NEEP 2021 Quarterly Report
Quarter One

Equitable Home and Building Decarbonization Leadership Network

Summit Series 2021: Resilient Low-Carbon Community Pathways

Mission: Provide a public program of opportunities and resources that inspire, inform, drive, and support community leadership and collaboration across the region to accelerate resilient, healthy, affordable, low-carbon homes and buildings that serve especially the most vulnerable.

Equitable Home and Building Decarbonization Leadership Network
Long-Term Market Transformation Goals

By 2030:

- All Northeast states adopt 2050 carbon-neutral mandates for all homes and buildings with zero energy/carbon codes for new and renovated homes and buildings to begin by 2032.
- All Northeast states engage LMI communities to implement equitable economic development programs that improve the efficiency, resiliency, health, safety, and long-term affordability of their homes and community buildings.

Project Narrative:

Due to continued COVID-19 restrictions, the *Summit Series 2021: Resilient Low-Carbon Community Pathways*, will be a virtual event. Early planning included fundraising, and as of Q1 we had secured six event sponsors – the Barr Foundation, the New York State Energy Research and Development Authority (NYSERDA), the Connecticut Department of Energy and Environmental Protection (CT DEEP), E4TheFuture, Mitsubishi, and Daikin.

AS NEEP celebrates 25 years of partnerships to accelerate building energy efficiency across the region, the Summit Series will examine how communities can effectively address:

- Climate Stabilization and Resiliency – Prepare homes, buildings, and institutions to reduce carbon emissions and provide public safety, protection, and essential services during and following extreme weather, flooding, and other climate-change-related hazards.
- Affordability and Equity – Engage low-income communities, listen, and support outcomes that develop and advance affordable, low-carbon, resilient housing and building solutions with quality local jobs that reduce energy burdens and improve the quality of life for economically disadvantaged populations.

- Economic Opportunity and Recovery from COVID-19 – Increase workforce capacities, business opportunities, and local employment to build climate-ready, sustainable, healthy communities across the region.
- Public Health and Wellbeing – Provide greater opportunities for all people to lead healthy lives by improving the condition, comfort, energy efficiency, and air quality of homes, schools, workplaces, and communities.

Progress Toward Equitable Home and Building Decarbonization Leadership Network Outcomes	25%	50%	75%	100%
Seven Northeast communities develop innovative strategies such as zoning requirements or strategic electrification plans to reduce carbon emissions 60 percent by 2030. **Progress Toward Outcome:** NEEP has partnered with the Urban Sustainability Directors Network (USDN) and Urban Land Institute (ULI) to host a training series and working group for cities and towns around the country with an interest in pursuing sustainable zoning initiatives. The training series will focus on zoning, best practices for working with zoning boards and the community, and sustainable zoning measures that can be implemented to address building decarbonization at the local level. NEEP will work with other experts to provide technical assistance to communities in the Northeast, Mid-Atlantic, and around the country as they take actionable steps on zoning. We finalized and published a new module in our online Community Action Planning for Energy Efficiency (CAPEE) tool that highlights how communities can approach strategic electrification at the local level. The module identifies barriers, highlights exemplary plans, and documents strategies to strategically electrify buildings at the community level. As more communities establish carbon emissions reduction goals, strategic electrification is a key pathway to reduce dependence on fossil-fuel-based technologies.				
At least two more state joins NY and MA with laws that require carbon emission reductions aligned with IPCC climate stabilization goals and establish carbon neutral by 2050 goals. **Progress Toward Outcome:** Rhode Island is likely to have their climate bill, the 2021 Act on Climate (SB0078/HB5445), signed by the Governor. This bill will increase the state's targets to reduce greenhouse gas (GHG) emissions 80% by 2040 – with net-zero emissions by 2050. The legislation has passed both chambers thus far.				

Progress Toward Equitable Home and Building Decarbonization Leadership Network Outcomes	25%	50%	75%	100%
New Hampshire had legislation introduced at the beginning of Q1 in both chambers, but this appears to be defeated (SB115/HB172). Maryland has introduced SB414, which increases the statewide GHG emissions reduction goal to 60% of 2006 emission levels by 2030, and sets the state on a path to achieve net-zero emissions by 2045. It has passed one chamber. Connecticut has introduced SB882, which requires that electricity supplied to customers in the state must emit no greenhouse gases by 2040. The bill has not yet been voted on. Massachusetts passed Senate Bill S9, which legislatively mandates a carbon-neutral by 2050 target with at least 85% GHG reductions. This law strengthens Massachusetts' earlier commitments.				
Increased public visibility for exciting community-led initiatives that advance healthy, efficient, resilient homes and buildings – particularly for low- and moderate- income communities and households. **Progress Toward Outcome:** During the first quarter of 2021, NEEP published five media stories to increase public visibility for community-led initiatives. We are planning additional marketing campaigns once content related to the Summit Series is finalized.				

Public Policy Leadership and Best Practices

Mission: Inform state and local public policy adoption, implementation, and evaluation to achieve deep building decarbonization and reduce carbon emissions at least 40 percent by 2030.

Public Policy Leadership and Best Practices
Long-Term Market Transformation Goals

By 2025:

- All Northeast States adopt mandates to reduce carbon emissions 40% by 2030 and 80% by 2050, and implement statewide plans to reduce building-sector carbon emissions.
- At least five Northeast States adopt a suite of policies and programs that effectively engage homes and buildings to serve as flexible load and avoid costly transmission and distribution (T&D) additions.
- All Northeast States adopt ratepayer-funded, demand-side resource programs to improve total building energy performance including electrification to displace direct fossil fuel use, and achieve at least 3% of prior year energy sales.

By 2030:

- All Northeast States adopt a suite of policies and programs that effectively engage homes and buildings to serve as flexible load and avoid costly T&D additions.

