

**EPA, Climate Pollution Reduction Grants – Implementation Grants
New England Heat Pump Accelerator
Workplan**

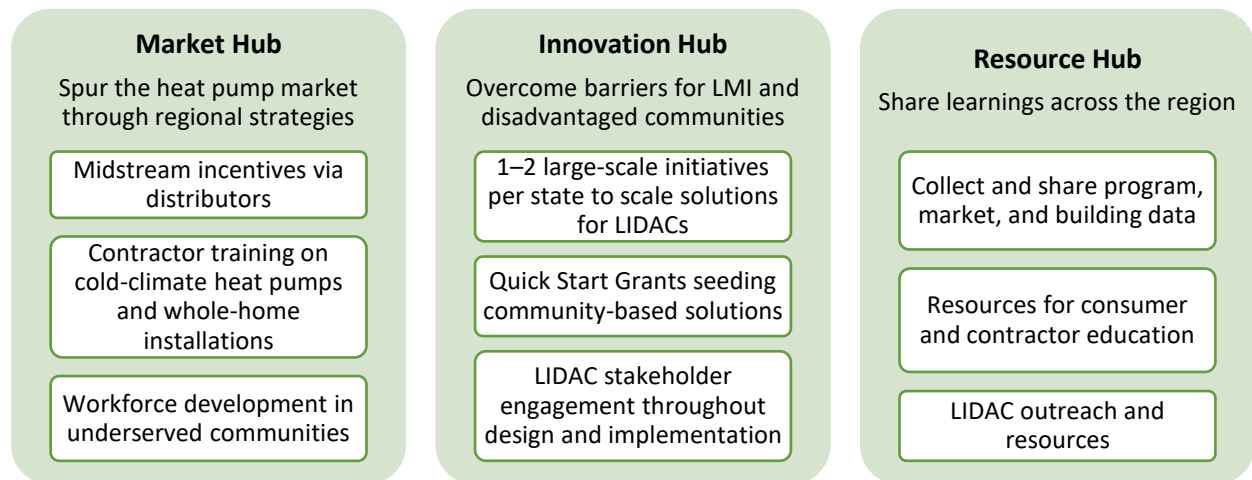
1. Overall Project Summary and Approach

Connecticut Department of Energy and Environmental Protection (CT DEEP), Maine Governor’s Office of Policy Innovation and the Future (ME GOPIF), Massachusetts Department of Energy Resources (MA DOER), New Hampshire Department of Environmental Services (NH DES), and Rhode Island Office of Energy Resources (RI OER) (hereinafter referred to collectively as “the coalition”) propose to create the New England Heat Pump Accelerator (Accelerator) to achieve substantial greenhouse gas (GHG) reductions.¹ The coalition will undertake the efforts described in this workplan if awarded funding under the Climate Pollution Reduction Grants (CPRG) Program: Implementation Grants General Competition.

The New England Heat Pump Accelerator will leverage the power of a multistate market to rapidly accelerate adoption of cold-climate air-source heat pumps (ASHPs), heat pump water heaters (HPWHs), and ground source heat pumps (GSHPs) in single-family and multifamily residential buildings across the region. The Accelerator is designed to achieve GHG emissions reductions even after its funding ends by overcoming systemic barriers to residential building electrification at this critical moment in the region and making heat pumps standard practice in the HVAC and water heating industries. If the Accelerator achieves its goals, nearly every space and water heater sold in New England will be a heat pump by 2040. Specifically, the Accelerator aims for heat pumps to make up at least 65% of residential-scale heating, air conditioning, and water heating sales by 2030 and 90% by 2040, in line with recent efforts on the national stage to increase adoption, notably the U.S. Climate Alliance Commitments to Decarbonize Buildings and the Northeast States for Coordinated Air Use Management (NESCAUM) Memorandum of Understanding to Accelerate the Transition to Zero-Emission Residential Buildings.² Both of these efforts were joined by states in the coalition and rely on the rapid adoption of heat pump technology to permanently shift the market from fossil fuel equipment to heat pumps.

The Accelerator will achieve these goals through three program pillars designed to activate the supply chain, scale solutions to address the specific barriers that low- and moderate-income (LMI) households

Figure 1 New England Heat Pump Accelerator Pillars



¹ Letters of Intent from each coalition member are included as part of the application.

² U.S. Climate Alliance, [US Climate Alliance Commitments to Decarbonize Buildings](https://www.usclimatealliance.org/commitments-to-decarbonize-buildings); NESCAUM (Northeast States for Coordinated Air Use Management), <https://www.nescaum.org/our-work/stationary-sources/building-electrification>.

and disadvantaged communities (collectively, LIDACs) face in adopting heat pumps, and share data and educational resources to drive rapid, aligned progress across the region, as shown in Figure 1.

This coalition of five states has joined forces to rapidly scale adoption of heat pump technologies suited to New England’s cold climate and older housing stock by filling gaps in funding and program coverage that prevent the full activation of the supply chain of manufacturers, distributors, and contractors and addressing barriers to access for LIDAC households. New England is comprised of small states that share a labor and supplier market. Therefore, states must work together to accelerate the regional heat pump market; the Accelerator’s pillars tackle the activities that are most essential for growth. The Accelerator is thoughtfully designed to coordinate with utility and state heat pump programs in the coalition states and will build on and learn from Maine’s national leadership in driving heat pump adoption.³

In alignment with EPA’s Justice40 goals, at least 40% of Accelerator funding will be directed to LIDACs. 100% of the Innovation Hub funding will serve LIDACs and LIDAC-targeted programs are included in each pillar. The Resource Hub will employ a multilayered approach to outreach and engagement with LIDACs and other stakeholders. It will collect resources for equitable building electrification policies, programs, and processes that center the needs of communities and provide stipends for LIDAC representatives and community members to participate in the Advisory Council and other stakeholder processes.

