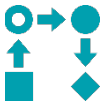
# NEEP 2017 QUARTERLY REPORT
## *ANNUAL SUMMARY*

## Executive Summary

In 2017, NEEP cast its eye on the lofty goal of assisting the Northeast & Mid-Atlantic region in reducing total carbon emissions 80% by 2050. While NEEP's focus may have pivoted in response to the changing industry landscape, one thing remained constant – our work to bring stakeholders together to engage around energy solutions. We're proud that through collaboration, NEEP and our network of state and federal partners, allies, foundations, and other stakeholders from across the region and nation have worked to embrace next generation energy efficiency as a core strategy to meet energy needs in a carbon-constrained world. NEEP shares this report to highlight some of our 2017 achievements.



***Facilitate Market Transformation for Advanced Solutions***

### Northeast Industrial Strategic Energy Management Initiative

**Hosted a Regional Strategic Energy Management (SEM) Collaborative Workshop:** In partnership with Efficiency Vermont, NEEP hosted our annual in-person regional collaborative meeting focused on energy efficiency program adoption and implementation of Strategic Energy Management. The event, hosted on November 8 in New York City, drew approximately 35 attendees. The regional collaborative, through this in-person event and quarterly webinar meetings, has helped spur a number of new Northeast energy efficiency programs to adopt SEM as a program measure. The New York State Energy and Research Development Authority (NYSERDA) launched a new program in the fall of 2017, while Connecticut, Massachusetts, and Rhode Island have all indicated launching SEM pilots in 2018. These programs will join Vermont to establish a more robust program landscape in support of SEM across the region.

### Home Energy Management Systems (HEMS)

**NEEP's home energy management systems (HEMS) initiative worked toward the strategies and goals set forward in our 2016 Smart Energy Homes report:** We began work toward the priority areas identified in the report for advancement in the smart energy homes space. Specifically, progress was made toward including smart considerations into water heating, advancing smart thermostat program success, and engaging with the home performance industry to ensure that smart homes are efficient homes. By focusing on these areas where HEMS have the biggest opportunity for near-term energy savings, NEEP's 2017 suite of resources and deliverables provided a great deal of value to the region and beyond.

### Emerging Commercial-Sector Business Models for Efficiency

**Began a process to identify emerging business models to advance efficiency in the commercial sector:** Our research and discussions on this topic identified barriers preventing deep

commercial efficiency as well as many new solutions. We found the opportunities for scale in deep commercial efficiency, therefore, were limited by customers' resistance to taking on these efforts. NEEP researched and drafted a two-part report to address these barriers. Part 1 of the report focused on providing updates and information about innovative financing, business models, new technologies, and other relevant considerations for commercial-sector efficiency. Part 2 focused on strategies to build demand for commercial efficiency projects and put the new tools identified in Part 1 to use. A draft of this report was delivered to stakeholders for review in December and will be finalized and published in early 2018.

### Regional EM&V Forum (EM&V 2.0 Focus)

**NEEP's EM&V Forum used research, reports, webinars, and discussions to share information relevant to current regional energy industry transitions:** We focused on how evaluation, measurement and verification (EM&V) can serve energy efficiency programs in the "Next Generation" environment, where energy efficiency is increasingly integrated with other distributed resources. The greatest achievement of 2017 lies in the diversity of topics addressed, including: whole-facility EM&V issues and resources; EM&V and market transformation; cost-effectiveness and non-energy Impacts of energy efficiency; and EM&V issues associated with program and technology trends. The Forum's resources on these topics engaged all states within the NEEP region and reached over 600 regional and national stakeholders throughout the year.

### State and Federal Appliance Efficiency Standards

**Refocused our appliance efficiency standards efforts toward opportunities for state standards:** As federal priorities shifted in 2017, NEEP began to shift resources toward new state standards. We worked with a variety of stakeholders – including utilities, state energy offices, and other environmental groups – in Connecticut, the District of Columbia, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Massachusetts, and Vermont. In states where priorities and momentum aligned, NEEP convened stakeholders to begin discussions, and, in close partnership with the Appliance Standards Awareness Project (ASAP), help advance appliance standards for 2017 and prepare for 2018. On September 14, NEEP co-hosted with the Appliance Standards Awareness Project an in-person state standards workshop. With 20 participants in person and several others joining via teleconference, this workshop brought stakeholders together discuss opportunities for near-term state standards adoption.

## *Promote Resilient, High Performance Buildings & Communities*

### High Performance & Zero Energy Buildings, Homes, and Communities

**Hosted the 2017 New Hampshire High Performance Schools Summit:** On October 20, NEEP, in collaboration with the N.H. Department of Education, held a schools summit to educate stakeholders about the importance of including high performance attributes in the school

environment. The theme of this year's event was to provide a pathway to high performance for every community – whether they were building a new school, undertaking a renovation project, or looking to improve upon the state of their current facilities. In total, approximately 100 stakeholders attended the event.

## Building Energy Codes

**Published a new report on transforming codes to zero energy:** The report, Building Energy Codes for a Carbon Constrained Era: A Toolkit of Strategies and Examples, released in December 2017, outlines strategies that can better position states in the Northeast and Mid-Atlantic region to achieve two critical objectives: 1) advance building energy code development and adoption to enact zero energy buildings codes within the next 15 to 25 years; and 2) improve the administration of building energy codes to ensure that desired performance levels are realized. The report proposes a new impactful approach toward transforming energy policy, code adoption and compliance, and carbon reduction.

## Home Energy Labeling Information Exchange (HELIX)

**Developed a functioning version of the Home Energy Labeling Information Exchange (HELIX):** After selecting ClearlyEnergy as the IT contractor, HELIX was developed on top of the U.S. Department of Energy's (US DOE) Standard Energy Efficiency Data (SEED) Platform. NEEP and our project partners also continued to engage stakeholders on the importance of HELIX and provided a demonstration of the database. HELIX is now in the beta testing phase of the project and will continue development into 2018.

## Building Energy Rating and Disclosure

**Provided technical assistance to the city of South Portland, Maine:** With the assistance of NEEP, the city formally adopted a building energy benchmarking ordinance in January 2017. In February, we offered technical assistance on next steps the city should take, including hosting a training workshop for covered building owners. We are now regularly engaged with the city to plan for the workshop in March 2018. Additionally, NEEP developed an in-depth look at the city's benchmarking ordinance – the resulting exemplar highlights the unique characteristics of their benchmarking policy and information on the process of passing the ordinance. The exemplar also demonstrates that passing benchmarking ordinances is possible in smaller cities and answers some of the critical questions surrounding barriers that prohibit ordinances from being enacted elsewhere.

## *Share Best Practices to Advance Strategic Electrification & Next Generation Energy Efficiency*

### Regional Strategic Electrification Assessment

**Published a new report, Northeastern Regional Assessment of Strategic Electrification:** The report includes a technology and market assessment, regional scan of policy/program activity related to strategic electrification, electrification impact modeling analysis, as well as potential near-term actions and key issues to resolve. The report was developed by a consultant, with input from NEEP and the project's Leadership Committee. It serves as a framing resource for the region and will help establish a foundation from which to build strategies to advance strategic electrification. Following release of the assessment report, the team began development of a regional Strategic Electrification Action Plan, scheduled to be published in Q1 2018. The Action Plan will outline priority actions the region should undertake to move forward strategic electrification.