Project Narrative:

In early 2021, NEEP hired a new team member to support this initiative – Public Policy Manager Erin Cosgrove – to expand our efforts to provide policy tracking and expert technical policy assistance to our state partners, allies, and internal teams. The year began with introduction of a surge of new bills as state legislatures opened. NEEP tracks these bills in our legislative web tracker, which also includes legislation from the past two years. The tracker is updated weekly and highlights are shared with NEEP's Allies network via the Allies newsletter. NEEP follows new bills closely to identify key target areas and trends, with an emphasis this year on climate goals and roadmaps, workforce development, equity, and building codes and standards. This information is included in bi-monthly policy blogs (see e.g., February), bi-monthly Allies webinars, and various NEEP-led working group meetings.

In the first quarter, NEEP provided guidance to the states of Massachusetts and New York in the form of comment letters. In Massachusetts, NEEP commented on the Interim Clean Energy and Climate Plan, which is reviewed every 10 years as part of the Commonwealth's 2050 Decarbonization Roadmap. NEEP's comment letter was grounded in our expertise on building energy codes and standards, advanced technologies and retrofits, workforce transition, and equitable policies. NEEP also sent guidance to New York's State Climate Action Council; this council is formulating legislative and regulatory recommendations to implement the Climate Leadership and Community Protection Act (CLCPA). NEEP's comments provided guidance on implementing building codes and appliance

standards, creating a clean energy workforce, ensuring equitable access to programs, and modifying the current utility energy efficiency programs.

NEEP sits on state working groups in Maryland, Connecticut, Maine, New York, Rhode Island, and New Jersey. NEEP's unique regional lens allows us to weave best practices and proven, implementable solutions into our recommendations. In Maryland, NEEP is attending meetings to aid in the formulation of metrics for the next round of the state's energy efficiency programs that align with state decarbonization goals. In Connecticut, NEEP's expertise on heat pump installation and regional knowledge of weatherization and clean energy goals has helped to identify regulatory barriers. Finally, in New Jersey, NEEP met with advocates and state regulators to discuss the best path forward for the state to begin its building electrification efforts. NEEP also sits on national groups including one focused on building electrification and another focused on inclusive workforce development.

NEEP will focus in 2021 on integrating public policy and evaluation, measurement, and verification (EM&V) with the goal of providing practical and achievable policy and EM&V guidance in easy-to-digest formats such as one-page reports and webinars. NEEP has selected three topics and will develop a one-page report and a companion webinar quarterly in Q2-Q4. The first report and webinar will address the significance of incorporating non-energy benefits into a state's cost-benefits test to account for state decarbonization goals and to properly value energy infrastructure investments. We also provide implementation guidance in our state comment letters. In New York and Massachusetts, NEEP provided guidance on incorporating state policy into energy efficiency programs. These suggestions included metrics to encourage beneficial electrification, prioritizing equity in access to programs, and accounting for non-energy benefits.

In Q1, NEEP unveiled the EM&V Resource Center. This is a part of a larger website update, and a new policy webpage will follow in Q2. The EM&V Resource Center highlights key decarbonization trends and policy areas and breaks down important metrics and EM&V processes. The resource center and forthcoming policy webpage will provide a framework of EM&V and public policy best practices that achieve decarbonization goals. Additionally, these webpages will catalogue NEEP's expertise on the subject by linking to other relevant NEEP projects, programs, and resources. These resources will be integrated to demonstrate the connected nature of policy and EM&V.

NEEP also completed the draft Regional End-Use Load Profile (EULP) Data Inventory and Needs Assessment report and convened the regional EULP Advisory Committee to share the results. The report will be finalized in Q2 along with a companion report that recommends priority areas for future EULP research and data sharing. In conjunction with this regional initiative, NEEP participates in the National End-Use Load Profiles for the U.S. Building Stock project conducted by the National Renewable Energy Laboratory (NREL) and Lawrence Berkeley National Laboratory (LBNL). The results of the national project will be finalized and made publicly available in fall 2021.

Progress Toward Public Policy Leadership and Best Practices Outcomes	25%	50%	75%	100%
At least two more states join NY, MA, DC, and VT with laws that require carbon emission reductions aligned with IPCC climate stabilization goals to reduce carbon emissions by at least 80% by 2050. **Progress Toward Outcome:** Rhode Island is likely to have their climate bill, the 2021 Act on Climate (SB0078/HB5445), signed by the Governor. This bill will increase the targets to reduce GHG emissions 80% by 2040 with net-zero emissions by 2050. The legislation has passed both chambers thus far. New Hampshire had legislation introduced at the beginning of Q1 in both chambers, but this appears to be defeated (SB115/HB172). Maryland has introduced SB414, which increases the statewide GHG emissions reduction goal to 60% of 2006 emission levels by 2030 and sets the state on a path to achieve net-zero emissions by 2045. It has passed one chamber. Connecticut has introduced SB882, which requires that electricity supplied to customers in the state must emit no greenhouse gases by 2040. The bill has not yet been voted on. Massachusetts passed Senate Bill S9, which legislatively mandates a carbon-neutral by 2050 target with at least 85% GHG reductions. This law strengthens Massachusetts' earlier commitments.				
Program administrators in three states join MA in developing/delivering EE programs integrated with other DERS (e.g. DR, storage). **Progress Toward Outcome:** The New York Department of Public Service (NY DPS) issued the second 'State of Storage' annual report announcing progress toward reaching New York's statewide energy storage goal of 3,000 megawatts (MW) by 2030, with an interim objective of deploying 1,500 MW by 2025. These programs are integrated with energy efficiency program offerings, but on their own have strengthened the market for developing and installing qualified energy storage systems in the state. No additional states have taken formal steps to develop/deliver energy efficiency programs integrated with distributed energy resources (DERs), but NEEP is monitoring				

Progress Toward Public Policy Leadership and Best Practices Outcomes	25%	50%	75%	100%
and advising the planning processes for energy efficiency programs in Maryland, Vermont, Maine, and Connecticut.				
At least one other state joins NY in examining the transition from natural gas to efficient electric heating. **Progress Toward Outcome:** On February 12, 2021, New York issued its Staff Moratorium Management Proposal and the Staff Gas System Planning Proposal. Public comments are due on May 3, 2021 with response comments due on June 4, 2021. NEEP is planning to participate in these comments. The Massachusetts Department of Public Utilities (MA DPU) has opened a formal investigation into the role of natural gas in the Commonwealth's transition toward its goal of net-zero GHG emissions by 2050 (Docket DPU 20-80). The local gas distribution companies will file proposals on or before March 1, 2022. No other states have started procedures at this time.				