All five states have identified residential heat pump installations as a priority GHG reduction measure in their Priority Climate Action Plans (PCAPs) and recognize that they can achieve greater impact by working

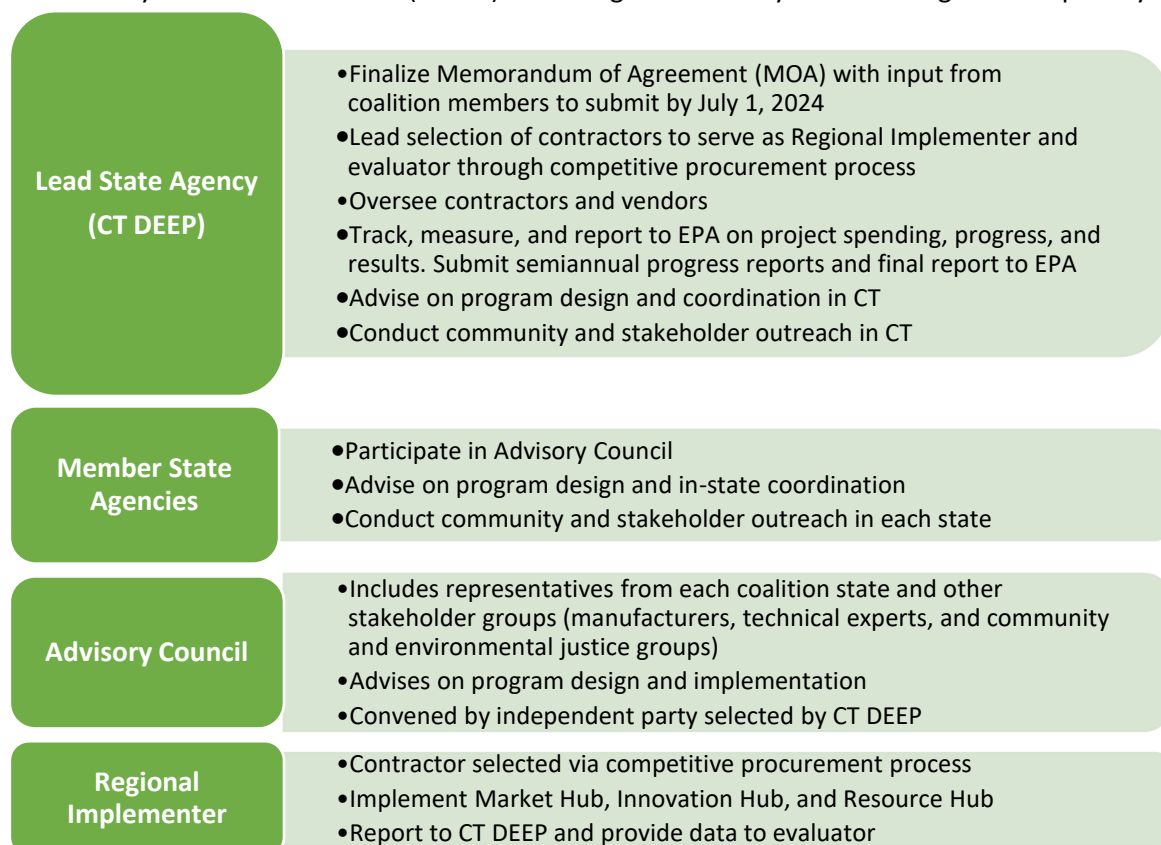


Figure 2 Coalition Roles and Responsibilities

³ Woody, T. (2003, October 6). *How Maine Became the Heat Pump Capital of the US*. Bloomberg. <https://www.bloomberg.com/news/articles/2023-10-06/how-maine-became-the-heat-pump-capital-of-the-us>.

together in a regional coalition to implement the Accelerator. Roles and responsibilities of each coalition member, as well as key supporting functions, are described in Figure 2.

a. Description of GHG Reduction Measures

Collectively, the activities of the Accelerator address one significant GHG reduction measure: transformation of the residential space and water heating market to heat pumps. Heat pumps are a highly efficient, all-electric replacement for fossil fuel heating equipment and a highly efficient replacement for homes with electric resistance heating. A recent analysis by the National Renewable Energy Laboratory (NREL) found that “nationally, heat pumps would cut residential sector greenhouse gas emissions by 36%-64%, including the emissions from new electricity generation.”⁴

This transition is especially important in New England, where many homes rely on expensive and highly polluting delivered fuels (propane, kerosene, and heating oil), which contribute disproportionately to GHG and air pollutant emissions and household energy burden. According to Atlas Public Policy, New England has the highest reliance on fuel oil and kerosene for home heating of any region in the U.S., as shown in Figure 3. Maine and New Hampshire also have a high percentage of households using propane. Propane and home heating oil are 19% and 40% more carbon-intense than natural gas, respectively.⁵ For example, heating oil and propane account for 61% of residential GHG emissions in Connecticut but serve only 43% of homes.⁶

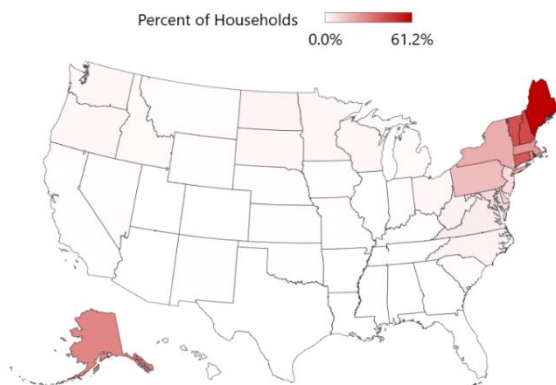


Figure 3 Percent of Households Using Fuel Oil or Kerosene for Primary Space Heating by State in 2020 (Source: Atlas Public