### Cold Climate Air-Source Heat Pumps (ccASHPs)

**NEEP's Cold-Climate Air-Source Heat Pump (ccASHP) specification and products list established itself in the Northeast program market:** The ccASHP list is a mechanism for the market to differentiate ASHP systems that can operate efficiently in cold climates. By the end of 2017, seven leading programs – including the Massachusetts Clean Energy Center, Efficiency Vermont, and NYSERDA – had adopted the specification and products list as part of their qualification for incentives. The specification and associated list, which NEEP has managed since 2015, grew to include over 500 products and was downloaded over 5,040 times by the end of the year. Product manufacturers must submit applications to NEEP in order to be listed. To support this effort, we reconvened the ccASHP Specification Sub-Committee on September 28 to begin discussions regarding potential updates to the existing specification. This sub-committee is made up of non-manufacturer stakeholders committed to the effective evolution of the specification to meet stakeholder needs. The process to make changes to the specification will include an opportunity for public, stakeholder review and comment before any changes are finalized.

## *Advanced Efficiency Leadership Network*

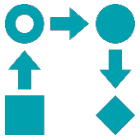
### Regional Energy Efficiency Database (REED)

**Began a project to collect new data for the Regional Energy Efficiency Database (REED) and add new features to the database:** With the support of the US DOE's Pacific Northwest National

Laboratory (PNNL) and the Energy Information Administration (EIA), NEEP will update REED as a product of the regional EM&V Forum. We will also investigate processes and methods to add measure-level cost-effectiveness metrics as well as incentive values for measure-level data for as many NEEP states as feasible. REED currently includes program-level data for ten states: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

## State and Local Policy Tracking, Analysis, and Technical Assistance

**Tracked state public policy, including legislative and regulatory proceedings:** NEEP maintained our status as a regional policy expert by providing insights and analysis on state energy efficiency policy. By keeping a pulse on state policy, we were able to direct this information to our Allies and internally to help advance NEEP initiatives. NEEP used these insights to reimagine advanced efficiency and develop the Advanced Efficiency Leadership Network.



## Facilitate Market Transformation for Advanced Solutions

***Help to transform markets with advanced energy efficiency technologies and solutions through public policy, research and collaboration, and public-private partnerships that deliver regional-scale impacts.***

### *Events & Stakeholder Engagement*

- **Co-led a regional Strategic Energy Management (SEM) Collaborative**: In partnership with Efficiency Vermont, NEEP helped organize and host three regional meetings of the collaborative throughout the year – on February 14, April 18, and June 19. This group facilitates a structured information exchange between industrial program administrators in the region who are either implementing or exploring SEM as a program measure, as well as SEM service providers. The group largely focused on SEM program implementation.
- **Engaged several leading SEM implementation firms:** NEEP approached these firms to discuss strategies for making a strong case for SEM incorporation into ratepayer-funded energy efficiency programs, including messaging and stakeholder identification.
- **Attended US DOE's Better Buildings Summit:** NEEP attended the May 15-17 event hosted in Washington D.C., participating in a number of sessions related to the effective implementation of SEM in commercial and industrial facilities, as well as an introductory workshop on the details of US DOE's new SEM resource, 50001 Ready. NEEP will work with regional partners to utilize the resources available through this program, making promotion and adoption of SEM more accessible to potential stakeholders.
- **Attended the American Council for an Energy-Efficient Economy (ACEEE) Industrial Summer Study:** The event took place August 16-18, and was preceded by the National SEM Collaborative meeting on August 15. The conference provided an opportunity to learn from leading programs and practitioners of industrial energy efficiency and the opportunities that SEM offers our region. NEEP spoke on a panel at the National SEM Collaborative meeting to provide an overview of the current status of SEM program implementation in the Northeast and Mid-Atlantic region. Following this event, we committed to continuing discussion of making the National SEM Collaborative meeting a permanent event, and possibly and more formal entity.
- **Organized a "Smart Homes" track at the 2017 Home Performance Coalition (HPC) National Conference:** In partnership with HPC, NEEP organized a "Smart Homes" track at the conference, which included nine formal sessions, an evening technology showcase, and a breakfast discussion. An estimated 450 individuals participated in at least one part of the track and the event was reported to be successful at making progress toward one of NEEP's key goals for 2017 – to advance home energy management systems (HEMS) in home performance
- **Hosted HEMS Working Group meetings:** In 2017, NEEP hosted six webinar meetings of the HEMS Working Group, with strong attendance ranging from 30-45 stakeholders at each. Attendees included representatives from NEEP partner states Vt., N.Y., N.H., Conn., R.I., as well

as the US EPA, US DOE, the National Renewable Energy Laboratory (NREL), and the Pacific Northwest National Laboratory (PNNL), and these meetings continue to be a successful convening of regional and national HEMS stakeholders. To ensure continued opportunities for engagement after the stakeholder discussions, NEEP provided a summary of meeting updates and new activities in our *Smart Energy Home Newsletter,* distributed to over 150 stakeholders.

- **Hosted NEEP's first Smart Energy Homes Virtual Workshop:** On December 13, over 85 stakeholders participated in a three-hour virtual workshop focused on equipping the smart home of today to be ready for the strategically electrified world of tomorrow. Presenters included stakeholders from multiple NEEP initiatives, program administrators, program implementers, a national lab, the US EPA, and industry representatives from storage, solar, electric vehicles, national retailers, and smart home devices. The conversations started in this workshop will continue into NEEP's 2018 market transformation initiatives.
- **Demonstrated thought leadership on the topic of Smart Energy Homes**: NEEP was invited to share smart energy home information and resources at several conferences and venues, including an ENERGY STAR webinar, the 2017 Smart Energy Summit, the 2017 NEEP EM&V Forum Spring Meeting, a Better Buildings Residential Network webinar, a presentation to the Connecticut Energy Efficiency Board at their annual retreat, the 2017 NEEP Air-Source Heat Pump Workshop, and the ENERGY STAR Partner Meeting. These presentations and discussions advanced NEEP's market transformation strategies for the smart energy home.
- **Engaged with stakeholders to advance emerging commercial-sector business models for efficiency:** States across the region – including N.H., N.Y., and Conn. – have been involved with this project from the beginning. In addition to conducting a survey on the topic, NEEP hosted a stakeholder teleconference in October to review key components of the commercial efficiency report in development, and collect feedback on additional content for inclusion in the report. The meeting resulted in identification of several areas for deeper investigation, and state partners had the opportunity to review and provide input on the draft report before publication.
- **Engaged with commercial efficiency stakeholders at national events:** Throughout 2017, NEEP engaged with various stakeholders involved in commercial energy efficiency. In May, NEEP attended the ACEEE Energy Efficiency Finance Forum in Chicago to learn more about the emerging financial mechanism for commercial efficiency. We also attended a session at the Consortium for Energy Efficiency (CEE) Summer Meeting in May, which focused on the utilities' challenge of getting participation in commercial efficiency programs. NEEP also presented draft report findings to NEEP Allies and NREL's Plug and Process Load Technology Research Team, both of which garnered additional interest in the project.
- **Tracked trends and needs in the commercial lighting sector:** As research for NEEP's commercial-sector project continues, it is clear that to be successful economically, one must incorporate high-efficiency lighting into any bundle of efficiency offerings. As such, NEEP has been participating in the National Utility Lighting Exchange (NULX) to track market developments in commercial lighting, including participating remotely in two NULX meetings
- **Conducted public outreach related to advanced M&V/M&V 2.0:** To advance the concepts related to M&V and M&V 2.0, NEEP hosted a public meeting on The Many Flavors of Advanced M&V in October, a December webinar on Rapid Fire on Advanced M&V Resources, and July

webinars on Non-intrusive Load-Monitoring, Case Studies in Making Program Evaluation Work for You, and the LBNL software tool being used in the Connecticut M&V 2.0 project funded by a US DOE State Energy Program (SEP) grant.