Efficient and Resilient Buildings & Communities

Efficient and Resilient Communities

Mission: Assist Northeast and Mid-Atlantic communities to equitably advance home and building energy efficiency to achieve local clean energy, climate resiliency, and economic development goals.

Efficient and Resilient Communities
Long-Term Market Transformation Goals

By 2025:

- 60% of Northeast communities have reduced municipal building energy consumption by 20% or more.

By 2030:

- All Northeast states adopt 2050 carbon-neutral mandates for all homes and buildings with zero energy/carbon codes for new and renovated homes and buildings to begin by 2032.
- All Northeast states engage low- and moderate-income communities to implement equitable economic development programs that improve the efficiency, resiliency, health, safety, and long-term affordability of their homes and community buildings.

Project Narrative:

NEEP's Efficient and Resilient Communities initiative presents an immense opportunity to support local-level action throughout the region. NEEP's approach is to help establish statewide policies and programs that support communities, as well as provide direct assistance and resources to community-level stakeholders. We continued work on our collaborative Achieving Community Efficiency (ACE) project funded by a grant from the U.S. Department of Energy (US DOE). We are also collaborating with two communities in Rhode Island to develop new, long-term sustainable energy plans. The goal of these plans is to establish a community-wide framework assessing the baseline and provide strategies that will reduce the community's energy costs and provide other associated benefits. Additionally, Keene, New Hampshire, released their new Sustainable Energy Plan in Q1, for which NEEP provided guidance.

NEEP launched the new CAPEE website in Q1 after several months of development. The updated site still serves the same purpose – to provide users with a self-help resource center on various energy efficiency topics – but now includes improved functionality and features. Stakeholders that utilize CAPEE are now required to create an account, which will enable improved tracking of users. Additionally, the tool now includes a discussion forum that

serves as a platform for dialogue between communities and industry experts. NEEP is planning for a webinar in Q2 to showcase the updated website.

Through direct engagements and development of best-practice tools for communities, NEEP's initiative is able to meet communities where they are to undertake energy efficiency projects. Facilitation of the Regional High Performance Communities Working Group serves as a forum for disseminating new resources and gathering stakeholder input. In Q1, NEEP held two webinars for this group focused on decarbonization and benchmarking respectively. These two topics exemplify the vast differences between community-level initiatives throughout the region. Some jurisdictions are further along in their energy journey – exploring strategic electrification and decarbonization – while others are developing energy plans and benchmarking for the first time.

Progress Toward Efficient and Resilient Communities Outcomes	25%	50%	75%	100%
Two additional states in the region join MA, NY, PA, and CT to support community-focused initiatives with state-level resources to advance clean energy, increase equitable access to energy efficiency programs and projects, and deliver workforce development opportunities. **Progress Toward Outcome:** NEEP's approach to the Efficient and Resilient Communities project aims to formalize statewide programs that support community-level stakeholders to take action. In Q1, NEEP kicked off development of a new report to analyze the current landscape of zero energy schools and provide recommendations for moving the region forward. NEEP is assembling an advisory committee and developing a survey to ensure that the process is guided by stakeholder input. The ultimate goal of this effort is to provide state agencies with an assessment and recommendations for state-led programs that support zero energy schools. Additionally, NEEP is researching local jurisdictions that are establishing GHG reduction and zero energy goals. Once complete, the information gathered will be used to create a Communities Commitment Tracker showcasing each of the jurisdiction's goals. This will help inform future efforts to guide statewide policy efforts that support communities.				

Seven Northeast and Mid-Atlantic communities develop innovative strategies, such as zoning requirements or strategic electrification plans, to reduce community-wide carbon emissions 60 percent by 2030. **Progress Toward Outcome:** NEEP has partnered with the Urban Sustainability Directors Network (USDN) and Urban Land Institute (ULI) to host a training series and working group for cities and town around the country with an interest in pursuing sustainable zoning initiatives. The training series will focus on zoning, best practices for working with zoning boards and the community, and sustainable zoning measures that can be implemented to address building decarbonization at the local level. NEEP will work with other experts to provide technical assistance to communities in the Northeast, Mid-Atlantic, and around the country as they take actionable steps on zoning. Additionally, NEEP finalized and published a new CAPEE module highlighting how communities can approach strategic electrification at the local level. The module identifies barriers, highlights exemplary plans, and documents strategies to strategically electrify buildings at the community level. As more communities establish goals, strategic electrification is a key pathway to reduce dependence on fossil-fuel-based technologies.				
States and communities lead by example by increasing the number of zero energy public buildings in operation by 10 across at least 5 states. **Progress Toward Outcome:** Over the course of the first quarter, NEEP engaged with many stakeholders to inform efforts on zero energy public buildings. Schools are a leading building type for the advancement of zero energy, and discussions are ongoing with the Town of Medfield, Mass., the American Institute of Architects in Connecticut, and the Mass. Zero Energy Schools Working Group. NEEP also presented to participants of RePower PVD, the City of Providence's voluntary energy challenge program, who are actively engaged in benchmarking and reducing energy consumption, with the ultimate goal of becoming the first zero energy building in Providence. At the end of Q1, NEEP started the process to update the Northeast Collaborative for High Performance Schools (NE-CHPS) criteria. The update will include many general updates to credits and prerequisites throughout the resource, as well as a new pathway for achieving zero energy. This update comes on the heels of a community in Massachusetts' interest in utilizing NEEP's Energy Zero (EZ) code as a means of				

achieving zero energy in their new school construction project. The addition of the EZ code into NE-CHPS will provide interested school districts with a prescriptive approach to achieve a healthy, zero energy school facility.				