Delivered fuels, along with electric baseboard heating, are also the most expensive options for heating on a dollar-per-BTU basis. Due to the region’s cold climate, older building stock, and reliance on expensive delivered fuels, low-income households in New England—many of whom are located in rural communities—have the highest median energy burden of any region in the country, with 10.5% of income spent on energy bills.⁷ Delivered fuels are also unregulated, leading to volatile and unpredictable pricing that places a particular strain on household budgets as well as a risk of dangerous fuel cut-off situations. NREL found that nearly all households that use fuel oil and propane for heating would see energy bill savings from switching to heat pumps, with more significant savings in colder climates.⁸

Each state’s PCAP identifies residential buildings as a significant contributor to total GHG emissions:⁹

- CT: Residential buildings are the second largest source of GHG emissions at 19%.¹⁰

⁴ National Renewable Energy Laboratory (NREL). (2024, February 12). *News Release: Benefits of Heat Pumps Detailed in New NREL Report*. <https://www.nrel.gov/news/press/2024/benefits-of-heat-pumps-detailed-in-new-nrel-report.html> (hereinafter NREL, *Benefits of Heat Pumps*).

⁵ Gabriel, N. (2023, April 3). *Fuel Oil and Propane Space Heating Across the United States*. Atlas Buildings Hub. <https://atlasbuildingshub.com/2023/04/03/fuel-oil-and-propane-space-heating-across-the-united-states/>.

⁶ CT DEEP. (2023, April). 1990-2021 Connecticut Greenhouse Gas Emissions Inventory. https://portal.ct.gov/-/media/DEEP/climatechange/1990-2021-GHG-Inventory/DEEP_GHG_Report_90-21_Final.pdf.

⁷ ACEEE. (2020, September). *National and Regional Energy Burdens*. ACEEE | American Council for an Energy-Efficient Economy. <https://www.aceee.org/sites/default/files/pdfs/ACEEE-01%20Energy%20Burden%20-%20National.pdf>.

⁸ NREL, *Benefits of Heat Pumps*.

⁹ PCAP links for the five coalition states are provided here and are not subsequently cited for each PCAP reference.

¹⁰ CT DEEP. (2024, March). *A Priority Climate Action Plan*. U.S. EPA. (hereinafter *CT PCAP*).

- MA: Residential and commercial buildings are the second largest GHG source at 35%.¹¹
- ME: Residential buildings are the second largest source of GHG emissions at 21%.¹²
- NH: Residential and commercial buildings are the second largest GHG source at 16.9%.¹³
- RI: Residential heating alone is 19.3% of the state’s emissions.¹⁴

Table 1 outlines the GHG reduction measure in coalition member PCAPs and provides PCAP links.

Table 1 PCAP Measures Related to Heat Pump Adoption

GHG Reduction Measure	PCAP Title(s) and Page Numbers
“Support increased adoption of heat pumps statewide” and “Support deployment of networked geothermal system”	Connecticut: EPA Climate Pollution Reduction Grant Planning Grant First Deliverable: A Priority Climate Action Plan ; Appendix I-7 page(s) 83–91; Appendix I-10 page(s) 106–115.
“Transition to cleaner heating and cooling systems and efficient appliances”	State of Maine: Priority Climate Action Plan ; page(s) 27
“Decarbonizing Building Heating Systems”	Massachusetts Priority Climate Action Plan ; page(s) 64–66; Appendix G – B2 page(s) 117–119
“Heat Pumps to Improve Energy Efficiency of Space and Water Heating of Buildings”	State of New Hampshire: Priority Climate Action Plan ; page(s) 62–66, 96; Appendix A page(s) A3–A7
“Increase Residential and Commercial Heat Pump Adoption”	State of Rhode Island Priority Climate Action Plan ; page(s) 32–34; Appendix 2-J

The Accelerator is purpose-built to address the region’s unique challenges and opportunities to fundamentally transform the market for residential heat pumps through three program pillars: Market Hub, Innovation Hub, and Resource Hub. The features of these program pillars are described below.

Market Hub Features

The Market Hub will supercharge participation in the coalition states’ existing heat pump programs by engaging manufacturers, distributors, and contractors to drive the sales, stocking, and quality installation of heat pumps suited to New England’s climate and housing stock. While utility and state programs currently offer incentives for heat pump technologies across the five states, these mainly take the form of “downstream” rebates to end-use customers. In contrast, “midstream” incentives typically include a smaller stipend to the wholesale distributor and a larger “pass-through” incentive to the contractor and/or customer, applied as an instant discount at point of sale. Currently, as described in Section 1.b, few midstream incentives are available in the region and engagement with the supply chain is inconsistent. Moreover, manufacturers and distributors highly value program consistency, since they operate in all five coalition states and frequently sell equipment across the borders of New England’s small states.¹⁵ The five largest distributors (F.W. Webb, Homans, Plumbers’ Supply Company, The Granite Group, and S.G. Torrice) sell more than 50% of the heat pumps sold in the region.¹⁶ The Accelerator will address this missed opportunity and drive equipment stocking and sales across the region. The Market Hub will also incorporate strategies that support LIDAC access to heat pumps, such as incentive adders for distributors and contractors serving LIDACs and incentivizing equipment types needed in LIDAC buildings.

¹¹ MA Office of Climate Innovation & Resilience (OCIR) and Department of Transportation (DOT). (2024, March). U.S. EPA [Massachusetts PCAP](#) (hereinafter *MA PCAP*).

¹² ME GOPIF. (2024, March 1). [State of Maine PCAP](#). U.S. EPA. (hereinafter *ME PCAP*).

¹³ NH DES. (2024, March). [State of New Hampshire PCAP](#). U.S. EPA. (hereinafter *NH PCAP*).

¹⁴ RI DEM. (2024, March 7). [PCAP](#). U.S. EPA. (hereinafter *RI PCAP*).

¹⁵ Personal Communication, New England Program Implementer, March 2024.