- **Presented on Strategic Energy Management evaluation best practices and Northeast regional program activity:** This presentation took place at the October 2017 Behavior, Energy & Climate Change Conference.
- **Advanced broader conversations on EM&V**: NEEP actively participated in planning for the 2018 AESP National Conference and 2018 International Program and Policy Evaluation (IEPPEC) Conference to advance EM&V at the national level.
- **Hosted the EM&V Forum Spring Meeting:** The April 2017 event focused on The Future of Evaluation, Measurement & Verification (EM&V): Where Technology and Policy Meet. Panels discussed various ways in which evaluation, measurement, and verification intersect with policy and technology, including cost-effectiveness issues, M&V 2.0 tools as evaluation resources, smart thermostat impacts, and evaluation approaches to market transformation.
- **Shared NEEP's EM&V resources at national conferences:** Outreach including moderating a panel on State EM&V Practices at the October E2e academic/evaluation collaborative workshop, and panels at the August 2017 International Energy Program Evaluation Conference (IEPEC) on M&V 2.0 and Evaluation of Renewables, Storage and Zero Net Energy.
- **Convened the Northeast – Mid-Atlantic Appliance Standards Working Group:** NEEP convened quarterly meetings of the Appliance Standards Working Group throughout 2017. These meetings focused on potential actions on federal standards efforts – including from the US DOE, ENERGY STAR – as well as updates on progress made in states throughout the region in advancing standards.
- **Convened a regional discussion to plan for action on multi-state standards opportunities:** In addition to the quarterly working group meetings, NEEP began a series of multi-state discussions with those stakeholders who are actively involved in advancing appliance standards in their respective states. Stakeholders convened twice to discuss their similar state goals, and the group plans to continue these strategic discussions in 2018.
- **Hosted several state-focused discussions on appliance efficiency standards**: In addition to the multi-state discussions, NEEP convened stakeholders in specific states to troubleshoot and develop action plans for their specific appliance standards needs.
- **Participated in the Appliance Standards Awareness Project (ASAP) Steering Committee meetings:** ASAP's Steering Committee has become a landing place for national discussions of standards strategy, and NEEP participated in several teleconferences as well as the in-person Steering Committee meeting in San Francisco to further collective efforts and build deeper partnerships with other organizations such as Natural Resource Defense Council (NRDC), ACEEE, Alliance to Save Energy, California Energy Commission, Northwest Energy Efficiency Appliance (NEEA), and others.

## *Research, Analysis, Reports, and Case Studies*

- **Published a report on SEM Evaluation, Measurement and Verification Best Practices:** The report identifies best practices for measuring savings from SEM programs, evaluating those measured savings, and screening for cost effectiveness. SEM in the industrial sector is an emerging opportunity to achieve significant energy savings through both increased capital projects as well as operations and maintenance (O&M). Earlier drafts of the report were shared for input with leading stakeholders including the US DOE, the national laboratories, energy efficiency program administrators, and other SEM experts. We anticipate the report will be used by states and programs to inform their consideration of launching SEM offerings.
- **Developed a draft report on current uses of SEM in water and wastewater facilities:** Research is the first phase of a report that will highlight existing use of SEM in water and wastewater facilities, as well as opportunities to expand the adoption of SEM into these energy intensive facilities. We anticipate that the report will be published in the first quarter of 2018.
- **Published four briefs on topics related to smart homes:** In April, NEEP released the Claiming Savings from Smart Thermostats: Guidance Document, and in December we released three briefs: The Smart Energy Home and Cross-Promotional Opportunities in Energy Efficiency, The Smart Home Interface: A Tool for Comprehensive Residential Energy Efficiency, and The Contractors Guide to the Smart Home.
- **Released several EM&V-focused briefs and reports:** These include the January release of State Leadership Driving Non-Wires Alternatives (NWA) Projects and Policies, which examines NWA policies and projects underway throughout the region; the February release of Advanced Metering Infrastructure (AMI): Utility Trends and Cost-Benefit Analyses in the NEEP Region, which evaluates the costs and benefits included in utility cost-effectiveness testing of AMI; and the August release of Advanced M&V: An Evolving Industry, a deliverable of the Connecticut M&V 2.0 project funded by a US DOE SEP grant. NEEP also released the report Non-Energy Impacts: Approaches and Values in October.
- **Supported strong standards for general service lighting (GSL):** The Energy Independence and Security Act (EISA) 2020 GSL standard has the potential to be an immensely impactful energy efficiency standards, but faces several challenges to implementation. In absence of federal leadership, NEEP has been working with ASAP and other stakeholders to raise awareness and understanding of the standards and ensure that they take effect as intended in the legislation. In addition to numerous discussions with regional actors on this topic, NEEP collaborated with evaluators from NMR Group to prepare a poster for the IEPEC. We also presented on this topic at the ENERGY STAR Partner Meeting as well as at a program-administrator focused webinar hosted by Apex Analytics.
- **Created informational resources on state standards opportunities**: NEEP has been coordinating closely with ASAP to create a sample fact sheet with key information about the appliance standards package. Additionally, we developed a regional guidance document to provide clarity on the process of setting state standards. This is a living document that includes information on key stakeholders, timing, and strategies for successful adoption of state-level appliance standards.

## *Technical Assistance and Resource Centers*

- **Provided technical assistance to a variety of stakeholders related to SEM:** NEEP shared SEM resources and facilitated further discussions with US DOE, program administrators, and other stakeholders across the region. One example of this is a discussion we hosted on the opportunities associated with SEM with the Delaware Division of Energy and Climate. This information will inform development of a new efficiency program offering – Energy Efficiency Industrial (E2I).
- **Attended an introductory workshop on US DOE's new SEM resource, 50001 Ready**: NEEP will work with regional partners to utilize the resources available through this program, making promotion and adoption of SEM more accessible to potential stakeholders.
- **Maintained and updated NEEP's web-based HEMS resource center, including the smart energy home products list**: This included updating the online products list of smart energy home devices. Now at 545 products, this online list is generating increased interest from regional stakeholders as a reference for smart home products and devices.
- **Presented to the Connecticut Energy Efficiency Board on the topic of smart energy homes:** In addition to numerous informal discussions of smart energy homes with Connecticut program administrators, in June, NEEP was invited to present strategies on the smart energy home to the Connecticut Energy Efficiency Board (EEB) at their annual retreat. This presentation was catered to help Connecticut stakeholders understand the short- and longer-term opportunities in the smart energy home.
- **Completed the Mid-Atlantic Technical Reference Manual (TRM) Version 7.5:** The major change to this newest version is the inclusion of updated tables for LED lighting.
- **Provided EM&V technical assistance to the region:** NEEP hosted the Cost Effectiveness Testing for the Next Generation Energy Efficiency Workshop on June 15, 2017 in Hartford, Conn.
- **Assisted Rhode Island stakeholders in advancing state appliance standards:** In early 2017, the Rhode Island legislature introduced an appliance standards bill based on ASAP's 2017 model standards package. NEEP provided technical assistance to Rhode Island stakeholders to aide in their understanding of the standards, including preparing a fact sheet to provide information on the potential impacts of the bill. Ultimately, the 2017 bill was not passed, with the focus then shifting to planning for successful passage of a bill in 2018. NEEP worked closely with state stakeholders – including the Office of Energy Resources (OER), National Grid, members of the state efficiency advisory board, and energy organizations – to create more robust and compelling resources focused on the 2018 state standards opportunity.

