEEP is a non-profit with a mission to accelerate regional collaboration to promote advanced energy efficiency and related solutions in homes, buildings, industry, and communities. With the goal to assist the region's leaders to reduce building sector energy consumption three percent per year and carbon emissions 40 percent by 2030, our vision is that the region's homes, buildings, and communities will be transformed into efficient affordable, low-carbon, resilient places to live, work, and play.

We thank the Energy Efficiency Advisory Council (EEAC) and the Department of Energy Resources (DOER) for the opportunity to provide input on the second draft 2019-2021 Energy Efficiency Plan and key issues to consider in finalizing the plan. Ranked number one in ACEEE's state scorecard, Massachusetts has much to be proud of in terms of policies and programs offered that continue to make the State a leader in energy efficiency. NEEP applauds Massachusetts' commitment to regional collaboration to advance policies and programs to lower the cost of reliable energy while meeting environmental and resiliency goals in an expedient and equitable manner.

2018 Act to Advance Clean Energy – An Opportunity to Expand Efficiency Program Benefits

Chapter 227 of the Acts of 2018¹, contains new energy efficiency provisions and tools representing an opportunity to significantly increase the public policy benefits of the draft 3-year energy efficiency plans currently under review. The provisions support incorporating innovative technologies into ratepayer-funded efficiency programs, including energy storage, active demand management technologies, and strategic electrification, as well as support greater flexibility in sector-level cost-effectiveness review. This expansion provides an important opportunity to include new tools and technologies in program plans to provide greater energy and demand savings as well as overall consumer and public policy value. With these provisions in place, Massachusetts has an opportunity for even greater savings under the performance metrics on par with historic savings levels. Given the newness of these provisions, it could be beneficial to move forward with expanded programs in 2019 with an opportunity to revisit and update the plan for 2020 and 2021 based on further learning and analysis.

Carbon reduction is an important public policy goal of the 2018 Act to Advance Clean Energy in addition to the Global Warming Solutions Act of 2008. With that we encourage development of carbon reduction goals and

¹ <https://malegislature.gov/Laws/SessionLaws/Acts/2018/Chapter227>



metrics in addition to demand reduction and energy storage goals for the energy efficiency program portfolio. This will be important to guide effective strategic electrification program development, implementation and evaluation.

Likewise, in-line with best practices in the National Standard Practice Manual for Cost-Effectiveness, we encourage the valuation of carbon reduction, and other non-energy benefits aligned with MA policy goals (e.g., deferred or avoided T&D costs, health, safety, resiliency, economic development), in cost-effectiveness screening as provided for in the 2018 Act to Advance Clean Energy. Use of this broadened scope of efficiency impacts with evaluation at the sector level is an important opportunity to increase the range of options to maximize net benefits including new and emerging technologies. Other Northeast states (e.g., Connecticut, Rhode Island and New Hampshire) are similarly considering revisions to cost-effectiveness criteria and practices to include the full range of energy efficiency impacts aligned with public policy goals including, but not only, health, safety and environmental benefits.

Electrification - High Performance Air Source Heat Pumps

High Performance cold climate Air Source Heat Pumps (ccASHPs) offer a major opportunity for increased energy efficiency and reduced carbon emissions. As we noted in NEEP's Strategic Electrification Action Plan, deployment of through high performance, cold climate air source heat pumps provides the greatest value for consumers and public policy in the context of a three-part approach that includes 1) improving the energy efficiency of homes with weatherization and air-sealing to achieve a high level of energy performance measured with a home energy, 2) displacing the use of fossil fuels with high performance heat pumps, and 3) enabling homes to be flexible to respond to peak demand constraints (e.g., with smart thermostats or water heating). We encourage MA to take a holistic approach that includes these elements in its approach to strategic electrification. In addition, the approach should recognize the need to build market capacities to deliver quality solutions including consumer and contractor education and in-field inspection, as well as on-going field validation of new and emerging technologies.