¹⁶ Ibid.

The Market Hub will also meet the need for training New England contractors on cold-climate heat pumps and the value of whole-home electrification with efficiency. This approach will address gaps in the market; according to one major heat pump manufacturer, “only 30% of contractors are aware that a modern heat pump can supply 100% of a home’s heating load at outdoor temperatures of around 0°F.”¹⁷ The Market Hub will raise the quality of training and installation across the region, while also incorporating a focus on workforce development and job creation in LIDACs. Details on these workforce strategies are provided in Section 5. The Market Hub will look to train contractors on the value of efficiency alongside electrification and look to cross-promote existing efficiency programs alongside installation of heat pumps. Table 2 provides a summary of Market Hub features.

Table 2 Market Hub Program Features

Program Features	
Midstream Incentives	<ul style="list-style-type: none"> • \$500-\$1,000 (on average) per unit incentive to wholesale distributors for qualifying ASHPs, GSHPs, and HPWHs, with distributors retaining 20%-30% of the incentive and 70%-80% passed through to participating contractors and/or customers. • Standardized tool for distributor reporting and invoicing, with streamlined data collection and rapid reimbursement. • Equipment eligibility based on qualifying product lists to drive adoption of products suited to New England’s climate and housing stock and the needs of LIDAC buildings, such as cold-climate ASHPs, variable-speed heat pumps, and 120-volt HPWHs. • Collaboration with distributors to increase stocking and sales of qualified products, ensuring product availability to meet growing demand for heat pumps across the region. • Collaboration with utility and multifamily program implementers to ensure program can be used when applicable to these projects.
Contractor Training	<ul style="list-style-type: none"> • Training resources for contractors to drive consistent quality installation practices in New England on topics such as: cold-climate ASHPs, equipment sizing, control strategies, whole-home installations, fuel switching, and emerging technologies. • Leveraging distributors’ contractor networks/relationships to reach contractors quickly. • Integration of electrification and New England program-specific content into existing manufacturer and distributor training infrastructure.
Workforce Development in Underserved Communities	<ul style="list-style-type: none"> • Workforce development programs to grow the contractor base, with a focus on promoting job creation and entrepreneurship in LIDACs. • Outreach and engagement workforce organizations in LIDACs. • Tools and training to overcome barriers to entry in current workforce programs.

Innovation Hub Features

Low-income households in New England have the highest median energy burden of any region in the country.¹⁸ It is essential that these households and communities are not left behind in the clean energy transition. At the same time, households in LIDACs face unique barriers to heat pump adoption, which are described further in Section 4. The Innovation Hub is designed to address these barriers by funding state-based projects and community-based Quick Start Grant projects that support heat pump adoption for LMI households and disadvantaged communities. 100% of Innovation Hub funding will serve LIDACs. Table 3 summarizes key features of the Innovation Hub.

¹⁷ Jachman, M. (2024, March 9). *Are HVAC Contractors Getting the Message on Heat Pumps?* Air Conditioning, Heating & Refrigeration News (ACHR News). <https://www.achrnews.com/blogs/17-opinions/post/154290-are-hvac-contractors-getting-the-message-on-heat-pumps>.

¹⁸ U.S. DOE (Department of Energy). (2020). *LEAD (Low-Income Energy Affordability Data) Tool*. Energy.gov. <https://www.energy.gov/scep/slsc/lead-tool>. (hereinafter DOE LEAD Tool).

Table 3 Innovation Hub Program Features

Program Features	
State Initiatives	<ul style="list-style-type: none"> • 1-2 large-scale, multiyear projects in each coalition state to address specific state priorities and develop scalable solutions to overcome LIDAC barriers. • Examples might include: heat pump strategies for multifamily buildings and mobile homes, networked geothermal systems, heat pump technologies to address specific housing barriers (e.g., 120V HPWHs for housing with limited electric panel capacity), inclusive financing, hydronic system replacement options, and interventions to make heat pumps standard practice within state low-income programs. • Modeled on TECH Clean California’s regional pilots.
Quick Start Grants	<ul style="list-style-type: none"> • “Bottom-up” annual grants for smaller-scale, community-based pilots. • Simple, accessible application process to invite creative ideas that expand access to heat pumps for LMI households and LIDACs. • Modeled on TECH Clean California’s Quick Start Grants.
EJ Engagement in Design and Implementation	<ul style="list-style-type: none"> • Representatives from environmental justice (EJ) and community groups involved in the design of the state pilots and selection criteria for Quick Start Grants, with stipends to support their time. • Community-based groups can apply for Quick Start Grant funding. • Shared outcomes and learnings from pilots and grant-funded projects.

Resource Hub Features

The Resource Hub will serve as the Accelerator’s central repository for data and resources. Currently, each of the five coalition states offers various programs promoting heat pump adoption, but there is no mechanism to share data, best practices, lessons learned, and other information across state lines or scale the successes being achieved in states like Maine. Since the states already have well-established consumer brands, such as Mass Save and Efficiency Maine, the Resource Hub will not seek to establish a new brand or portal for consumers. Instead, it will serve as a central portal for distributors, contractors, program implementers, and other stakeholders in the heat pump supply chain to access relevant data and educational resources. The Regional Implementer will collaborate closely with existing heat pump programs (Efficiency Maine and utility energy efficiency programs in Connecticut, Massachusetts, Rhode Island, and New Hampshire) to collect resources and insights from these programs to share across the region, and to provide resources for these programs to disseminate information within their customer and contractor networks. Table 4 summarizes key features of the Resource Hub.