## *Regional Market Transformation Strategies*

- **Advanced the conversation on smart water heaters:** To advance the strategies outlined in NEEP's 2016 Smart Energy Homes report, we hosted two topical calls for interested stakeholders focused on the existing activity for smart retrofit and new water heaters, as well as the range of energy benefits from efficiency, demand response, and integration with distributed energy resources. With engagement from water heater manufacturers, researchers, program administrators, and program implementers, the discussion evolved to determine some near-

term needs in the smart water heating space, including additional studies. NEEP continued these conversations through one-on-one meetings with water heater manufacturers to break down barriers for integrating connectivity into product offerings and inclusion of a targeted smart water heating discussion at the December Smart Energy Homes virtual workshop.

- **Delivered contractor trainings on the smart energy home:** A key market transformation opportunity in the HEMS space involves connecting home performance and the smart home. In 2017, NEEP worked with various regional and national organizations – including the Home Performance Coalition, Efficiency First, and local efforts in Mass., Conn., N.Y., and Md. – to plan, coordinate, and deliver contractor trainings. In November, NEEP delivered a training via webinar to a group of N.Y. home performance contractors, and, in December, we delivered an in-person training for Conn. home performance, HVAC, and solar contractors in coordination with EnergizeCT, the Conn. Utilities, and the CT Green Bank.
- **Conducted a survey to identify stakeholders' key barriers to and opportunities for market transformation in commercial efficiency:** As part of NEEP's research on commercial efficiency, we conducted a survey of market actors to identify the primary barriers to and opportunities for deep retrofits. Survey questions were developed through discussion with industry stakeholders, and the survey was shared with a wide range of stakeholders including program administrators, ESCOs, other service providers, financiers, and more.
- **Participated in development of national EM&V guidance and protocol development**: This included providing guidance on the ENERGY STAR Retail Products Platform, the Uniform Methods Protocols, National Standards Practice Manual, National Energy Efficiency Registry, Lawrence Berkley National Laboratory (LBNL) National Stakeholder Collaborative, and the Future Grid Coalition.
- **NEEP and the region weighed in on the value of federal appliance standards**: There were several opportunities throughout the year to submit comment letters to US DOE on facets of the appliance standards program. NEEP worked with our Appliance Standards Working Group to develop letters of support in response to a request for information on opportunities to minimize regulatory burden from the US DOE. Additionally, NEEP participated in and co-signed letters for several technology-specific procedures, including information collection extension, room AC test procedure, refrigerator and freezer test procedure, the direct final rule for central ACs and heat pumps (with NEEP's independent letter here), and the general service lighting request for information.
- **Contributed to the ENERGY STAR specification development process:** NEEP participated in the ENERGY STAR specification process for products of interest for appliance standards. Stronger ENERGY STAR specifications in the near-term will advance the markets for high efficiency technologies, ultimately resulting in stronger future appliance standards. In 2017, this included submitting comment letters on: uninterruptable power supplies (UPS), televisions, Most Efficient program, clothes washers, clothes dryers, and contributing to joint comments for servers.
- **Supported market transformation through the Retail Products Platform (RPP):** NEEP continued participation with the RPP and co-convened the Products Tasks Force, which focused on selecting appropriate products for this program into the future and appropriately pushing specifications to grow the markets across several appliance and electronics technologies.

## Promote Resilient, High Performance Buildings & Communities

***Provide guidance and technical assistance to support the development of resilient, healthy, high-performance and zero energy buildings and communities at the local and state level.***

### *Events & Stakeholder Engagement*

- **Presented at numerous regional and national events:** NEEP presented at different events to educate stakeholders, share best practices, and disseminate resources. These events include:
    - Northern New England Facilities Masters Conference: Topics included the Regional Operations and Maintenance Guide and NE-CHPS.
    - NESEA's Zero Energy Schools Workshop at BuildingEnergy Boston: Topics included a regional overview of zero energy schools, planning for zero energy, and cases studies.
    - Energize Connecticut Center: This Connecticut-specific event focused on the importance of proper operations and maintenance (O&M) and the Northeast Collaborative for High Performance Schools (NE-CHPS) Criteria.
    - National Grid Municipal Energy Summit: This event was held for all municipal customers of National Grid in Massachusetts and the presentation focused on O&M and NE-CHPS.
    - Metropolitan Area Planning Council (MAPC) Clean Energy Forum: This event facilitated a discussion about barriers and best practices for municipal leaders to achieve zero energy performance.
    - Massachusetts Facilities Administrators Association (MFAA) Conference: NEEP staff helped organize the conference's energy track, and disseminated NEEP resources at a session on technology.
- **Hosted a school tour on National Healthy Schools Day:** NEEP organized a tour of the Francis T. Bresnahan Elementary School, a high performance school in Newburyport, Mass. that achieved CHPS Verified Leader status and serves as a great model for a healthy, energy efficient building. The tour was led by the school's facility director and architect. Tours present an opportunity to learn about the characteristics that define a high performance school and why they are important in a community's decision to embrace sustainability. The tour also highlighted the school's unique feature of bringing in community sponsorship to help fund the project.
- **Convened the Regional High Performance Public Buildings Leadership Group:** NEEP organized four webinars and one in-person meeting for regional public building stakeholders throughout the year. The webinars covered topics including streamlining access to utility data, benchmarking and operations and maintenance, a community exemplar, and LED street lighting.
- **Served in leadership roles on national boards and working groups to advance energy efficiency:** NEEP's Director of Buildings & Community Solutions, Carolyn Sarno Goldthwaite,

continued to serve in leadership roles as the Chair of the Collaborative for High Performance Schools' Board of Directors and the Co-Chair of the SEE Action Existing Commercial Buildings Working Group, a joint initiative of US DOE and US EPA. This effort co-led the development of the 2020 Leadership Agenda, which defines the baseline actions states and communities can take to demonstrate national energy efficiency leadership. Ms. Sarno Goldthwaite also served on the Board of Direction of the Commercial Workforce Credentialing Council (CWCC) and on the Massachusetts Department of Energy Resources Zero Energy Council.