We encourage Massachusetts efficiency programs to participate in NEEP's regional ccASHP and smart home market transformation initiative which includes a list of ccASHP products that meets NEEP's high performance ccASHP specification. Next year we will update the specification and prepare to expand the list to include high performance heat pumps, as well as VRF technology, for a broader range of climate zones. This product list is currently referenced and supported by the Massachusetts Clean Energy Center in addition to programs in five other jurisdictions including in Canada.

Home Energy Information

The updated Residential Conservation Services (RCS) guidelines² released September 24th includes the delivery of a DOER-approved home energy scorecard, in conjunction with in-home audits, before and after installation of program measures. This is an important step forward as home energy labeling makes energy efficient homes visible in the market and offers important transparency to home owners and renters. Home and building energy labels also provide data to support policy and market development for eventual minimum building energy

² <https://www.mass.gov/files/documents/2018/09/24/RCS%20Guideline%20Final%2009-24-18.pdf>



performance standards for existing buildings important to reduce building sector carbon emissions to meet the Commonwealth's climate stabilization goals. In moving forward the RCS guidelines for home energy scores, it is critical to include customer opt-out language so that the energy score information can be shared in the market place, specifically in the real estate market, e.g., at the time of listing. Connecticut and Rhode Island recently added similar language to their efficiency programs.

The Draft Three-Year Energy Efficiency Plan targets residential program services towards renters. In serving this market, NEEP recommends home energy checklists for both renters and real estate professionals to enable all parties to effectively assess the energy cost and performance of specific properties. For example, NEEP offers a model renters checklist³ and guide with steps renters can take to save and manage energy by knowing what to look regarding home energy assets when renting an apartment. In addition, we offer a Real Estate Professionals Checklist⁴ that enables real estate professionals to quickly assess a home's energy efficiency. By making available to renters as well as to real estate professionals such energy checklists, all parties can make better informed decisions regarding home and building energy costs as well as options to improve energy efficiency and related energy bill affordability – a result important to both tenants and landlords. Upon request, NEEP's checklists are available for co-branding with the Program Administrators (PAs) and Mass Save.

In addition to making energy data available to renters and home owners, the PAs and DOER can make this data available to potential home owners by integrating HELIX⁵ into the Massachusetts home energy scorecard program. Massachusetts is a part of the regional pilot to develop and test HELIX as a tool to automate the transfer of home energy information into the Multiple Listing Service in five states (VT, RI, CT, MA, and NH), providing access to verified, and independent home energy data. HELIX includes the following datasets: Home Energy Rating System (HERS), U.S. DOE Home Energy Scores, ENERGY STAR™ Certified Homes, U.S. DOE Zero Energy Ready, the National Green Building Standard (NGBS), U.S. Green Building Council's LEED for Homes, and VT certifications, with discussions ongoing with other programs and sources of solar PV data. As HELIX was developed and is being tested in Massachusetts with DOER's support and participation, it is an important tool to maximize the impact and benefits of the Massachusetts home energy scorecard program. We encourage its use in this aspect of the Triennial Plan to make home energy information widely available in real estate listings, sales and leases, and to support effective building code implementation, as well as increased investment in residential efficiency retrofits to provide consumer value and meet state and local climate and energy goals.

New Opportunities for Energy, Demand and Carbon Savings

To enable homes and buildings to serve as flexible grid load to meet current and future needs to reduce T&D system peaks, we encourage the design of programs to promote efficient and connected products that can respond to grid or price signals. Specific opportunities include “smart” HVAC, home energy management

³ NEEP, A Guide for Renting and Creating Lower Cost Energy Efficient Apartments and Homes, Available at: <https://neep.org/sites/default/files/resources/A%20Guide%20for%20Renting%20and%20Creating%20Lower%20Cost%20Energy%20Efficient%20Apartments%20and%20Homes%20-%202018%20Update.pdf>

⁴ NEEP, Real Estate Professionals Checklist, Available at: <http://www.neep.org/sites/default/files/resources/Guidance%20for%20Real%20Estate%20Professionals%20on%20Home%20Energy%20Efficient%20Attributes.pdf>

⁵ <https://neep.org/initiatives/energy-efficient-buildings/green-real-estate-resources/helix>



systems, and appliances. Another key measure to help reduce peak demand is improved home and building weatherization and air-sealing that reduce thermal losses during extreme temperatures. This can reduce peak loads as well as enable buildings to reduce calls for heating (or cooling) for periods of time during system peaks.