Table 4 Resource Hub Program Features

Program Features	
Data Hub	<ul style="list-style-type: none"> • Website hosting publicly accessible aggregate or anonymized data, including: market data (ASHP, GSHP, and HPWH sales and full-category HVAC and water heater sales), wholesale and installation cost data (as available), and program participation data. • Maps and tools for regional trend analysis, synthesizing publicly available information from each coalition state on building decarbonization policy and programs, housing stock and fuel sources, available incentives, and electricity and fuel costs. • Modeled after the TECH Clean California Public Data Portal and the Midwest ASHP Collaborative.¹⁹
Educational Resources	<ul style="list-style-type: none"> • Web-based, easily searchable repository of educational resources for distributors, contractors, program implementers, and other stakeholders.

¹⁹ TECH Clean California. (2024). <https://techcleanca.com/public-data/> and Midwest ASHP Collaborative. (2024). <https://www.mwalliance.org/midwest-ashp-collaborative>.

Program Features	
	<ul style="list-style-type: none"> Contractor training resources covering topics such as: trainings on cold-climate heat pumps, quality installation practices, sizing tools and guidance, emerging heat pump technologies, whole-home installation, multifamily options, and customer sales and support techniques for heat pumps. Consumer resources covering topics such as: selecting a heat pump, assessing operating cost impacts, cold-climate tools, operating and maintaining a heat pump, and developing a plan to fully electrify your home. Policy and program resources including: market studies and program evaluations from across the region; resources on topics such as rate design and grid impacts; and insights and best practices from successful heat pump programs.
LIDAC Outreach & Engagement	<ul style="list-style-type: none"> Multilayered outreach and engagement with groups representing LMI households and disadvantaged communities. Stipends to support community participation. Collected resources for equitable building electrification policies and programs.

Accelerator Tasks, Milestones, Risks, and Mitigation Strategies

Table 5 summarizes key tasks and milestones for the Accelerator by month. Tasks for the whole Accelerator are italicized, and hub specific tasks are listed in their own columns. If awards are made in October 2024, then we would assume month 1 to be the first month that the lead state executes a contract with EPA, likely November or December 2024.

Table 5 Accelerator Key Tasks and Milestones

Month	Tasks and Milestones		
	Market Hub	Innovation Hub	Resource Hub
1	<i>Kickoff meeting with coalition states</i>		
2	<i>Identify Advisory Council members and convene first meeting</i>		
	<i>Initiate stakeholder engagement, including LIDAC outreach and meetings with current program implementers, to inform program design, coordination, and RFP design</i>		
3	<i>Issue RFP for Regional Implementer</i>		
4			
5	<i>Select Regional Implementer</i>		
6	<i>Finalize contract with Regional Implementer</i>		
	<i>Finalize outputs, outcomes, and performance measures that will be tracked</i>		
7	Determine equipment eligibility criteria Develop Qualified Product Lists (QPLs) Draft distributor participation agreement and reporting requirements	Engage states and LIDACs to identify priorities and selection criteria for Innovation Hub projects	Identify regional resources for heat pump training, sizing, and quality installation
8	Complete first round of distributor enrollment Launch tool for distributor reporting and incentive processing	Engage states and LIDACs to identify priorities and selection criteria for Innovation Hub projects	Launch Resource Hub website
9	<i>Launch Accelerator</i>		
	Midstream incentives available through participating distributors	Open solicitation for Quick Start Grants and State Initiatives	Initial resources posted on website
10	Engage manufacturers, training providers, LIDACs, and utility program implementers to identify workforce priorities and gaps	Select Quick Start Grant projects	Promotional Materials Available
11	<i>Issue RFP for Program Evaluator</i>		
12	Formalize partnerships with workforce development partners and training providers	Finalize agreements and project plans with implementers	
13	Launch contractor trainings and other workforce development programming	Launch implementation State Initiatives and Quick Start Grants	Second round of resources posted on website
14	<i>Select Program Evaluator and put contract in place; develop Quality Assurance Plan</i>		
Ongoing	<i>Convene Advisory Council quarterly to guide program design and implementation, monitor progress, and adjust as needed</i>		

Month	Tasks and Milestones		
	Market Hub	Innovation Hub	Resource Hub
Ongoing	Collect distributor sales data and process incentives monthly		
Ongoing	Update Resource Hub with anonymized sales data on a quarterly basis		
Ongoing	Update midstream incentive requirements and QPLs at least annually		
Ongoing	Conduct annual Quick Start Grant solicitations and report on results of prior year grants		
Ongoing	Continuously improve program tools, resources, and trainings		
Ongoing	Regularly add new reports, resources, and information to the Resource Hub		
Ongoing	Publish annual reports to stakeholders on Accelerator results for Market Hub and Innovation Hub		
Ongoing	Publish annual program evaluation by third-party Program Evaluator		
Ongoing	Submit semiannual and final reports to EPA		

All major GHG reduction initiatives and energy market transformation programs face some known risks. Table 6 details anticipated risks mitigation strategies for the Accelerator. The third-party evaluator will also play a critical role in analyzing performance data to evaluate program risks on a regular basis.

