

DRAFT – Revised 2022-2024 EEAC Three-Year Planning Workshops 1-3 Recommendations

Tracked Changes

January 19, 2021

NEW CONSTRUCTION

Residential

1. **Continue to grow the pipeline of new multi-family (5+ units) Passive House projects by increasing participation and workforce training,** ~~since the Passive House standard provides a step up in savings.~~
 - a. **Include specific targets and goals**
 - ~~Increase efforts to develop a qualified workforce that meets demand~~
 - a. ~~Run demonstrations to address centralized water heating barriers~~
2. **Investigate opportunities for promoting zero-energy modular homes based on DOER's Zero Energy Modular Affordable Housing Initiative (ZE-MAHI)**
 - ~~Assess opportunity to leverage These efforts may entail working with DOER's Zero Energy Modular Home Affordable Housing Initiative (ZE-MAHI).~~
 - b. ~~Continue to work with out of state manufacturers and local contractors to advance this effort.~~
3. **Better characterize the non-energy impacts of fossil-free new construction.**
 - a. **Prioritize/accelerate analysis/evaluation activities that quantify health and equity-related non-energy impacts of gas stoves and other in-home fossil fuel combustion so that findings are available for review and inclusion in the 2022-2024 Plan.**
 - ~~Recent studies have shown significant health impacts from combustion appliances, including the health impacts of gas stoves. Properly quantifying and claiming these health-related non-energy impacts of gas stoves and other fossil fuel end uses. new construction and baseline approaches from an equity perspective.~~
 - b. **Analyze and determine impacts of fossil-free new construction and baseline approaches from an equity perspective benefits would likely improve the cost effectiveness of all-electric new construction and or support incentives for electric induction cooktops and ranges. The PAs are starting a new NEI study later this year that will update current RNC measure and program NEIs and investigate additional NEIs, including those that may be attributable to Passive House. Although this recommendation is listed in the residential section of this document, it also applies to the C&I sector. The PAs should provide tools and training to promote the use of variable refrigerant flow (VRF) and ground-source heat pump HVAC systems.**
 - **Develop one to four unit single family and low-rise (2-4 unit) multifamily all-electric program offers.** ~~The single family offer should~~ **may be informed by similar offers in other states such as Connecticut as well as by Passive House criteria. It would likely entail, at a minimum, include a set of stringent prescriptive envelope and HVAC equipment criteria.**
 - ~~The MF multifamily all-electric offer should leverage the current Passive House activities, which should remain largely unchanged.~~
 - ~~In concert with their C&I program efforts, the PAs should continue to develop and and the The PAs provides should provide~~ **tools and training to promote the use of variable refrigerant flow**

(VRF) HVAC systems in multifamily MF buildings. VRF systems will also have high-rise building applications.

2.4. Determine impacts of such offers on customer operating costs, especially in affordable housing, and on available workforce

- a. Develop and implement an education and educational outreach strategy for all relevant participant segments (–customers, builders, developers etc.)

5. Develop connected home requirements.

- a. This may start as simply as requiring smart, Include a broad range of active demand measures and opportunities, including Wifi thermostats, or over time it might address requirements for home energy management systems and/or connected equipment such as HVAC and hot water equipment, and electric vehicle charging.
- b. As part of this connected home effort, the PAs should These efforts should be leverage opportunities to actively recruiting new homeowners to participate in the PAs' ADM active demand management (ADM)ADM efforts. As part of this connected home effort, the PAs should, and more seamlessly integrate already available storage, EV-charger, and PV incentives into the program. The forthcoming DPU ruling on the CLC's Cape and Vineyard Electrification Offer may further inform whether and how the Program can support PVs.
- b. Ensure income eligible customers are also targeted and address unique barriers for different types of customers.

C&I

1. Increase thresholds for participation and increase incentives to push for deeper efficiency, ensuring significant impacts on building energy use through investments in very high efficiency building envelopes and electrification to avoid more costly future deep energy retrofits.

- a. Ensure EUI baselines used for Paths 1 and 2 are stringent enough to drive projects towards the highest efficiency achievable with modern construction practices.
- b. Emphasize Path 1 (ZNE ready) as often as possible – including with smaller buildings that are motivated to achieve ZNE status. Include bonus incentives for electrification and reduced thermal loads by focusing on high-performance building envelope.
- c. Address barriers to and find means for consistently shifting new construction to all electric buildings to avoid more costly deep energy retrofits in the future.
- ~~c.d.~~ Enhance pathways for smaller buildings to participate in ZNE offerings
- ~~d.e.~~ Increase use of performance monitoring and monitoring-based commissioning, particularly in Path 2.