Building Energy Codes and Appliance Standards

Mission: Assist states and communities to adopt and implement building energy codes, and support appliance efficiency standards aligned with public policy goals for climate stabilization and resiliency, clean affordable energy, public health and safety, and equitable economic development.

Building Energy Codes and Appliance Standards
Long-Term Market Transformation Goals

By 2025:

- All Northeast states have a zero energy/carbon code adoption roadmap with timelines.
- State appliance standards are adopted or updated to obtain all cost effective energy and carbon savings.

By 2030:

- All Northeast and Mid-Atlantic states adopt 2050 carbon-neutral mandates for all homes and buildings.
- All Northeast and Mid-Atlantic states adopt zero energy/carbon codes for new and renovated homes and buildings with an effective date of 2032.

Project Narrative:

Building Energy Codes

In the first quarter of the year, NEEP convened codes collaboratives in Maine, New Hampshire, Pennsylvania, and New Jersey. NEEP also continued to offer technical assistance and code recommendations to several states in our region – Massachusetts, West Virginia, New York, Rhode Island, Maine, New Hampshire, and Pennsylvania. Additionally, we continued development of and published several resources. We updated our Strategic Electrification and Energy Codes Brief to address federal appliance standard preemption and offer states recommendations for how they can feasibly incorporate electrification in their state building energy codes. We are also preparing to publish International Energy Conservation Code (IECC) 2021 resources, including videos explaining the residential and commercial changes to the code and an accompanying one-pager, as well as updates to NEEP's Energy Code Adoption and Compliance Toolkits to account for new technologies and best practices. These initiatives are designed to establish a strong foundation for states as they adopt new energy codes, enforce and comply with codes, and design energy programs with utilities.

In Massachusetts, NEEP has worked with other energy efficiency organizations and stakeholders to provide energy code information and resources. The state legislature recently passed and signed into law Senate No. 9: *An Act creating a next-generation roadmap for Massachusetts climate policy*. NEEP's work on the EZ Code in Massachusetts played an essential role in net zero stretch code language in the bill. NEEP has also continued to engage with the Mass. Board of Building Regulations and Standards (BBRS) and the Mass. Department of Energy Resources (MA DOER) on net zero stretch code adoption. Finally, NEEP offered comments and recommendations on the state's interim Clean Energy and Climate Plan for 2030, specifically on the adoption timeline for a zero energy base code and the role of a zero energy stretch code in helping the state achieve its 2030 goals.

In New Jersey, NEEP worked with the Rutgers Center for Green Building and the New Jersey Board of Public Utilities (NJ BPU) to convene a code collaborative made up of diverse stakeholders from the building and energy efficiency sectors. The collaborative will assist the state by surveying stakeholders to determine opportunities and barriers to code adoption and building decarbonization. NEEP will use this information and ongoing collaborative discussions to develop a roadmap to support code adoption, building decarbonization, and help put the state on a path to reach a zero energy base code.

In Maine, NEEP worked with the Maine Uniform Building Energy Code (MUBEC) Board to support its first stretch code adoption. The code is based on the latest model code, the 2021 IECC, and will go into effect on July 1, 2021. NEEP is engaged further in Maine with the state's Energy Code Collaborative, working on outreach to communities to support stretch code adoption.

In West Virginia, NEEP was selected to serve on the State Fire Marshal's IECC Development Committee, tasked with reviewing the code and recommending provisions for adoption to the Fire Marshal. West Virginia will adopt either the 2015 or 2018 IECC and will include options for municipalities to adopt more stringent measures voluntarily.

In Connecticut, NEEP has provided extensive, detailed technical assistance directly to the Department of Energy and Environmental Protection (CT DEEP) toward the state's adoption of its first stretch energy code. The stretch code will be applicable to commercial buildings 40,000 square feet and larger. In Q2, NEEP will respond to a public comment period on a provision to be included in its adoption of the 2021 suite of codes, including the 2021 IECC.

Appliance Standards

After a quiet 2020 due to the COVID-19 pandemic, 2021 is off to a resounding start with appliance standards activity. Massachusetts passed a standards bill in March, and Washington, D.C. passed a standards bill in January, which became effective in March; the bill included air purifiers – the first standards to be passed nationally. Six other states (R.I., Penn., N.J., Conn., N.Y., and Md.) are all engaged in standards adoption. NEEP has provided technical assistance toward the passage of standards bills in all of these states. A summary of this activity is below:

- Rhode Island – Introduced a standards bill in March
- Pennsylvania – A draft bill is circulating and is expected to be introduced in Q2
- New Jersey – Both the Senate and Assembly passed a standards bill out of committee review

- Connecticut – Bill did not get voted out of committee, and no further action is expected in 2021
- New York – Introduced a standards bill in March
- Maryland – A standards bill passed out of Senate committee

NEEP, in cooperation with the United States Climate Alliance (USCA), the Appliance Standards Awareness Project (ASAP), and Environment America hosted three coordinating state appliance standards webinars in the first quarter. The first covered state adoption activity and federal regulation; the second focused on responding to standards opposition; and the third covered implementation of standards. Each webinar had over 40 attendees, and NEEP contributed by providing presentations on various standards-related activities.

In the first quarter of 2021, NEEP entered into a contract with the USCA supported by NYSERDA to launch a new initiative to develop tools to support states in implementing state appliances standards. Specifically, NEEP and our subcontractors will produce a supplemental appliance standards listing database and implementation toolkit. This initiative's current working title is "the Portal' until we identify a fitting acronym. Partner organizations supporting the Portal initiative include ASAP and states throughout the country. The database will include products that do not meet the stringency of Title 20, CEC and cannot be included in the California Modernized Appliance Efficiency Database System (MAEDbS). States with standards meeting those parameters will require a supplemental product listing for product certification. Presently, these are primarily plumbing products (faucets, toilets, urinals, and showerheads) and portable electric spas. NEEP is reviewing contractor bids for the database development and will convene an advisory committee in the second quarter.