Table 6 Accelerator Risks and Mitigation Strategies

Risk	Effect on GHG Emission Reductions	Mitigation Strategy
Delays in Regional Implementer procurement process	Delays may reduce cumulative GHG emission reductions in the near-term (2025-2030).	Develop request for proposals documentation between announcement of CPRG awardees and receipt of assistance agreement to build in more time. Several states in the coalition have experience issuing similar RFPs, enabling the coalition to use these examples to hit the ground running. The MOA also serves as a launching pad for the RFP development.
Delays in coordination with existing state program implementers and training providers	Delays may reduce cumulative GHG emission reductions in the near-term (2025-2030).	Engage current program implementers prior to RFP and after selection of Regional Implementer to identify each state's current landscape and program goals and identify where Accelerator can provide support; leverage existing state and utility relationships with program implementers.
Program undersubscribed in certain areas	GHG emission reductions and criteria co-benefits may not occur over the same geographic scope as anticipated and may result in inequitable distribution of program benefits.	Track distributor locations and identify state and local networks program can engage to advertise rebates and workforce offerings. Proactive outreach to LIDACs to ensure awareness, access, and participation. Consider incentive adders for LIDAC projects.
Program oversubscribed in certain areas	May cause Market Hub to achieve emissions targets early and spend out funds sooner than anticipated.	Work with implementer to ensure longevity and reevaluate budget and incentive distribution after first year of reporting and again at 2-year mark. Design evaluator goals to assess program subscription rates.
Challenges getting distributors to participate and report data	Lower participation may reduce cumulative GHG emission reductions in the near-term (2025–2030).	Select Regional Implementer with strong preexisting distributor relationships and engage distributors throughout implementation process; target largest distributors first; increase incentives to distributors and/or contractors.
Market confusion between Accelerator and existing programs in the region	Delays leading to lower participation and lower GHG emission reductions	Support existing programs in maintaining primary relationships with customers and contractors, while the Accelerator focuses on distributors to avoid creation of new consumer brands. Collect and share information on available incentives and reinforce existing brands.
Insufficient engagement with and participation of LIDACs	Reduced LIDAC benefits	Compensate EJ and community groups as partners and ambassadors; redouble Innovation Hub efforts to launch and successfully implement pilots and Quick Start Grants targeting LIDACs.

b. Demonstration of Funding Need

CPRG implementation funding is necessary to fully implement the proposed Accelerator to transform the region's market for residential heat pumps. Coalition states have varying access to other federal, state, and utility funding sources, which have successfully begun to prime the region for adoption of heat pumps. However, these sources are not sufficient to fully implement the proposed measures. Existing programs focus on informing and incentivizing end-use customers but do not address gaps in the regional supply chain, such as availability of the equipment through distributors and training of contractors to trust the product. CPRG funding, aligned with other time-bound sources of funding, provides a historically unprecedented opportunity at a critically important time to achieve regional market transformation for residential heat pumps in alignment with state priorities and customer economics.

The need to transition to heat pumps is particularly urgent in New England, due to the region's high energy burdens and reliance on expensive and polluting delivered fuels. Current levels of funding are insufficient to meet this outsized need, even with new IRA investments. There are more than 6 million homes in the five coalition states but DOE's Home Electrification and Appliance Rebates (HEAR) allocations for these states are estimated to serve only 20,000 homes in total, less than 2% of LMI households.²⁰ Additionally, in the absence of CPRG funding for the Accelerator, the heat pump market in New England is at risk of experiencing a boom-bust cycle, in which a short-term "boom" due to federal incentives for end-use customers leads to a long-term "bust" and market collapse when that funding ends.²¹ The Accelerator will avoid this outcome by aligning the supply chain and leveraging the strength of a regional approach that can sustain GHG reductions in New England's heat pump market beyond short-term incentives.

Furthermore, transitioning New England homes to heat pumps will require targeted strategies to address the region's unique challenges. The region needs heat pump solutions that are affordable, perform well at cold temperatures, meet homes' full heating load without reliance on backup fuels, enable full electrification for homes with hydronic heating (boilers), and work in older homes that may have insufficient electric panels and wiring. While some of these solutions are commercially available or under development, there is no current mechanism to rapidly scale adoption of cold-climate, full-electrification heat pump systems across the region.

State and utility programs in five states currently offer incentives for heat pumps, but they mainly take the form of "downstream" rebates to end-use customers. Most of these are utility rebates, which vary across states and can be unpredictable. These programs often run in short three-year cycles, with changing goals and mandates. Downstream rebates also have more extensive customer eligibility requirements (e.g., utility service territory, income level, fuel type) and usually require that customers or contractors fill out paperwork and wait to claim the rebate. As a result, downstream programs in the coalition states are estimated to reach less than 20% of heating equipment replacements each year.²²

Current program engagement with heat pump distributors is limited and inconsistent, with only one state currently offering midstream incentives for ASHPs at the distributor level, as shown in Figure 4. This leaves

²⁰ Analysis based on state funding allocations available at: DOE SCEP (n.d.). IRA Home Energy Rebates: State Allocations. <https://www.energy.gov/scep/articles/ira-home-energy-rebates-state-allocations>.

²¹ The 2009 American Recovery and Reinvestment Act (ARRA) provides an example of this phenomenon: following a temporary influx of funding for energy efficiency programs and investments, many weatherization and efficiency contractors were laid off and programs shuttered after the funding ran out. See Lydersen, K. (2024, February 26). *With Federal Funds Flowing, Weatherization Industry Prepares to Fill the Gaps*. Energy News Network. <https://energynews.us/2024/02/27/with-federal-funds-flowing-weatherization-industry-prepares-to-fill-the-gaps/>.

²² See Technical Appendix D for more details on downstream rebates in the region.

a key gap, since the “vast majority of retrofits are replacement on burnout and most customers opt for whatever technology the contractor recommends” and the distributor has in stock.²³ The Accelerator will address this gap and align requirements where midstream programs exist. Four of the coalition states currently offer midstream incentives for HPWHs, and these programs show promising results. About 60% of new electric water heaters sold in Maine are heat pumps rather than electric resistance models, thanks to Maine’s longstanding midstream incentive for HPWHs; nationwide, heat pumps account for only 2% of electric water heater sales.²⁴ Other states’ distributor stipends are very low (\$50 or less per unit). According to a program implementer in the region, “an additional distributor incentive would be very impactful for converting more sales from fossil fuel or electric resistance water heaters to HPWHs.”²⁵ Furthermore, midstream incentive levels, eligibility requirements, and incentive processing methods vary by state, limiting their effectiveness with distributors that operate across state lines.

	CT	MA	ME	NH	RI
Downstream: ASHP + GSHP	✓	✓	✓	✓	✓
Midstream: ASHP		✓			
Downstream: HPWH	✓	Pass-Through	Pass-Through	Pass-Through	✓
Midstream: HPWH	✓	✓	✓	✓	

Figure 4 NE Heat Pump Program Incentives at the Consumer vs. Distributor Level. (Appendix D provides a comprehensive summary.)