2. ~~Run pilot~~ Actively promote projects with small or mid-size participants-customers in the less comprehensive new construction Paths 3 & 4 that utilize modern building envelopes and high performance HVAC systems such as Variable Refrigerant Flow or Ground Source Heat Pumps paired with Dedicated Outdoor Air Systems.

- a. Include commissioning and operator training, and actively promote performance monitoring and monitoring-based commissioning
- ~~e.b.~~ and sStudy project impacts on energy and non-energy benefits including: energy and cost savings, lifetime carbon emissions, indoor air quality and occupant comfort.

- ~~f. Energy and cost savings~~
- ~~g. Lifetime Carbon emissions~~
- ~~h. Ongoing optimization, Operator training and operating costs~~
- ~~— Indoor air quality and occupant comfort improvements~~
- ~~i. Actively promote performance monitoring and monitoring-based commissioning~~

2.3. Develop Connected Buildings offerings for all four C&I new construction paths that build ADMR capabilities into the design of new buildings of all sizes.

- a. ~~The PAs should leverage controls for end uses like lighting (integrated as well as networked controls) and HVAC in new buildings, which are now required by code in most cases, for active demand reductions management (ADMR) from early in the design process, tailoring approaches to address sophistication and size of customers.~~
- b. Expand marketing for DR-ADM and Eco-market EE and ADMR for all customers, not just those who express an interest in AD-ADM, to help ensure all new buildings become flexible grid assets.
- c. The U.S. Department of Energy has coined the term “Grid Interactive Efficient Buildings”, which integrates technologies ranging from EE, to DRADM, to distributed generation and EV charging. The PAs should integrate the themes of this concept into the New Construction programs.
- ~~e.d. Develop an approach that supports campuses in overcoming compatibility issues that otherwise could limit their investment in modern control systems in new buildings.~~

ACTIVE DEMAND

- 1. Direct Load Control (DLC):** Increase participation in existing DLC offerings, incorporate new end uses, and increase participation of low income customers.
 - a. Increase wifi thermostat DLC penetration through tactics including bundling wifi thermostats and DLC with heating and cooling system installations including heat pumps, and comarketing and delivery coordination of DLC with in-home audits and wifi thermostat rebates. Increase enrollment and penetration of wifi thermostats in DLC, e.g. from 3% of wifi thermostats to 15% (residential and small business). *(Note: Consider revising the % target by updating the eligible population for wifi thermostat DLC (the denominator) once better data or estimate are available.)*
 - b. Incorporate new end uses by expanding or adding EV charging and pool pumps, and revisit the cost-effectiveness and potential addition of appliance DLC opportunities such as water heaters and dehumidifiers.
 - c. Increase the participation of low income customers in the DLC offerings.
 - d. Include a target date for the implementation of the National Grid EV charging effort.
- 2. C&I Load Curtailment:** Grow the C&I load curtailment resource through integration with normal program and market sales channels and with the new construction program. Before 2022, assess the eligibility for new CHP/generators to participate in C&I load curtailment for the 2022-2024 Plan, including an assessment of GHG emissions impacts, and consider phasing out existing CHP/generators that are currently enrolled during the 2022-2024 period. *(Note: Future eligibility of CHP will be assessed for the 2022-2024 Plan overall, and not just for ADM.)*
- 3. Storage:** Significantly expand the program behind-the-meter (BTM) storage targets to contribute to the Commonwealth’s overall storage goal of 1,000 MWh by 2025 (or 500 MW with storage

duration of 2 hours). Revise the program outreach and integration processes to enable increased and broader participation of customers and storage/inverter providers. Identify and highlight other value streams. Help integrate the storage program offerings into a statewide framework that leverages SMART and the Clean Peak Standard, possibly including through co-delivery.

4. **Electric Vehicle (EV) Charging and Mobility:** Increase enrollment and participation of EV chargers in the bring-your-own-device (BYOD) ADM program offering including payment of pay-for-performance incentives. Develop and implement co-marketing and targeted incentives for newer-technology EV chargers, and for EV chargers for some customer segments to provide equitable opportunities to benefit from transportation electrification. ~~Explore and implement~~ co-marketing or co-delivery integration with other state EV and charger programs including potential co-funding sources. Develop and implement a state-wide program for BYOD for EV chargers and/or vehicle-controlled charging to be implemented by a specific date ~~(TBD)~~. ~~Explore possible co-marketing or program support for other mobility solutions beyond individual automobile approaches.~~
5. **Winter Demand Management:** Revisit the performance and cost-effectiveness of winter ADM by mid-2021 after the AESC 2021 study is complete. Consider combining summer and winter efforts into an annual ADM offering. Continue winter ADM efforts in the interim in 2020-2021 by leveraging investments in summer ADM to increase utilization in winter.
6. **Gas Demand Management.** Assess the potential benefits and costs of gas ADM, building on the preliminary analysis of Eversource and National Grid ~~(from rate case filings)~~. Develop and implement a gas ADM program offering that complies with the DPU order in the Eversource and National Grid gas rate cases s that directs the PAs to pursue gas ADM through the EE programs.