NEEP also published a brief titled Emerging Codes and Standards for Grid-Interactive Buildings. The brief explores codes, standards, and policies to inform the potential implementation of buildings, equipment, and grid interconnection in the Northeast and Mid-Atlantic region. As regional stakeholders consider policy and programs to assist the proliferation of grid-interactive appliances and buildings, we are examining how long-standing models of building energy codes and standards may be replicated or leveraged for purposes of driving grid-interactive homes and buildings. NEEP will host a webinar on the emerging codes and standards for grid-interactive buildings in April 2021.

Progress Toward Building Energy Codes and Appliance Standards Outcomes	25%	50%	75%	100%
Three additional Northeast and Mid-Atlantic States adopt zero energy stretch codes (DE, MA, NY). **Progress Toward Outcome:** Massachusetts is considering multiple zero energy codes, including NEEP's EZ Code, with expected adoption at the end of 2021. Massachusetts passed bill S.2, which charges MA DOER to develop an opt-in stretch code with a definition of zero energy and pathway over the next 18 months. NEEP will engage with MA DOER to ensure that the EZ Code and other zero energy pathways are considered				

Progress Toward Building Energy Codes and Appliance Standards Outcomes	25%	50%	75%	100%
for the opt-in stretch code. Maine has resolved to adopt the 2021 IECC with the option to use the zero energy appendices as a compliance path, to be effective July 1, 2021. In New York, NYSERDA released an RFI for the 2023 version of its stretch code, likely to be a zero energy code, to which NEEP submitted the EZ Code for consideration. And Delaware is working on updating its base code but does not have plans to adopt a stretch code this year.				
Four additional Northeast and Mid-Atlantic States adopt stretch codes (CT, DE, ME, NJ). **Progress Toward Outcome:** Connecticut has legislation in process to adopt a stretch code this summer. Maine has adopted a stretch code that will go into effect on July 1, 2021. Delaware has no plans to adopt a stretch code. Massachusetts will update its stretch code this year. Maine adopted IECC 2021 as its voluntary stretch code; it still needs to go through rulemaking but is expected to be implemented by mid-2021. NEEP is convening a codes collaborative in New Jersey to help provide the state with the next steps for code adoption, including a stretch code.				
Municipalities in four states (MD, WV, NH, CT) adopt zero energy building codes. **Progress Toward Outcome:** The community of Ranson, West Virginia will adopt a stretch code. Keene, New Hampshire is considering adoption of the 2021 IECC, which includes zero energy compliance pathways.				
Five Northeast and Mid-Atlantic States (NH, VT, RI, PA, NJ) establish pathways to quantify statewide code compliance baseline levels to inform code compliance initiatives. **Progress Toward Outcome:** In New Jersey, NEEP is serving on a technical advisory group (TAG) for a code compliance baseline study conducted by the Rutgers Center for Green Building. New Hampshire included support for a code compliance study in its 2021-2023 Energy Efficiency Resource Standard (EERS) plan, which has yet to go into effect due to political obstacles. Pennsylvania and Rhode Island have expressed interest in conducting a new code compliance baseline study.				

At least seven Northeast and Mid-Atlantic States (NY, MA, RI, CT, DC, ME, PA) adopt new state appliance standards in 2021. **Progress Toward Outcome:** There was significant activity across the region related to appliance standards: • Massachusetts – Passed a standards bill in March • Washington, D.C. – Passed a standards bill in January, which became effective in March • Rhode Island – Introduced a standards bill in March • Pennsylvania – A draft bill is circulating and is expected to be introduced in Q2 • New Jersey – Both the Senate and Assembly passed the standards bill out of committee review • Massachusetts – Passed a standards bill in March • Washington, D.C. – Passed a standards bill in January, which became effective in March • New York – Introduced a standards bill in March • Connecticut – Bill did not get voted out of committee, and no further action is expected in 2021 • Maryland – A standards bill passed out of Senate committee				

Low-Carbon Retrofit Solutions

Mission: Ensuring equitable access to low-carbon retrofit solutions to improve the energy efficiency of homes and buildings.

Low-Carbon Retrofit Solutions
Long-Term Market Transformation Goals

By 2025:

- Building energy labels or ratings are populated in all real estate listings across the Northeast.

By 2030:

- 30 percent of existing homes and building are retrofitted to reduce carbon emissions 50 percent.

Project Narrative:

NEEP's Low-Carbon and Retrofit Solutions initiative includes several programs: Home Energy Labeling Information eXchange (HELIX), Energy Estimator, Building Energy Analysis Manager (BEAM), and Total Energy Pathways (TEP). NEEP continued development of these tools, increased stakeholder engagement, and expanded the tools' user base. These tools target specific barriers to energy efficiency and offer flexible solutions for city planners, policy makers, and building owners.

HELIX's datasets and use cases continue to grow. NEEP is working with New Jersey's Garden State Multiple Listing Service (MLS) to integrate HELIX data and will be featured in a demo to showcase the three HELIX integration pathways for other MLSs throughout the region. We also recently acquired more labeling (Home Energy Scores, Pearl Certification) data for the state of New York. As HELIX continues to update datasets and execute new data sharing agreements, it adds even more value to the real estate market through increased transparency and data availability. HELIX also benefits states, communities, and utilities by facilitating data management to better understand local markets and to design programs and policies to support market transformation.

Through NEEP's continued technical assistance to Vermont and the city of Montpelier, the state and city are moving forward with voluntary and mandatory home energy labeling initiatives, respectively. In March, NEEP assisted in presenting the Montpelier Home Energy Information Ordinance and Vermont Home Energy Profile to the City Council; the second hearing was scheduled for late April and a version of the ordinance is expected to pass. The Vermont Home Energy Profile website is live and available to all Vermont residents as a voluntary resource. Residential energy labeling provides transparency for homeowners and drives consumer action by highlighting potential cost savings of energy efficiency measures. With the mission to accelerate regional collaboration to promote advanced efficiency solutions in homes, HELIX and Energy Estimator provide the mechanisms to inform, educate, and recommend efficiency improvements to transform the places where we live, work, and play into efficient, affordable, low-carbon homes.