Strategic Energy Management

The Three-Year Energy Efficiency Plan includes a review of Strategic Energy Management (SEM) for comprehensive commercial and industrial efficiency improvements. The findings of this review, “Innovation – Strategic Energy Management Cohort Approach” align with findings from other SEM programs in Northeast states. Of the many factors that impact SEM programs – data engagement, employee engagement, project implementation, energy team size, energy champion participation and executive sponsor participation – those that affect the long-term impact of SEM on energy savings and its persistence bear paramount importance and are constantly under analysis and review. In the Northeast states, a few SEM programs have been implemented, with Vermont having the most advanced, continuously improving program. Recently, Efficiency Vermont expanded their program design to serve smaller commercial and industrial customers by scaling-up marketing and online learning targeted to this sector.

The Massachusetts’ proposed plan to investigate an SEM Cohort is commendable and exciting. In doing so, we encourage the PAs to participate in NEEP’s SEM collaborative to track, learn from and contribute to effective program approaches as well as to build competitive market capacities to provide such services to a range of commercial and industrial market sectors. In addition, the following resources may be helpful in evaluating SEM:

- [DOE’s 50001 Ready Network Series](#)
- [U.S. DOE’s ISO 50001 Brochure](#)
- [U.S. DOE’s 50001 Ready Program](#)
- [U.S. DOE’s Superior Energy Performance \(SEP\) Program](#)
- [U.S. DOE’s Better Buildings Challenge Program](#)
- [U.S. DOE’s 50001 Ready Navigator Tool](#)
- [U.S. DOE’s Energy Performance Indicator Tool](#)

Commercial HVAC

The Draft Three-Year Plan includes a focus on commercial and industrial (C&I) customers using existing and emerging technologies including smart, high efficiency HVAC and controls that reduce energy requirements and enable demand response to reduce peak period impacts. In the Northeast, several factors create a unique opportunity now for accelerated market adoption of this new generation of high performance commercial HVAC products and services in the region:

- **Need for New Savings Opportunities:** With the rapid increase in the availability and adoption of high efficiency, quality LED lighting, energy efficiency programs need new savings measures to meet targeted goals. Advances in and turnover in HVAC equipment presents a special opportunity for a program focus on new high efficiency commercial HVAC – a market that is often difficult to serve and move with simple equipment incentives.
- **The High Value of Peak Demand Reduction:** The costly needle-peaks at winter and summer peak offer high value for smart HVAC equipment that can respond to calls for demand flexibility/management. This high value supports the introduction and adoption of new technology and service options.



- **R-22 Refrigerant Phase-Out Driving HVAC Equipment Turnover:** The former industry-standard refrigerant R-22 (hydrofluorocarbon also known as Freon) is being phased out worldwide due to its harmful effects on the ozone layer. As per the U.S. Environmental Protection Agency (EPA), the manufacture or import of R-22 refrigerant will become illegal in the United States on January 1, 2020. The replacement refrigerants require new equipment – creating an opportunity to encourage building owners to replace old, inefficient equipment with super-efficient, grid responsive systems (Advanced Roof Top Units, Variable Refrigerant Flow Heat Pumps, etc.).
- **New Generation of Smart, High Performance HVAC Equipment:** Last December, a US DOE report on the *Energy Savings Potential and RD&D Opportunities for Commercial Building HVAC Systems*⁶ documents a wide range of new and emerging HVAC equipment.
- **New Business Models Reduce New Technology Risks for Building Owners and Operators.** NEEP's report released earlier this year, *Getting to Yes: Scaling Comprehensive Efficiency in Commercial Buildings*⁷ explores why many commercial customers are not yet embracing efficiency as well as several new financing, technology, and policy changes to achieve success for commercial sector efficiency. This includes a range of new business models, e.g., equipment as a service, that ease customer adoption of new, high performance equipment and controls that provide customer, grid and public policy value.