INCOME ELIGIBLE

Increasing heat pump installations and introducing new measures

1. Increase cold climate heat pump installations, ~~including~~ by identifying and prioritizing cost-effective applications for IES customers, developing protocols to standardize decision-making, identifying and addressing barriers to participation and installation, and working to increase customer satisfaction post-installation through customer education and support for operation and maintenance.
 - a. Goals should be broken out by all heat pumps, whole house conversions, partial displacement, and heat pump water heaters.
 - b. Provide education to customers on the viability and benefits of electrification; provide training to operators on maintenance and operations of heat pump systems.
- 1.2. Develop heat pump assessment expertise capabilities within the workforce to include at least one specialist at each Community Action Partnership (CAP).
3. Increase ~~opportunities for~~ participation in active demand ~~reduction~~ management programs, including developing and implementing protocols for determining appropriate households for installation of WiFi thermostats for energy efficiency and demand ~~reduction~~ management. Include follow-up, when necessary, to provide customer support.

4. ~~Collect and report data to EEAC on non-participation in measures, including data on barriers to participation and installation, to facilitate allow continual review and improvement to program protocols.~~ Collect and report data on the number, type, and location of barriers including those related to installation (e.g., building code violations) as well as those related to participation. Use this data to inform program delivery.

Ensuring adequate budgets

1. ~~Ensure that income eligible budgets should increase to reflect expected increases in the number of low-income households due to COVID, and should also increase as needed to reflect revised measure mixes and improved protocols.~~ The Plan should incentivize additional spending on income eligible programs. Improving data and systems for program assessment and improvement.
 - a. Collect data on and report to EEAC if and when there are deferrals or delays in service (in whole or in part) due to budget constraints.

Ensuring equitable service

1. Determine if there are differences in service by CAP territory, PA territory, or PA program (gas or electric) that are not warranted by differences in proportions of low-income households. ~~Explore differences, and~~
 - a. ~~Develop and implement strategies to correct unwarranted service differences, including greater investment in additional resources to CAP agencies to assure uniform and comprehensive service in every region.~~
2. Expand efforts to enroll customers newly eligible for IES services as a result of the COVID-19 pandemic.
 - ~~Develop complete detailed mapping of customer journeys for those who may be isolated by limited English proficiency (LEP) or are underserved for other reasons, from first point(s) of contact, through intake, application, assessment, installation, and quality assurance. Utilize customer journey mapping to develop and implement a strategies to improve service to LEP and other underserved customers in coordination with CAPs.~~
 - ~~Develop workforce to enable contacts in customer preferred language throughout the customer journey.~~

Strengthening multifamily pipelines and protocols

1. ~~Develop and implement a strategies for i~~ncreasing and improv~~ing~~e service to multifamily buildings, including naturally occurring affordable housing (NOAH). This Strategies should include:
 - a. Working with the Massachusetts Department of Housing and Community Development (DHCD), the U.S. Department of Housing and Urban Development, and public housing authorities to identify and reach out to owners and managers of small multifamily buildings that are part of the certificate-based Section 8 program.
 - b. Utilizing PA account data to identify multifamily buildings.

~~2. Develop and implement strategies to~~ **Provide more flexibility for multifamily building owners undergoing scheduled rehabilitation, renovation, or refinancing, to enable installation of deeper energy-saving measures and/or electrification.**

a. Collaborate with affordable housing developers and key stakeholders to establish a workable pay-for-savings approach which promotes deep energy retrofit projects.