Building Energy Analysis Manager (BEAM), a joint project of NEEP and ClearlyEnergy, increased public visibility with the unveiling of a public website modeled off of the existing HELIX and Energy Estimator websites to create a cohesive and streamlined user experience. This webpage allows NEEP and our partners to easily share information and raise awareness of the tool with others. After nearly a year of development, BEAM will soon be ready to host data from cities and states who are implementing or wish to implement a building performance standard or benchmarking ordinance. Washington, D.C., one of the first cities in the world to pass a building performance standard, has signed on to use BEAM to manage their program. The flexibility of BEAM to transition from benchmarking to building performance standards, and to track multiple forms of compliance, make it an attractive option for decision makers in D.C. NEEP is also in discussions with other jurisdictions, large and small, about using or testing the tool. The project team is in the process of applying for Phase 2 funding from US DOE to incorporate additional feedback received from the project's Advisory Committee.

Total Energy Pathways (TEP) continued to build off the successful Zero Energy Now program in Vermont and made initial strides to increase awareness and visibility in the region by launching a public webpage in the first quarter.

Furthermore, NEEP and project partners conducted research on the status of residential retrofit programs in the Northeast and Mid-Atlantic region to identify strong candidates for the comprehensive package offered through the TEP tool. A complementary residential retrofit program matrix resource will be available on the TEP webpage in early Q2. The project team created a list of key program stakeholders to convene as an advisory committee in order to inform and develop the retrofit model for use in jurisdictions outside Vermont. Meanwhile, the Vermont Zero Energy Now Committee revisited program policies and procedures in order to make participation in the program more accessible, as anecdotal evidence cited that some customers were burdened by the qualifications needed to participate. NEEP intends to host a kick-off meeting for the project Advisory Committee in May to present the revamped program model and materials to key program stakeholders. We hope that this meeting will elicit interest in collaboration to launch TEP-like programs in other states to help make greater strides toward their efficiency and clean energy goals.

Progress Toward Low-Carbon Retrofit Solutions Outcomes	25%	50%	75	100%
Thirty Vermont homes enroll in the Zero Energy Now/Total Energy Pathways program and undergo comprehensive energy retrofits to reduce energy use by >60 percent. **Progress Toward Outcome:** The Zero Energy Now/Total Energy Pathways project team revisited the performance standards and program enrollment procedures from 2020 to expand the inclusivity of the program and successfully enroll twenty additional Vermont homes in 2021. By streamlining the program features of ZEN/TEP – such as contractor fuel data collection and financing procedures – we aim to ease the burden on the customer and make the program more easily accessible to homeowners.				
Two Northeast states and two cities adopt and implement policies to use home energy labeling and/or benchmarking as a strategy to improve energy efficiency of existing homes and buildings. **Progress Toward Outcome:** Vermont's Residential Building Energy Labeling Working Group released a legislative report that recommends the use of HELIX and Energy Estimator. NEEP continues to provide support to Montpelier's Energy Efficiency Working Group to pass the home energy labeling ordinance. Connecticut proposed the Home Energy Affordability bill (S.B 882), which would require home energy information disclosure when a home is listed for sale or rent. NEEP has engaged CT DEEP and Connecticut utilities through the HELIX and Regional Residential Labeling working groups. In Massachusetts, development of the Massachusetts Home				

Progress Toward Low-Carbon Retrofit Solutions Outcomes	25%	50%	75	100%
Scorecard is progressing using HELIX. NEEP provided a demo of Energy Estimator to the Massachusetts Clean Energy Center (MassCEC). At the community level, NEEP continued to stay engaged and provide support to communities looking to adopt and implement a residential energy labeling policy including Keene, N.H., Princeton, N.J., Newton, Mass., Winchester, Mass., and Portland, Maine. Commercial benchmarking efforts are occurring at the local level throughout the region. In Providence, NEEP developed supporting materials and participated in stakeholder meetings to support the proposed ordinance, which is currently being discussed by the Committee on Finance within the City Council. In Maine, the City of South Portland is in the process of lowering the square footage threshold, which will result in additional buildings being required to benchmark and report their energy data to the city.				
Three additional states (e.g. NJ, MD, ME) use HELIX to support home energy labeling policies and programs at the state and local level. **Progress Toward Outcome:** NEEP provides technical assistance to New York and New Jersey who are considering the use of HELIX and/or Energy Estimator. In New York, NEEP and NYSERDA executed a data sharing agreement to transfer Home Energy Scores and Pearl Certifications from the Home Energy Rating Pilot into HELIX. NEEP was selected as an awardee for NYSERDA's Remote/Virtual Audit Challenge, a project that will use the Energy Estimator to support a virtual audit and to generate a home energy profile and HELIX to store the label. NEEP and Garden State MLS, serving northern New Jersey, plan to demo the deep link integration in addition to other integration pathways to the HELIX Photovoltaic Auto-Population Advisory Committee. This group is composed of state energy offices, utilities, MLSs, real estate professionals, data aggregators, and other non-governmental organizations (NGOs). This successful collaborative effort may open doors for many more MLSs to pursue using HELIX. Additionally, NEEP is in discussions with the state to subscribe to HELIX as a program/policy management tool.				

Two cities adopt building performance standards as a strategy to improve energy efficiency of existing homes and buildings. **Progress Toward Outcome:** Multiple jurisdictions in the region are currently in various stages of developing building performance standards (BPSs). Through the BEAM project, NEEP is actively engaged on two fronts with leaders on this topic including Boston and Cambridge, Mass., Washington, D.C., Montgomery County, Maryland, and others. NEEP convenes and facilitates a regional stakeholder group with the goal of developing a software solution to assist jurisdictions with BPS program management. We also provide direct assistance and catalogue best practices to help communities adopt unique BPS programs that meet their needs.				
Three states (MA, NY, RI) enact existing building retrofit initiatives to drive ongoing decarbonization of all existing homes and buildings toward growing an equitable retrofit economy. **Progress Toward Outcome:** These leading-edge programs are continually gaining interest at the local- and state levels, and are rapidly becoming key policy mechanisms to help the region meet its climate goals. In Massachusetts, companion bills (HD3385/SD2114) were submitted to be introduced to Congress. These bills would establish a statewide building performance standard for all state buildings and commercial and industrial (C&I) buildings greater than 25,000 square feet. The intent of the bill is to reduce GHG emissions from the existing building stock. NEEP provided direct guidance and technical assistance on the development of this bill and continues to engage in its progression through the legislature. West Virginia introduced legislation (HB2667) that would establish the annual benchmarking of state-owned facilities to reduce state spending on utility costs.				