Consideration of each of these factors in commercial HVAC program design can play an important role in capturing significant, long-term energy and demand savings in the C&I (and multifamily) sectors. We invite Massachusetts to participate in a regional market assessment study we are planning this fall for next year to more carefully assess the opportunity to accelerate market transformation of existing commercial HVAC equipment to high efficiency, grid responsive solutions. Adequate participation and funding from interested states is necessary to move this time-critical study forward.

State Appliance Standards

The Draft Three-Year Energy Efficiency Plan includes objectives to support state and federal appliance standards with savings attribution for successful efforts. We encourage this as appliance standards are highly impactful in reducing energy and demand requirements. In the categorization of opportunity and the prescribed level of effort for standards, the program effort may benefit from taking a more customized approach including an upfront assessment of 1) the opportunities for savings in Massachusetts offered by specific standards, and 2) the value that the PAs could bring to the effort.

For example, in the case of federal rulemakings, if the Massachusetts PAs have unique data or analysis to contribute to the standard setting process, this could impact the outcome of the new federal standard much more so than a MA-specific standard where the product is well understood with broad support. The PAs should remain active on all fronts, with a flexible, strategic approach towards categorizing the opportunity.

On conducting the intervention, additional efforts may be important for the MA PAs to play a role in. One of which involves pre-standards market priming achieved through efficiency program impacts. Through work with

⁶ See <https://www.energy.gov/sites/prod/files/2017/12/f46/bto-DOE-Comm-HVAC-Report-12-21-17.pdf>

⁷ See: <https://neep.org/getting-yes-scaling-comprehensive-efficiency-commercial-buildings>



the ENERGY STAR program and targeted support of specific products with large standards savings opportunities⁸, the MA PAs can maximize such program impacts.

Finally, a very important role that MA PAs could play, particularly for state standards, is in new standards database management. Passing a new standard through legislation or regulation is only half the challenge. The other half comes in making sure that the standard is implemented and enforced. To reduce the administrative burden for this, the PAs could assist state implementation by preparing and populating databases for compliant products, and in supporting enforcement through spot-checking of the standard-affected products in the field. Savings is only actually achieved when the standard is successfully put into effect, and the PAs could play a very helpful role in that regard.

We invite Massachusetts PAs to participate in our Regional Appliance Standards project to learn from and contribute to others in our region working to advance cost-effective and timely state and federal appliance standards.

Residential Retail Initiative

The national ENERGY STAR Retail Products Platform⁹ offers MA another opportunity to increase energy savings. Coordinated by the U.S. EPA, this effort is bringing together utilities throughout the nation to align on program basics for national retailers. This national alignment allows a smaller, mid-stream incentive to go a long way in transforming the market. Program administrations from across the country (including CA IOUs, NEEA, CT, VT, WI, CO, etc. representing 17 percent of US population) are already participating in this program.

Residential Active Demand Reduction Approach

Expanding the residential Demand Reduction (DR) program offers an opportunity for increased savings and value especially when incentives for DR participation are coupled with efficiency incentives to help customers select connected, efficient, devices, and help accelerate market adoption of efficient, demand-reduction enabled products. ENERGY STAR is helping in this regard through their connected functionality specifications.

One critical consideration regarding DR program participants is that homes that cannot retain heat or cold through a DR event should be the first targets for home performance upgrades as they are likely the leakiest and greatest contributors to energy demand during periods of extreme hot or cold. Home energy scorecards can help to identify homes most in need of weatherization and air-sealing.