- **Hosted NEEP's annual in-person Regional Building Codes Meeting:** NEEP hosted the meeting on December 14 in Hartford, Conn. The event was well attended in-person and via webinar with approximately 65 individuals representing the majority of the NEEP region. Topics included stretch codes, state updates, studies and resources from US DOE and PNNL, and an introduction to NEEP's new zero energy codes market transformation report. Participants expressed interest in pursuing advanced code compliance strategies and tools to achieve zero energy buildings.
- **Conducted a quarterly Building Energy Codes Leadership Group webinar:** In October 2017, 30 regional stakeholders representing state energy code and energy offices, non-governmental organizations (NGOs), US DOE, architects, and engineers joined the webinar, which covered: an update of current state energy code adoptions; regional stretch codes; code adoptions; and an overview of the 2018 International Energy Conservation Code (IECC).
- **Presented at the Regional Planning Commission Zero Energy Forum:** NEEP spoke at a regional symposium titled "What Would 100% Renewable Energy Look Like in the Pioneer Valley?" in October. The forum – hosted by the Western, Mass. Pioneer Valley Planning Commission – brought together regional mayors, city council members, and influential stakeholders to explore the possibility of Western Mass. achieving zero energy.
- **Presented at the Keystone Energy Efficiency Alliance (KEEA) Annual Conference:** NEEP joined code experts and environmental advocates on a panel at the seventh annual KEEA Conference. Discussion focused on Pennsylvania's inactive code adoption process – the state is three code cycles behind national codes – and deficiencies in state code compliance. Panelists explored the challenges and opportunities of working within a politically constrained state to advance energy efficiency and code adoption. Participation in the conference resulted in invitations to further explore advancing code adoption on a municipal level through stretch codes and zoning.
- **Presented to New Hampshire home builders:** NEEP presented to the New Hampshire Home Builders Southwest Association on building codes and the role builders can play to ensure efficiency and comfort for home buyers. One dozen builders joined NEEP staff to learn about the future of energy codes and market transformation toward zero energy buildings. Regional representatives from the National Association of Home Builders (NAHB) were in attendance.
- **Presented at Greenbuild Boston:** NEEP participated in a lighting-round presentation at the USGBC Greenbuild Codes Summit in November 2017. We introduced our building energy codes initiatives and invited attendees to partner with NEEP to advance energy efficiency in the region and beyond.
- **Presented on the legal implications of zero energy buildings and codes:** NEEP was invited to present to Defense Resources Inc. (DRI) on zero energy, water, and waste at their annual conference in Las Vegas, Nev. in March. Approximately 150 attorneys heard from NEEP staff on

emerging zero energy, water, and waste construction methodologies, codes, and policies, and the legal implications of these emerging topics for their clients.

- **Presented on a panel on energy codes and zero energy:** In March, NEEP headed a panel titled, "Energy Codes and Zero Energy Buildings: Strategies for Today, Tomorrow, and Beyond" at the 2017 NESEA Conference in Boston, Mass. As the session organizer and moderator, NEEP convened energy code thought leaders from our region (Massachusetts DOER and Rhode Island OER) and beyond (Building Codes Assistance Project [BCAP], California) in order to discuss the strategies being put in place to move from present energy codes to zero energy codes. We identified connections while guiding the audience discussion, and also provided the perspective of other states in the region – most notably New York.
- **Assisted with planning for the National Energy Codes Conference:** NEEP and the other regional energy efficiency organizations (REEOs) – along with US DOE, PNNL, and BCAP – assisted in the coordination and agenda setting for the 2017 US DOE Energy Codes Conference, which took place in Pittsburgh, Penn. from July 17-20. The annual gathering of code advocates covers code development, implementation, compliance, and policy. Specifically, NEEP coordinated and spoke on a panel titled "Scaling up Codes Toward Multifamily Energy Efficiency," drawing from a joint REEO multifamily report published last year.
- **Provided demonstrations of the Home Energy Labeling Information Exchange (HELIX) across the region:** NEEP hosted state-specific teleconferences for stakeholders in R.I., Conn., N.Y., Me., N.H., Vt., and Mass. to engage state energy offices, utilities, and other key stakeholders on the functionality of HELIX. This provided an opportunity for NEEP to communicate needs in each state to gear up for beta testing of the HELIX database, as well as an opportunity for states to ask questions and give insight into the data available to import into the database.
- **Attended the 2017 NASEO Annual Meeting:** NEEP presented on the HELIX project during a home energy labeling panel at the event that highlighted synergistic activities and provided context about the importance of home energy labeling information in the real estate market. This provided an opportunity to educate state energy offices and other stakeholders about how HELIX relates to other concurrent projects, such as Energy Metrics to Promote Residential Energy Scorecards in States (EMPRESS), a State Energy Office-led project supported by funding from the US State Energy Program of the US DOE and private-sector partners.
- **Held quarterly HELIX Advisory Committee meetings**: NEEP hosts quarterly Advisory Committee meetings to engage stakeholders in each state on the progress of the project. This enabled NEEP and our project partners to determine which states have data available to import into HELIX and which states to engage first. The committee provides feedback on essential decisions the HELIX team must make, such as which types of data they would be interested in importing into HELIX for incorporation into the Multiple Listing Service (MLS). We can then ensure that a database is built that will be relevant and useful to all states in the NEEP region.
- **Held a HELIX Virtual Summit on November 15:** The HELIX summit is an annual event to engage stakeholders and inform them about the progress of the project. The 2017 summit was hosted virtually to encourage engagement of stakeholders in other regions of the country that may not be able to join in person, and to require less of a time commitment for participants.

- **Hosted a webinar on streamlining access to utility data:** In February, NEEP collaborated with US DOE and US EPA to host a webinar to share best practices and resources that make it easier for customers to access their utility data. The webinar highlighted NEEP's new report, Public Sector Building Energy Benchmarking - Utility Data Access Options and Opportunities, US DOE's accelerator, and US EPA's experiences with integrating Portfolio Manager with utilities in the region. Increasing capabilities to streamline access to utility data enables buildings to be benchmarked simply and accurately.

## *Research, Analysis, Reports, and Case Studies*

- **Researched and developed content for a new resource – the Community Action Planning for Energy Efficiency (CAPEE) platform:** Launched in 2017, CAPEE, is an interactive online platform designed to help municipalities reach their energy and carbon reduction goals. Thus far, progress includes website design, fact sheet development, and formation of a community dashboard. This new tool, which is being informed by regional stakeholders, will provide users with a clear understanding of actions that can be taken at the local level to improve energy performance.
- **Developed an exemplar on LED street lighting:** In partnership with the Delaware Valley Regional Planning Commission (DVRPC), NEEP published an exemplar on LED street lighting, which provides lessons learned from this program and details about how this program was set up, to serve as a model for others going forward.
- **Created an exemplar on the Town of Wayland's energy improvement initiatives:** NEEP collaborated with the Town of Wayland, Mass. to produce a community-level exemplar highlighting the various energy improvement projects the town has undertaken. Projects include LED street light conversions, upgrading building equipment, and installing solar photovoltaics (PVs). Wayland's successful approach is attributable to the formation of a dedicated energy committee and their ability to seek out key partners. The exemplar shares the success of a small community and how their approach can be replicated.
- **Commenced the Connecticut Construction Best Practices study:** Utilizing collection methodology from the US DOE and PNNL, NEEP and Tunxis Community College kicked off the Connecticut Construction Best Practices study. The study will identify the impact of code implementation on energy savings and carbon emissions reductions. Three lead data collectors, NEEP, and TxCC staff have been trained, and the college is beginning to seek the participation of home builders throughout the sampling areas. Similar energy code field studies have been conducted in a dozen other states.
- **Published a new building energy codes report:** The report, Building Energy Codes for a Carbon Constrained Era: A Toolkit of Strategies and Examples, published in December 2017, outlines strategies that can better position states in the Northeast and Mid-Atlantic region to advance building energy code development and adoption to enact zero energy buildings codes within the next 15 to 25 years. The report proposes a new impactful approach toward transforming energy policy, code adoption and compliance, and carbon reduction.
- **Completed the building energy rater variability study:** NEEP and five other REEOs completed energy rater variability field studies and reports for the US DOE. Utilizing a consistant study

methodolgy, the same residental single family home was tested in Conecticut and New York by five independant raters to determine if there is varaibility from rater to rater.