~~c.~~

Improving data and systems for program assessment and improvement

1. **Strengthen regular reporting in order to identify areas of improvement and resources needed to support comprehensive and equitable service to all submarkets.** Reporting should provide insight into specific program activities and buildings served, as well as identify where program designs are working well or need modification. By the first quarter of 2022Q quarterly Reporting to the EEAC should allow differentiation of program activities by more granular parameters, including:
 - PA and CAP territory
 - Program (gas, electric)
 - Service type (Appliance Management Program (AMP), weatherization, heating system)
 - Building size (number of units)
 - Resident status (owner or renter)
 - Ownership (public housing, subsidized affordable housing, private)
2. **Develop and implement a statewide computerized audit tool by the third quarter of 2022 that can provide regular, timely, and consistent information to support identification of best practices and needed continuous improvement as well as reporting to the Council and providing data for EM&V.**

C&I EXISTING BUILDINGS

Lighting Controls

1. **End support for non-dimmable TLEDs starting in 2022 by the end of 2021** across all program pathways. To receive support, dimmable TLEDs should be installed and commissioned to deliver some combination of initial wattage tuning, daylight harvesting, occupancy controls and dimming capabilities. Refocus upstream product offerings on “smart” dimmable and controllable TLEDs and DLC qualified luminaire-level lighting controls.
2. **Push-Drive customers towards luminaire-level lighting controls** wherever possible using performance lighting and other more comprehensive pathways. Improve the ease of participation for the Performance Lighting Plus program, particularly for existing buildings.
3. **Increase Continue to investments in lighting controls training for contractors/installers and customers;** expand training efforts to include commissioning for contractors/installers, sales strategies for distributors/contractors, operation and maintenance best practices for facility managers, and customer education on energy and non-energy benefits of controls.

HVAC

1. **Increase electric and gas HVAC savings from existing buildings** by improving realization rates, increasing participation, addressing system optimization, providing benchmarking services, commissioning projects from concept through operations and including envelope upgrades.
 - a. Improve realization rates for implemented HVAC projects by consistently including third party commissioning to ensure the Massachusetts ratepayers and the customers investing in HVAC retrofits have accurate savings estimates that are realized.
 - b. Increase participation in custom HVAC projects and pursue system optimization to increase savings per project. System optimization includes right-sizing, eliminating pinch-points and by-passes, adding energy and heat recovery, implementing optimal sequences of operations and commissioning.
 - c. Consistently prioritize support for building envelope assessments and upgrades including air sealing, insulation and incremental improvements to siding and windows when investments in thermal envelope are planned. to increase comfort and reduce HVAC loads. Support cost-effective envelope measures including the incremental cost for triple glazed windows where window replacements are already planned.
 - d. Incorporate standardized benchmarking across PAs (using ~~Energy~~ENERGY STAR Portfolio Manager) as a pre-post component of project implementation and capture benchmark data in PA tracking databases.
 - e. Align timing of interventions with planned infrastructure upgrades to support deeper, more comprehensive upgrades.
 - d.f. Report on progress by Undertake ing evaluation studies-y that addresses barriers to adoption, site level realization rates and reasons for differences in verified vs reported savings.
2. **Drive demand for remote electrification projects**, including conversions to variable refrigerant flow (VRF), air source and and/or ground-source heat pump systems paired with Dedicated Outdoor Air Systems (DOAS) and providing operator and occupant training.
 - a. Establish increasing target for electrification projects by fuel type count: 1,000 year 1; 2,000 year 2 and 5,000 year 3.
 - b. Establish target for include heat-pump water heating.
 - e-c. Provide training to customers on the viability and benefits of electrification; provide training to operators on maintenance and operations of heat pump systems.
- 2-3. **Undertake a Deep Energy Retrofit Pilot** including working with customers to leverage planned replacements to achieve cost-effective deep energy retrofits that result in balanced investment in envelope, HVAC and other improvements. Engage private and public -customers with significant real estate portfolios to identify potential buildings and undertake integrated design with scenario modeling, lifecycle and financial analysis to identify the optimum investments. Completed retrofits should reduce energy use by at least 40%¹ to move participants toward ZNE and renewable-ready buildings. Use the pilot to build the supply chain and workforce including identifying existing market actors identify market actors with the skills best suited to delivering successful projects and training providers. dDocument project characteristics in promotional materials.