Several efficiency programs in the US receive significant customer data from manufacturers of smart thermostats, which has been very helpful and informative in understanding demand-reduction and efficiency opportunities, most notably ComEd in their large smart thermostat effort. NEEP encourages the MA PAs to learn from other such programs and collaborate to align efforts in working with manufacturers of smart thermostats, including through NEEP's Smart Home Energy Management Systems project.

⁸ Such as those identified in a 2016 ASAP Report: <https://appliance-standards.org/document/report-overview-next-generation-standards>

⁹ <https://www.energystar.gov/ESRPP>



Building Codes

Building energy codes are among the most cost-effective mechanisms for ensuring efficiency for the life of buildings within the Commonwealth. Energy codes save homeowners and renters alike from prohibitive energy costs. Dollars saved on energy costs are redirected into local communities ensuring vital, safe and affordable neighborhoods. Furthermore, they promote healthy indoor quality, fire safety, long-term durability, and resilience. The energy code is the only building code that pays for itself (i.e., through short and long-term energy savings and building longevity), and is an important opportunity for MA efficiency programs to drive savings by supporting (1) progressive energy code upgrades (e.g., with market data and analyses), and (2) effective stretch code and energy code implementation (e.g., through builder and inspector training) as well as enforcement (e.g. field inspection support).

Massachusetts adherence to its legislative mandate to adopt national model energy codes within one year of publication is important to the Commonwealth's goals for climate stabilization, and building sector energy resiliency and affordability. Beyond adoption of the latest State energy codes on a three-cycle, we encourage the Commonwealth to begin in earnest to strengthen the efficiency of the base energy code toward all buildings being constructed to zero energy standards by 2030. This includes State adoption of the 2018 IECC currently under review by the DOER and BBRS with amendments that make it at least ten percent more stringent than the current energy code based on 2015 IECC.

Stretch codes are an important strategy to set the direction of future base code adoptions. A pathway to zero energy codes by 2030 includes State adoption of a statewide stretch code that is at minimum 20 percent better than the 2018 IECC within one year of the adoption of the 2018 IECC. Within two years of the issuance of the 20 percent stretch code, State adoption of a 40 percent more efficient stretch code as well as a zero energy stretch code representative of a 2030 state energy code that requires all new residential and commercial construction and renovation to meet zero energy standards.

To support this progression towards zero energy building codes, it is necessary to provide resources to support energy code training, enforcement and compliance activities. For example, development of a statewide electronic plan review, permitting and inspection request system will assist the state in claiming energy and carbon savings from code adoption and compliance. Many of the ideas stated above can be found in NEEP's latest code white paper, *"Buildings Energy Codes for a Carbon-Constrained Era – A Toolkit of Strategies and Examples."*¹⁰ Efficiency program support for a progressive building energy code strategy and program can be a critical element to succeed.

Conclusion

Massachusetts is a highly regarded national energy efficiency leader. With the provisions of the 2018 Act to Advance Clean Energy, the Commonwealth has an import opportunity to expand the impact and value of its energy efficiency leadership, and help prepare the Commonwealth's building sector to be a significant part of a successful resilient, low-carbon and affordable energy future.

¹⁰ See: <https://neep.org/building-energy-codes-carbon-constrained-era-toolkit-strategies-and-examples>



We invite Massachusetts to increase opportunities for energy savings by participating in NEEP's regional market transformation projects, research and best practices to overcome barriers to new technologies and practices for integrated advanced energy efficiency including strategic electrification to decarbonize homes and buildings.

Thank you for your consideration of our comments. We hope that you find them constructive and useful in finalizing the Massachusetts Three-year Energy Efficiency Plan for 2019-2021. We can provide clarifications or additional information where that would be helpful.

Sincerely,

A handwritten signature in black ink that reads "Samantha Caputo". The signature is written in a cursive, flowing style.

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