The Accelerator’s midstream incentives will improve alignment and implementation on a regional scale to achieve transformative GHG reductions that are only possible through multistate collaboration. In the absence of the regional coalition enabled by this CPRG grant, states are unlikely to engage distributors with the consistency needed to rapidly scale the heat pump market. Manufacturers and wholesale distributors are very supportive of the Accelerator, and several provided letters of support.

Federal tax credits and electrification rebates are available in the coalition states, as shown in Table 7.

Table 7 Federal Funding Sources for Residential Heat Pumps

	IRA Tax Credits ²⁶	DOE HEAR ²⁷	DOE Weatherization Assistance Program ²⁸
State Funding Allocations	Available in all coalition member states	CT: \$49.5 million; MA: \$72.8 million; ME: \$35.7 million; NH: \$34.7 million; RI: \$31.8 million	CT: \$3,647,792; MA: \$8,429,550; ME: \$3,898,763; NH: \$1,989,111; RI: \$1,524,355
Incentive Levels	Annual credit limit of \$2,000 for heat pumps and HPWHs through 2032	Up to \$8,000 for heat pumps and \$1,750 for HPWHs; \$14,000 max per household	Covers full cost of installation, subject to cost-effectiveness requirements
Customer Eligibility	Limited to homeowners that pay taxes; primary residences	LMI households with incomes at or below 150% of area median income	Low-income households with incomes at or below 60% of state median income

²³ Kisch, T., et al., TECH Clean California’s Heat Pump Market Transformation Approach: Lessons Learned in Year 1. ACEEE Summer Study Proceedings, 2022. <https://energy-solution.com/heat-pump-market-transformation-paper/>.

²⁴ Woody, T. (2003, October 6). *How Maine Became the Heat Pump Capital of the US*. Bloomberg. <https://www.bloomberg.com/news/articles/2023-10-06/how-maine-became-the-heat-pump-capital-of-the-us>.

²⁵ Personal communication, March 21, 2024.

²⁶ IRS, Home Improvement, <https://www.irs.gov/credits-deductions/energy-efficient-home-improvement-credit>.

²⁷ DOE Home Energy Rebates State Allocations, <https://www.energy.gov/sites/default/files/2023-07/IRA%2050121%20%26%2050122%20Home%20Energy%20Rebates%20State%20Allocations.pdf>.

²⁸ DOE Weatherization Assistance Program, 2023 Grantee Allocations, https://www.energy.gov/sites/default/files/2023-02/WPN_23-2_Program_Year_2023_Grantee_Allocations.pdf.

c. Transformative Impact

The Accelerator is fundamentally a market transformation program: it is purpose-built to overcome systemic barriers to residential building electrification in the region and make heat pumps standard practice in the HVAC and water heating industries. If the Accelerator is successful at achieving its goals, then nearly every space and water heater sold in New England will be a heat pump by 2040. In this way, the Accelerator will continue to produce GHG emission reductions even after the CPRG funding ends.

The Accelerator will transform the heat pump market in New England by:

- Scaling deployment of proven electrification technologies like HPWHs, GSHPs, and ducted ASHPs;
- Accelerating market adoption of emerging electrification products and practices like air-to-water heat pumps and full-electrification retrofits in cold climates; and
- Increasing heat pump installations and GHG reductions from LIDACs, where heat pumps are not yet widely adopted.

The logic model presented in Figure 5 shows the specific barriers that the Accelerator will overcome, the activities it will undertake, and the outputs and outcomes that will result.