¹ DOE Deep Energy Retrofit Challenge <https://www.energy.gov/management/spo/articles/doe-s-sustainability-performance-office-announces-deep-energy-retrofit>

- a. Work with customers with significant real estate portfolios to identify buildings suitable for inclusion in the pilot [with a target of 50 participant buildings](#). Help customers realize the full benefits of holistic lifecycle cost analysis by working with them to plan how they will replace equipment, systems and envelope components nearing end of life in order to move buildings towards lowest required energy inputs for HVAC operation.
 - b. Use an integrated design approach incorporating early retirement of existing equipment, systems, and components to ensure comprehensiveness and to identify the optimal package of integrated energy efficiency measures for the client; consider electrification in every package. Incorporate envelope improvements including assessments of the addition of insulated exterior cladding and upgrading windows to triple glazed units at the time of replacement.
 - c. As part of the process assess which service providers are best suited to support customers and the PAs in pursuing Deep Energy Retrofits. e
 - d. Document project costs, savings, benefits and measured results in case studies and other promotional materials.
- 3.4. Expand delivery of services and savings relating to building automation and energy management information systems including legacy system upgrades and replacements and portfolio optimization.** [Require](#) [increase](#) the use of [and provided incentives for](#) independent third-party commissioning in the existing building sector to improve savings.
- a. Work with customers to upgrade legacy systems and optimize HVAC system performance. For customers with significant real estate holdings, work to ensure interoperability and optimization across their portfolio by helping them bring existing systems up to modern standards when new buildings or systems are added.
 - b. [Increase participation in](#) [Require](#) existing building commissioning [using to use](#) independent third-party commissioning providers [who participate in the project](#) from [project](#) kick-off through Measurement and Verification [and include operator training \(M&V\)](#).
- 5. Undertake an [increase support for and participation in](#) Energy Management Information Systems (EMIS) [measures](#) ~~Pilot to demonstrate the costs and benefits of EMIS~~ and monitoring-based commissioning (MBCx).**
- a. ~~Verify costs and benefits of this approach. Provide the Council with periodic documentation~~ [Include of participation rates, estimated savings, achieved savings and project costs in quarterly reports to the Council.](#)
 - b. ~~Study~~ [Evaluate](#) EMIS and MBCx to identify market barriers, identify proven [programmatic approaches that addressed those barriers in other jurisdictions and assess the market actor competency in delivery EMIS and MBCx services.](#)

Industrial/Process Savings

1. **Continue to identify and eliminate barriers that are preventing project implementation** and savings already identified through the Industrial Initiative.
 - a. Continuously check back regularly with customers to see if circumstances have changed, or what it would take to move forward. Once a project has been identified, and quantified, the incremental support to cause a project to move forward should be less than the effort and cost to identify a new potential project.
 - b. Provide sales training to Industrial Initiative contractors.

- c. Use the Massachusetts Pro Forma tool to provide cash flow analysis, rate of return, and other project financial information to the customer CFO to sell the project.
 - ~~c.d.~~ [Report out to the EEAC on work being done to reduce barriers for industrial process savings.](#)
2. **Expand Strategic Energy Management (SEM) to a full program offering for all industrial customers.**
 - a. Pair SEM with implementation of traditional Industrial Initiative to drive more capital projects. Track any increases in capital projects to assess the impact of SEM participation in Massachusetts. SEM may be the most valuable marketing tool available to target manufacturers.
 - ~~a.b.~~ [Reassess the measure life for Strategic Energy Management operational savings.](#)
 - ~~b.c.~~ Support Energy Management Information Systems through financial cost sharing.
 3. **Identify ~~niche~~ customer segments where there are still appreciable non-lighting savings opportunities and construct targeted initiatives to address these markets. [Examples include:](#)**
 - Smaller/distributed telecom sites, including cabinets and other unoccupied structures.
 - Cannabis cultivators with substantial process savings from CO2 extraction and environmental controls. [Laboratory freezers](#)

CHP

1. **[Re-assess incentives for natural gas fueled CHP](#)**
 - a. ~~and consider reducing or eliminating all but the most energy-intensive market segments as necessary to meet long-term~~ [Analyze lifecycle greenhouse gas impacts of CHP in the context of the Global Warming Solutions Act climate goals](#)
 - ~~Exemptions may include hospitals, pharmaceuticals, and manufacturing or~~ [Prioritize and offer enhanced incentives for renewable fuel CHP systems such as those that run on anaerobic digester gas.](#)
 - b. **Complete a dedicated CHP impact evaluation no later than 2022** [and reassess incentive levels based on this evaluation. Ensure this report](#) ~~that also~~ includes an update to free-ridership, spill-over and net to gross ratios. Study new and replacement systems separately. ~~Implement programmatic changes based on results of impact evaluation.~~
2. **[For all CHP projects, conduct detailed lifecycle emissions analysis](#)** using an impartial and agreed upon forecast of ISO New England's emissions intensity between now and 2050. ~~Also~~ conduct a project-by-project economic analysis that determines whether a given CHP project needs Mass Save support to generate a 5-year positive cash-flow. [Prioritize and offer enhanced incentives for lower carbon systems such as renewable fuel CHP systems that run on anaerobic digester gas.](#)