- **Launched a regional home energy rating cost study:** To better understand the home energy rating market and clearly define a rating, NEEP commenced a regional home energy rating cost study. There is a wide spectrum of costs for home energy ratings; for example, in Connecticut, a rating costs $975 to $1,850 for the same rating service for the same home. In New York, there is a smaller range in the costs, but a variance in the data delivered by each rating. The study will assist regional and national rating organizations to offer more consistency for energy rating services.
- **Conducted research on building energy codes topics including:**
  - 2015 IECC versus 2018 IECC, and ASHRAE 90.1 2013 versus ASHRAE 90.1 2016 – changes and administration of codes;
  - Passive House Standards – US standard versus international standard;
  - 2018 IECC Energy Rating Index (ERI) – changes and policy implications; and
  - Zero energy buildings – first costs and financing.
- **Developed the governance and operations policy/structure for HELIX:** The HELIX governance team developed the governance and operational policy structure for HELIX for the remainder of the US DOE-funded grant period, as well as an initial structure for the period following DOE funding. This helps determine the database access structure and who the owners may be within the structure. This guidance provides a framework to work within for the rest of the project period and a long-term goal to work toward for the ultimate HELIX structure.
- **Tracked regional building energy benchmarking efforts:** NEEP updated its brief, Building Energy Benchmarking and Disclosure Policies in the Northeast and Mid-Atlantic, which provides an overview of benchmarking ordinances throughout the region. The document contains information on the location of ordinances enacted, and more specific information related to square footage thresholds, compliance guidelines, links to benchmarking reports, and more. This resource provides interested stakeholders with a snapshot of regional benchmarking efforts and their intended impacts.
- **Conducted research and analysis for development of a benchmarking dashboard:** Upon completion, NEEP's benchmarking dashboard will become part of the CAPEE project. The purpose of the dashboard is to measure the impact that benchmarking ordinances are having in the region. It will provide details on the benefits that cities and states are realizing by enacting these ordinances, including reduced carbon emissions and energy consumption. NEEP is currently collecting information and working on the functionality for the online dashboard.
- **Created an exemplar on Connecticut's Home Energy Score (HES) program:** This exemplar highlights the success of the state's HES program in achieving over 25,000 scores and best practices for other states to learn from and support implementation of HES in their residential energy efficiency program portfolios. The exemplar also highlights the remaining opportunity for the state with HELIX with the inclusion of opt-in/out language in the program and for deep home energy retrofits. This places HELIX in the bigger picture of residential opportunities for energy savings, and will be a part of the Home Energy Information Accelerator through US DOE.

It will also be a resource and case study that other states can look to for information about implementing similar programs, and best practices to do so.

### *Technical Assistance and Resource Centers*

- **Engaged with stakeholders from towns throughout the region**: NEEP provided technical assistance to a number of cities and towns in the region including:
    - Hanover, N.H.: NEEP provided guidance and resources to help the town's Energy Committee establish energy reduction plans and prioritize key first steps that should be considered in these plans. We remain engaged with committee members and the town is also represented on NEEP's CAPEE task force.
    - Belmont, Mass.: Throughout the year, NEEP engaged with the town's Building Committee to discuss the construction of a new school targeting zero energy performance. NEEP provided the town with case studies, presentations, and other materials to help the committee establish project goals and select an appropriate project team through an RFP process.
    - Amherst, Mass.: NEEP provided technical assistance to Amherst green buildings advocates and town officials to provide technical assistance on the costs and operation of zero energy buildings. Amherst is building new municipal buildings including a library, school, police station, EMS facility, and fire stations.
- **Provided technical assistance to the state of Rhode Island:** NEEP collaborated with RI OER to advance the state's zero energy goals. A workshop was held in September to kick off these efforts, and NEEP assisted by helping to prioritize next steps to create a path forward, supporting the residential, commercial, and public buildings subgroups throughout the year.
- **Provided technical assistance to Rhode Island in the development of stretch codes:** In partnership with the RI OER, National Grid, and other stakeholders, NEEP contributed to both the residential and commercial state stretch codes through committee participation and technical assistance. Upon NEEP's recommendation, the state utilized the US DOE's Zero Energy Ready Homes Program (ZERH) as the basis of the residential code. Using the ZERH program to inform the stretch code is progressive and unique in the stretch code space. The residential code supports the state's zero energy roadmap to advance its zero energy and greenhouse emission reduction goals. The commercial code is based on the 2015 International Green Construction Code (IGCC). The stretch code public comment period is now closed, and both stretch codes are expected to be publicly available in the spring of 2018.
- **Provided sought-after building energy codes technical assistance:** NEEP provided ongoing technical assistance to states, municipalities, collaboratives, and other energy advocate organizations within the region on codes and code-related topics such as zero energy buildings, the Energy Rating Index, Zero Energy Potential Index (zEPI), and code attribution. Highlights include providing technical assistance to:
    - The state of Pennsylvania; the National Governors Association lead-by-example Pennsylvania state retreat; the city of Pittsburgh; and the Pennsylvania Green Building Alliance. NEEP also continued support for the Pennsylvania Code Compliance Collaborative, and provided technical guidance to the Central Pennsylvania chapter of

the U.S. Green Building Council (USGBC) to encourage a greater focus on supporting and updating the state's energy code.

- The state of Maryland as they begin adoption of the 2018 codes and look to address builder and home buyers concerns.
- The state of New Hampshire in the adoption of codes and code-related legislation.
- The state of Delaware in understanding the differences between the 2015 and 2018 energy codes and in considering next steps toward statewide zero energy building codes.
- The state of Connecticut in their adoption of the 2015 codes, with particular attention to the adoption of the energy code without amendments.
- The state of New York, including providing NYSERDA with strategies for measuring energy and carbon savings from code compliance.
- The Northeast Collaborative for High Performance Schools (NE CHPS) in updating the program's energy efficiency standards and in utilizing the zEPI scale.

- **Maintained our national network of building energy codes partners:** NEEP continued to play an active role in the National Code Collaborative, as well as provide monthly updates to groups assembled by the Responsible Energy Codes Alliance (RECA) and the National Association of State Energy Officials (NASEO) in order to coordinate energy code support activities across the country. We also continued to guide the efforts of the Northeast HERS Alliance in informing their network of energy professionals across our region by identifying resources to promote increased code compliance.
- **Reviewed and added new individuals to the HELIX stakeholder list that receives general project updates:** By consistently reviewing and adding to this list, we are able to increase our engagement and outreach efforts, further spreading information about the project.
- **Created tangible HELIX resources for professionals:** NEEP developed a one-page resource for real estate professionals to highlight how HELIX will make it easier to incorporate energy information into a listing by automating the process. This resource can be used at events and trainings for real estate professionals and provides an easy-to-understand glimpse into the relevance of HELIX to their work.
- **Developed a course curriculum for real estate professionals**: One objective of the HELIX project is to educate and provide outreach to the real estate community to help professionals better understand the relevance of HELIX and the importance of energy information in the real estate market. The course will allow professions to earn credits toward their licenses and help create energy efficiency valuation in the market.
- **Provided technical assistance on building data aggregation**: NEEP submitted written comment letters to the New York Public Service Commission (NY PSC) on the Distribution System Implementation Plans (first, second) and to the Connecticut Department of Energy and Environmental Protection (CT DEEP, third), educating stakeholders about whole building data aggregation thresholds. The N.Y. letters encouraged the state to follow the best practices of other jurisdictions in the region and beyond that have implemented a low threshold to

encourage benchmarking of as many buildings as possible. This information helped inform the N.Y. commission, which released an order instructing the utilities to consider a 4/50 standard.