Heating Electrification Market Transformation

Mission: Accelerating market adoption of high performance heat pumps for residential and commercial space heating and cooling.

Heating Electrification Market Transformation
Long-Term Market Transformation Goals

By 2025:

- 10 percent of Northeast homes and buildings use high performance heat pumps for space and water heating.

By 2030:

- 40 percent of Northeast homes and buildings use high performance heat pumps for space and water heating.

Project Narrative:

NEEP's Heating Electrification initiative serves as a key platform for regional stakeholders to collaborate on market development activities for air-source heat pumps (ASHPs) and variable refrigerant flow (VRF) systems. The ASHP and VRF Working Groups met in Q1 to discuss market development strategies and progress, both of which were attended by dozens of regional stakeholders.

Ensuring quality installation of ASHPs and VRFs is a key area of focus for market actors. To make strides in standardizing the content and delivery of ASHP installer training in the region, NEEP convened the ASHP installer best practices sub-committee in late January, attended by 43 participants. Stakeholders offered recommendations to standardize how heat pump contractors are trained to properly design and install systems. This conversation is ongoing and a follow-up sub-committee meeting is scheduled for Q2. The outcomes of the sub-committee meetings will eventually inform updates to NEEP's installer guides and other installer training initiatives in the region.

Promotion of high performance systems able to deliver efficiency in cold climates like the Northeast is crucial to building consumer confidence in ASHP technology. NEEP's cold-climate ASHP (ccASHP) specification and product list are maintained to identify the highest performing systems. New programs inside and outside the region have adopted the NEEP ccASHP specification and product list, which has increased substantially to now house over 20,100 cold-climate systems from over 90 industry-leading brands. In the Southwest, Xcel Energy Colorado became a new subscriber of the Heating Electrification Initiative in Q1, followed by Natural Resources Canada (NRCan) in Ontario, Canada. NEEP also launched activity to develop new specifications for VRF systems and packaged terminal heat pumps.

Lastly, NEEP updated the ASHP/VRF Market Transformation Progress Survey to be disseminated to stakeholders following the working group meetings planned for Q2. The updated survey contains sections related to COVID-19 recovery and diversity, equity, inclusion, and justice (DEIJ) initiatives, as well as more streamlined methods to collect information on regional heat pump activities. This stakeholder survey will inform the ASHP and VRF Market Transformation Strategy Reports, which will be published in Q2.

Progress Toward Heating Electrification Market Transformation Outcomes	25%	50%	75%	100%
Twenty percent increase in annual sales of high performance heat pump systems across the NEEP region. **Progress Toward Outcome:** Public policy developments reflect an increased frequency of ambitious heat pump installation targets in the region. In particular, Massachusetts and Maine have near-term targets for deployment of heat pump systems in buildings. When available, NEEP intends to have a final determination of 2020 sales through New York data to use in tracking 2021 adoption numbers. Final determination will not be made until the end of 2021.				
Five new programs join the twenty others already using NEEP's ccASHP product list. **Progress Toward Outcome:** Twenty-two programs inside and outside of the region now reference the ccASHP specification/product list – the Massachusetts Clean Energy Center, Mass. Alternative Energy Portfolio Standard, Efficiency Vermont, National Grid - Rhode Island, PSEG Long Island, Con Edison, Central Hudson, Orange & Rockland, NYSEG, Rochester G&E, National Grid - New York, the Minnesota ASHP Collaborative, Holy Cross Energy, Northwest Energy Efficiency Alliance, Efficiency Nova Scotia, Energy Transition Québec, efficiencyPEI, Wabash Valley Power Alliance (Power Moves), Central Iowa Power Cooperative, ENERGY STAR, Xcel Energy Colorado, and Natural Resources Canada. Xcel Energy Colorado and Natural Resources Canada were new additions in 2021.				
NEEP's heat pump consumer and installer guides are used or referenced by ten programs in the region. **Progress Toward Outcome:** Content from NEEP's ASHP Buying Guide is being leveraged by MassCEC's Clean Energy Lives Here campaign, the CT Green Bank's Smart-E Loan heat pump webpage, PSEG Long Island's heat pump marketing materials, NYSERDA, and the Rocky Mountain Institute. The breadth of heat pump				

Progress Toward Heating Electrification Market Transformation Outcomes	25%	50%	75%	100%
information in the consumer buying guide has proved relevant to groups in different regions. NYSERDA uses NEEP's ASHP Installing Guide for their in-field monitoring pilot, in addition to MassCEC, Mass Save, Efficiency Vermont, and Xcel Energy, who link to the guides on their websites. Furthermore, the Northwest Energy Efficiency Alliance and the Minnesota Air Source Heat Pump Collaborative have leveraged content from NEEP's installer guides to produce training modules and guides tailored to their own jurisdictions. Most recently, Xcel Energy Colorado has utilized content from NEEP's installer guides for their own program brochures.				
Initiative participants report significant progress in implementing the Regional ASHP Market Transformation Strategy and Regional VRF Market Transformation Strategy. **Progress Toward Outcome:** The 2021 ASHP Market Transformation Progress Report survey was updated in Q1 to facilitate more participation by stakeholders and to collect information on initiatives related to DEIJ, COVID-19 impacts, and needs and opportunities around heat pump technologies. This updated survey will be distributed to the ASHP and VRF working groups following the Q2 working group meetings; results will inform the ASHP Market Transformation Strategy Report to be published at the end of Q2.				

Smart Energy Homes and Buildings

Mission: Enabling building-sector decarbonization by transforming homes and buildings to be efficient and flexible grid assets.