- **Provided technical guidance on Rhode Island's residential labeling efforts:** NEEP continued to guide the RI OER and the working groups they have convened to implement building energy rating across their entire building stock. For residential buildings, NEEP provided updates on synergistic efforts such as HELIX at the group's quarterly meeting, and provided technical assistance as the state prepares to pilot US DOE's Home Energy Score via National Grid's home performance program.
- **Provided technical assistance to various communities in the region:**
    - Providence, R.I.: NEEP provided assistance to support the development of the city's benchmarking ordinance. This included a presentation, fact sheets, and additional PowerPoint slides that outline the benefits and business case for enacting an ordinance. Once enacted, benchmarking policies help cities and private building owners track and manage their energy usage.
    - New York City: NEEP formed a new relationship with the NYC Mayor's Office of Sustainability, which is interested in catalyzing energy savings in the underserved small multifamily market to pair with its transparency ordinance for large commercial buildings. We provided technical guidance on the various rating programs available, as well as different strategies for introducing rating programs or policies at the time of listing of properties for sale.

## *Regional Market Transformation Strategies*

- **Updated the Northeast Collaborative for High Performance Schools Criteria (NE-CHPS):** NEEP engaged stakeholders to update NE-CHPS and transform the schools market to ensure that all communities are providing healthy, energy efficient learning environments for students. Updates have been made to the zEPI scale, with additional updates slated for early 2018, including to the energy documentation and acoustics sections.
- **Conducted a quarterly Building Energy Codes Leadership Group webinar:** Regional stakeholders representing state energy code and energy offices, NGOs, US DOE, architects, and engineers joined the March 2017 webinar, which provided an overview of NEEP's building energy codes market transformation strategies report to advance building energy code development and adoption to enact zero energy buildings codes within the next 15 to 25 years.
- **Began beta testing a functioning version of HELIX:** This effort launched with the state of Vermont to test the functionality of importing and exporting data to and from HELIX. This will ensure that HELIX functions for the different types of building energy labels it is intended to receive. The beta testing effort will expand to other states in early 2018.
- **Updated the regional Building Energy Benchmarking Policy Inventory**: NEEP maintains a document that catalogues all of the benchmarking policies that have been enacted throughout the region. In 2017, the document was updated and published online to include the recent adoption of benchmarking policies in both Portland and South Portland, Maine. The purpose of this brief is to provide a snapshot of the basics of benchmarking and also more detailed information on the policies that have been enacted in the NEEP region.

## Share Best Practices to Advance Strategic Electrification & Next Generation Energy Efficiency

***Support the region's move to strategic electrification of buildings and transportation – backing out of carbon-based fuels, and pairing deep energy efficiency with distributed renewable power, energy storage and demand response.***

### *Events & Stakeholder Engagement*

- **Formed a Strategic Electrification Leadership Committee:** This committee, comprised of approximately 30 stakeholders, helped inform the development of both the Strategic Electrification Regional Assessment Report as well as a regional strategic electrification action plan in development. The committee includes a broad range of stakeholders including state energy policymakers, NGOs, consumer advocates, utilities, manufacturers, and grid operators, among others. Leadership Committee materials are housed on NEEP's website.
- **Facilitated Strategic Electrification Leadership Committee meetings:** The Leadership Committee provided valuable guidance related to the project and key deliverables, and will be an important vehicle to move forward the forthcoming Strategic Electrification Action Plan. The committee convened four times in 2017:
    - February 1: The committee gathered in-person to be introduced to the project and provide input to an RFP for contractor services for development of the assessment report and action plan.
    - March 29: The committee reviewed the selected contractor's draft work plan, and provided initial feedback on the planning for the in-person Regional Strategic Electrification Summit.
    - May 31: The committee gathered in-person to discuss the consultant's draft assessment report as well as the program and agenda for the Summit.
    - July 26: The committee gathered to discuss the draft assessment report as well as takeaways from the June Summit.
- **Hosted the Regional Strategic Electrification Summit on June 29 at Schneider Electric's Campus in Andover, Mass**.: The Summit's morning session featured a keynote presentation from David Cash of the University of Massachusetts McCormack Graduate School of Policy and Global Studies, the consultant's presentation on their regional assessment findings, and a "reaction" panel with several stakeholder groups represented. The afternoon pivoted to a discussion of necessary actions that the region should prioritize to advance strategic electrification.
- **Served as facilitator for a session on strategic electrification at DOE's Better Buildings Summit:** NEEP's Director of Technology & Market Solutions, Dave Lis, led the ASHP breakout group in discussion about their role in strategic electrification.

- **Presented an overview of NEEP's strategic electrification project to the Renewable Thermal Alliance (RTA) during their in-person meeting:** The meeting, hosted on May 25 in Brooklyn, N.Y., focused on developing stronger markets for renewable thermal technologies including air-source and ground-source heat pumps, solar thermal, and biomass.
- **Presented an overview of NEEP's Strategic Electrification project to NEEP's High Performance Buildings and Communities Working Group:** The presentation took place at the working group's in-person meeting on August 29, and focused on opportunities for municipalities and communities to advance strategic electrification.
- **Published two blogs focused on strategic electrification:** Driving Electrification was published on July 19, and was republished by the Zero Energy Project, and A Regional Approach to Deep Decarbonization was published on September 20.
- **Convened three meetings of the regional Air-Source Heat Pump (ASHP) Working Group**: The ASHP Working Group, whose objective is to effectively implement the strategies outlined in NEEP's 2016 ASHP Market Strategies Report, met by webinar three times throughout 2017, with roughly 50-75 stakeholder in attendance at each.
- **Hosted the Regional Air-Source Heat Pump Market Transformation Workshop from June 27-28 in Andover, Mass.:** The workshop gathered over 90 key stakeholders from across the ASHP market – including manufacturers, program administrators, installers, technology experts, state/local policy makers, and others – to coordinate effective implementation of regional market transformation strategies. Attendees interacted through a diverse series of sessions exploring topics such as in-field performance, integrated controls, installer education, the cold-climate ASHP Specification, and others.
- **Provided thought leadership on ASHPs at regional events:** One of the recommended strategies from NEEP's ASHP report is to educate a wide range of industry stakeholders on ASHPs and on our cold climate specification. To advance this strategy, in 2017 NEEP participated in the following engagements:
    - Contributed input to the February 23 Bringing Renewable Thermal Solutions to New England event.
    - Contributed input to the February 27 Northeast Renewable Thermal Summit.
    - Submitted comments ahead of a March 16 DOE meeting, "Smart Tools for Improving Installed Performance of Residential and Small Commercial HVAC Systems," to highlight the need for tools to verify in-field performance of ASHPs.
    - Contributed input to NYSERDA's ASHP Advisory Group on March 24.
    - Attended the Renewable Thermal Alliance (RTA) in-person meeting on May 25 to share NEEP updates with renewable thermal stakeholders. The RTA is focused on driving market adoption of a set of renewable thermal technologies which include air-source and ground-source heat pumps as well as solar thermal and biomass.
    - Participated on a panel on beneficial electrification as part of Rhode Island's Power Sector Transformation Initiative on September 25 to provide comment on their framework document. NEEP encouraged R.I. to prioritize the thermal-sector aspects of

electrification through the enhanced promotion of ASHPs, including cases where customers would be switching heating fuels in the process.