Smart Energy Homes and Buildings
Long-Term Market Transformation Goals

By 2025:

- 50 percent of Northeast homes and buildings are "energy smart" with either two "energy smart" systems or smart building management systems able to respond to grid service needs.

By 2030:

- 90 percent of Northeast homes and buildings are "energy smart" (as defined above).

Project Narrative:

In 2020, the aim of NEEP's Smart Energy Homes initiative was to begin implementing the recommendations made in our Grid-Interactive Efficient Buildings (GEBs) report. This was achieved mainly through engagement with stakeholders of our Home Energy Management Systems (HEMS) and Smart Energy Buildings working groups. In 2021, NEEP will continue the regional conversation around the needs and opportunities associated with smart energy homes and buildings through these two working groups. We will also continue to track and report on relevant smart energy homes and buildings technologies trends and policy and program activity, pilots, and technology demonstrations across the region; progress will be shared primarily via our new Smart Energy Homes and Buildings Policy and Program tracker developed in Q1. NEEP will also provide and develop new strategies and tools, as well as provide technical assistance to programs and industry, to advance the market adoption of smart energy homes and buildings technologies and programs.

Progress Toward Smart Energy Homes and Buildings Outcomes	25%	50%	75%	100%
Utilities in five states in the region design or launch demonstration pilots that explore the abilities of homes and buildings to serve as flexible grid resources. **Progress Toward Outcome:** Although states including Massachusetts and New York have launched smart thermostat and battery storage pilots and several other states have demand response pilots in progress, NEEP is in the fundamental stages of tracking which states have recently designed and launched demonstration pilots that explore the abilities of homes and buildings to serve as flexible grid resources.				
Six states in the region enact policies or programs that support the deployment, or engagement, of smart energy homes to provide grid services. **Progress Toward Outcome:** NEEP began development of a resource to track policies and programs that support the deployment or engagement of smart energy homes to provide grid services. Tracked policies will include those on rate design, grid modernization, advanced metering infrastructure, grid interactive codes and standards, workforce development, improved asset utilization, distributed energy resources, and pilots. Programs tracked will include demand response, smart thermostats, battery control, and water heater control. Each state's progress will be available in Q2 and going forward.				

Progress Toward Smart Energy Homes and Buildings Outcomes	25%	50%	75%	100%
Six utilities/energy efficiency programs in the region identify the highest priority grid services to be enabled by smart energy homes and buildings (i.e., demand response, responsiveness to time-of-use signals, load shifting, off peak usage, frequency regulation, etc.). **Progress Toward Outcome:** All utilities and energy efficiency programs in the region have started deploying grid interactive services. Information on the highest priority grid service to be enabled by smart energy homes and buildings will be captured via direct stakeholder outreach, a stakeholder survey, or through working group meetings.				

Strategic Energy Management

Mission: Accelerating adoption of Strategic Energy Management to continuously improve building and industrial facility energy efficiency, productivity, health, comfort and safety, while reducing costs and carbon emissions.

Strategic Energy Management
Long-Term Market Transformation Goals

By 2025:

- All Northeast states have policies and programs to support adoption of SEM in the commercial and industrial sectors.

By 2030:

- All Northeast states adopt 2050 carbon neutral mandates for all homes and buildings with zero energy/carbon codes for new and renovated homes and buildings to begin by 2032.

Project Narrative:

Through the Strategic Energy Management (SEM) Collaborative, NEEP continues to encourage SEM program adoption by the industrial, commercial, and municipal sectors in the Northeast. In 2020, NEEP developed an understanding of how SEM can serve as a key pathway to reduce C&I-sector emissions. In 2021, we will conduct deeper research on this topic and will publish a report on our research and findings, titled Strategies to Scale Adoption of SEM: Complementing EE Programs. We will also track, analyze, and share leading efforts and progress across the region, and will facilitate peer exchange to inspire and transfer learning. Additionally, NEEP will provide and develop new strategies, tools, and technical assistance to programs and industry to advance the market adoption of SEM.

Progress Toward Strategic Energy Management Outcomes	25%	50%	75%	100%
All active SEM programs report increased customer participation in their SEM offerings compared to 2020. **Progress Toward Outcome:** Relative to 2020, all active SEM programs have increased their customer participation. Due to the COVID-19 pandemic, many programs changed their strategy to involve more online participation and inclusion of 50001 ready as part of their respective program offerings. After a year of lower-than-expected energy savings in 2020, Massachusetts and Rhode Island returned to in-person activities in 2021 and will facilitate four workshops to leverage lessons learned during the COVID-19 pandemic. In the first quarter of 2021, Connecticut pursued more participants and cohorts and implemented virtual treasure hunts. To complement their programs, the Connecticut SEM evaluator completed a phase 1 report on best practices for SEM evaluation, including goodness of fit, data collection frequency, measure life, negative savings, and working amidst COVID-19. Vermont began transferring from their typical cohort model to an individual model as their commercial customers got smaller; the state moved this activity to largely online during the pandemic, but may return to in-person engagement in 2021. After pausing cohort recruitment due to their struggle with participation in 2020, New York recently implemented a more one-on-one approach through their new On-Demand program and virtual treasure hunts. They are looking into post-COVID protocols and considering a flexible approach to program delivery to make the program successful for different kinds of participants.				
Progress Toward Outcome: At least two additional energy efficiency program administrators offer Strategic Energy Management in their program offerings. **Progress Toward Outcome:** The District of Columbia Sustainable Energy Utility (DC SEU) launched two SEM cohorts – one for federal buildings and another for colleges and universities. These groups of similar customers participate in workshops and receive technical assistance conducting energy assessments and developing energy use models. These efforts will help building owners meet the city's new building energy performance standards.				

A state or utility adopts one of the recommendations in the Regional Market Transformation Strategy for SEM. **Progress Toward Outcome:** Work on the Regional Market Transformation Strategy for Strategic Energy Management began in the first quarter. NEEP developed an outline for the new report and disseminated a survey to stakeholders to gather results to inform the report.				