## *Technical Assistance and Resource Centers*

- **Maintained our strategic electrification webpage:** NEEP regularly updated the webpage with current project content, including the assessment report, advisory committee meeting materials, and the agenda and presentations from the annual Summit.
- **Provided technical assistance for ASHPs to regional program administrators**: NEEP provided direct input to program planners in Massachusetts, Rhode Island, Connecticut, and New York.

## *Regional Market Transformation Strategies*

- **Published two new guides for ASHP installers in February:** The guides, A Guide to Sizing & Selecting ASHPs in Cold Climates and A Guide to Installing ASHPs in Cold Climates, provide practical, best practice guidance related to sizing, selecting, and installing ASHPs in cold climates. ASHP system performance, including energy efficiency of the systems, as well as customer comfort can be negatively impacted by poor sizing, system selection, and installation. The guides were developed to assist installers in sizing and selecting ASHPs for cold climate applications, while maintaining high efficiency, performance, and customer satisfaction. Dozens of external stakeholders contributed to the guides, including close partnership with a team at US DOE's Buildings Technologies Office. NEEP hosted a public webinar on March 28 to present the guides with 140 stakeholders in attendance. NEEP also held numerous one-on-one discussions and attended the CEE Summer Program Meeting in Boston on June 1 to share the guide with program administrators and other stakeholders. The Sizing & Selecting guide was downloaded 827 times, and the Installation guide was downloaded 740 times throughout 2017.

## Advanced Efficiency Leadership Network

***A regional center for learning and sharing best practices and a dashboard of state and local progress on energy efficiency and integrated clean energy solutions. Bringing together thought leaders on policy, programs and market-based solutions, the Advanced Efficiency Leadership Network (AELN) is working to drive progress towards an energy-efficient, resilient, and accessible low-carbon economy.***

### *Events & Stakeholder Engagement*

- **Convened a call with ISO New England to discuss collection of data for the Regional Energy Efficiency Database (REED):** ISO New England (ISO-NE) will be contributing New England electric utility program data for inclusion in the next update to REED. The group discussed ways to ensure an efficient data collection process in 2018.
- **Presented at two national ACEEE conferences:** NEEP presented on regional policy advancements at two conferences with other REEOs – once at the Market Transformation Symposium in Washington D.C., and again in the fall at the Energy Efficiency as a Resource Conference in Phoenix, Ariz.
- **Participated in Northeast Clean Energy Council (NECEC) working groups**: Efforts NEEP participated in include the energy storage, grid modernization, policy, and energy efficiency working groups, which provided opportunities for NECEC and NEEP to collaborate to advance public policy in New England. NEEP provided expertise to NECEC on various energy efficiency topics.
- **Attended a technical hearing on Connecticut's Comprehensive Energy Strategy:** At the technical hearing, NEEP was able to interact with local stakeholders and gauge their response to the strategies and goals outlined in the strategy, and thus be better prepared to provide written comments to the state of Connecticut on their proposed strategy.
- **Attended technical sessions in R.I. for the Power Sector Transformation Initiative:** NEEP attended sessions focused on the utility business model, distributed system planning, and beneficial electrification. This provided an opportunity for a deeper dive in the regulatory proceeding and insights into the commission and stakeholder stance on the different work streams. NEEP provided comment letters on the different work streams – electrification, the utility business model and AMI, and distribution system planning – which were taken into consideration during the development of the Phase 1 report for the Governor.
- **Attended the 2017 NASEO Annual Meeting:** NEEP attended the event and participated in several sessions, engaging with regional state energy offices on state-level activities to gain a greater understanding of how the NEEP region compares to the rest of the nation, and develop an understanding of what other regions are tackling and challenges they face. This provided an opportunity to learn from others and provide NEEP resources to various stakeholders.

## *Research, Analysis, Reports, and Case Studies*

- **Published the spring 2017 Energy Efficiency Snapshot:** This report provides an overview of energy efficiency by the numbers for the NEEP region, using the most recently published REED data, as well as drawing from other sources to examine policies and targets.
- **Completed data collection of 2016 program year data and documents for the REED update**: REED currently includes program-level data for ten states: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.
- **Started the quality control/quality assurance process on submitted 2016 program data for REED:** This process ensures the data submitted aligns with annual reports submitted by each utility. Any discrepancies are discussed with the host state. This process will be completed in January 2018 when the data is published.
- **Researched metrics for energy efficiency in buildings and for carbon reduction to expand REED:** NEEP began exploring how REED can be used as a tool to measure success of our other projects and initiatives. This will further REED's purpose and scope and enable NEEP to incorporate new data points into the database.
- **Published the 2017 Regional Roundup:** This annual publication provides insights into the latest policy developments, as well as updated REED data. The report includes links to external resources such as Public Utility Commission orders, policy documents, listserv information, as well as utility plans and programs.
- **Began work on the Advanced Efficiency Leadership progress report**: NEEP completed a final draft of the report and developed a dissemination plan; it will be published in the first quarter of 2018. This report replaces NEEP's annual Regional Roundup and provides a high-level view of state progress in implementing strategies in advanced energy efficiency to achieve carbon emissions reductions.
- **Published a bi-monthly policy tracker and maintained the online policy tracking tool:** The tracker is used to highlight the latest trends in legislative and regulatory proceedings. This effort puts a regional pulse on policy; for instance, the July policy tracker provided a spotlight on energy storage and discussed the movement in this sector throughout the region. Trackers can be found at the following links for February, March, May, July, September, and November.

## *Technical Assistance and Resource Centers*

- **Published a quarterly *REED Rendering*:** This is a series of blogs where NEEP brings stakeholder attention to interesting trends that can be found in REED data and the stories behind those trends. Blogs can be found at the following links for: Q1, Q2, Q3, and Q4.
- **The Regional Energy Efficiency Database (REED) was populated with 2016 data:** The databased now includes energy efficiency data for ten states – Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.
- **Provided technical assistance on REED:** NEEP responded to requests for background information regarding the contents of and sources for REED, meeting with staff of Greentech

Media, Optimal Energy, and the Energy Information Administration (EIA). We also provided insights from REED to NYSERDA that contributed to development of metrics revisions.

- **Provided technical assistance to the N.H. Public Utilities Commission (PUC):** NEEP assisted the PUC by providing information on non-energy impacts and how they are valued in cost-effectiveness testing throughout the country. In addition, NEEP presented this research to the Energy Efficiency Resource Standard (EERS) Committee of the PUC Energy Efficiency & Sustainable Energy (EESE) Board. N.H. requested this technical assistance after a presentation in February to the PUC on non-energy impacts.
- **Provided technical assistance to the R.I. Office of Energy Resources:** NEEP produced a report advising our Rhode Island partners on how to improve the state's ACEEE State Scorecard ranking in 2018, identifying areas for improvement and providing a recommendation for increasing and/or maintaining high scores.

## *Regional Market Transformation Strategies*

- **Participated on a panel on beneficial electrification at a regional event:** NEEP participated on a panel as part of Rhode Island's Power Sector Transformation Initiative to provide comment on the initiative's framework document. We encouraged the state to prioritize the thermal sector aspects of electrification through the enhanced promotion of ASHPs, including cases where customers would be switching heating fuels in the process.