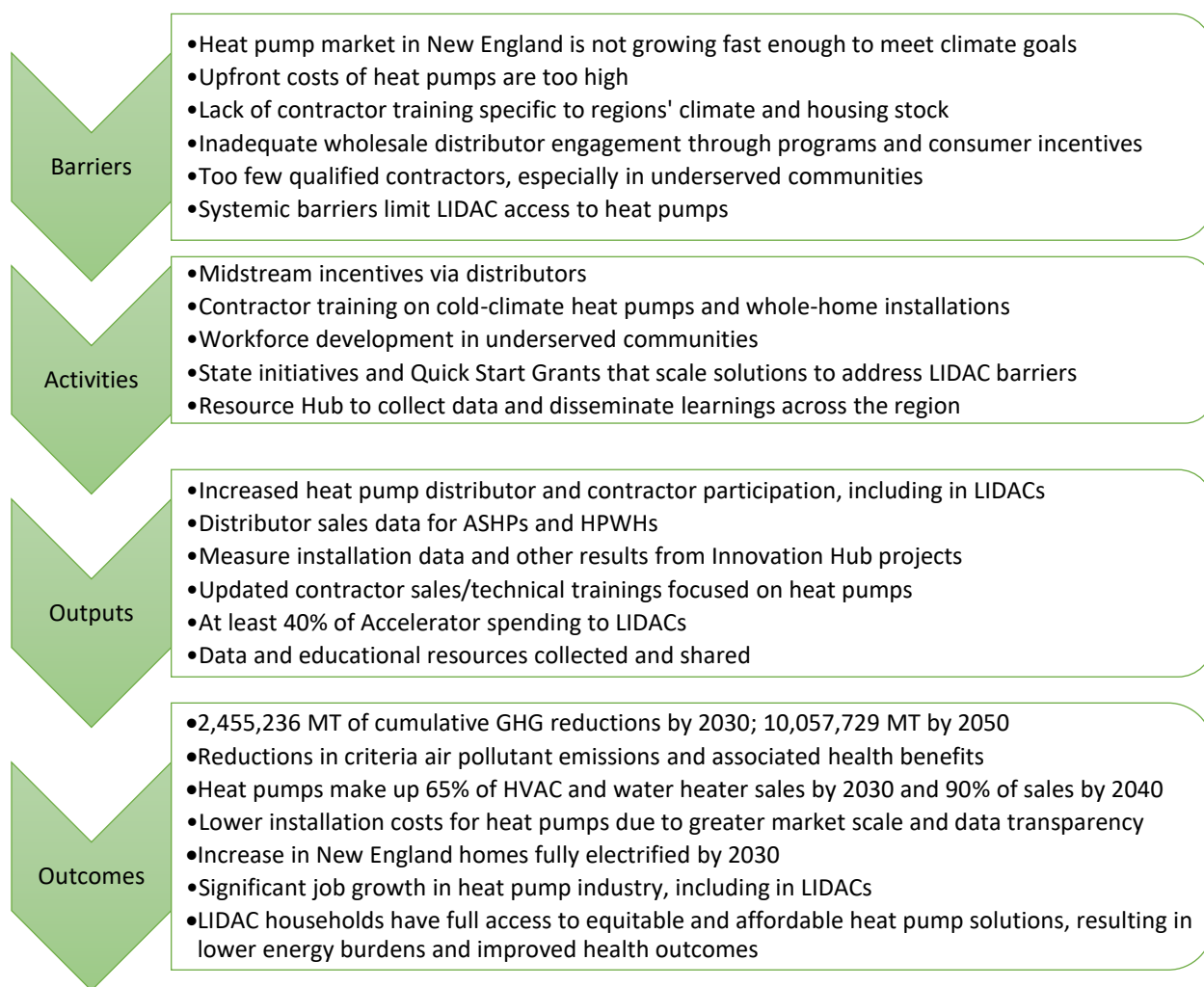


Figure 5 NE Heat Pump Accelerator Logic Model

The Accelerator will seek to learn from and scale successful regional examples, such as Maine's high rate of heat pump installations and large contractor network. It is also modeled on TECH Clean California, a statewide market transformation initiative for heat pumps, which in turn was modeled on the California Solar Initiative. The team that designed TECH "examined the underlying structures from the solar industry that enabled long-term market transformation and the success of the California Solar Initiative to identify the broad market development characteristics required for long-term market success."²⁹ The Accelerator coalition team held numerous discussions on program design and consulted with designers and implementers of other programs including TECH in developing the strategy presented in this application.

Since TECH's launch in 2021, early results have borne out the success of its market transformation model. More than 700 contractors have enrolled in the program statewide, installing over 26,000 heat pumps and HPWHs.³⁰ TECH's data also demonstrates that, as the number of contractors participating in a region increases, installation costs decline, driven by increased competition and lower soft costs as contractors become more familiar with heat pumps. Notably, "projects in counties served by 100 TECH contractors cost \$1,031 (\pm \$147) less than projects in counties served by 10 contractors."³¹

This proposal incorporates lessons learned from TECH Clean California that will make the Accelerator successful, while developing a first-in-the-nation regional model that spans state lines and will ensure success in New England's multistate market. It will replicate the success of regionally focused initiatives like the Regional Greenhouse Gas Initiative (RGGI), the nation's first cap-and-invest program, which has achieved significant reductions in carbon dioxide (CO₂) emissions and lowered dangerous air pollutants from the electric power sector.³² The Accelerator serves as a similar model for collaboration amongst states to demonstrate that aligned strategies will create lasting market transformation.

2. Impact of GHG Reduction Measures

The New England Heat Pump Accelerator will achieve significant GHG emission reductions in single-family and multifamily residential buildings across the five coalition states. It will achieve these impacts by rapidly increasing adoption of high-efficiency heat pumps in New England, which reduces GHG emissions in two ways: 1) displacing fossil fuel space and water heaters with electric heat pumps, and 2) raising the efficiency level of the heat pumps installed by promoting cold-climate ASHPs, variable-speed equipment, and proper sizing. As a market transformation program, the Accelerator seeks to make heat pumps standard practice in New England by permanently shifting the market to increase heat pump sales and installations. This design ensures GHG emission reductions will continue even after program funding ends.

a. Magnitude of GHG Reductions from 2025 Through 2030

The New England Heat Pump Accelerator will immediately begin reducing GHG emissions from home heating by increasing installation of high-efficiency heat pumps, starting in 2025 and continuing for five years. Two pillars of the Accelerator will result in direct GHG emission reductions:

- The Market Hub will incentivize heat pump sales through wholesale distributors and upskill contractors to increase the number and quality of heat pump installations.
- The Innovation Hub will fund the installation of heat pumps in LIDACs through larger-scale state-based initiatives and smaller-scale community-based grants.

²⁹ Kisch, *TECH Year 1*.

³⁰ TECH Clean California. (2024). *TECH Public Reporting Project Data*. <https://techcleanca.com/public-data/data-visualizations/>.

³¹ TECH Clean California. (2023, October 12). *Public Reporting Update and Preliminary Data Analysis*. https://techcleanca.com/documents/2707/TECH_Data_Webinar_October_2023.pdf.

³² Since the program went into effect in 2008, CO₂ emissions from power plants in RGGI states have fallen by 50%, outpacing the rest of the country by 10%.

Table 8 provides the cumulative emission reductions in metric tons of carbon dioxide equivalent (MTCO₂e) anticipated from implementation of the Accelerator for two time periods: 2025-2030 and 2025-2050, in total and subtotals for the Market Hub and Innovation Hub. Estimates for each hub assume investments of \$300 million on midstream incentives for ASHPs, GSHPs, and HPWHs through the Market Hub and \$100 million on measure installations through Innovation Hub projects in LIDACs. Further details on quantification methods, emission factors, relevant assumptions, and attribution methods associated with the estimates are provided in detail in Appendix B: Technical Appendix.

Table 8 Cumulative GHG Emission Reductions for New England Heat Pump Accelerator

Priority Measure	Cumulative GHG emission reductions (MTCO ₂ e)	
	2025-2030	2025-2050
New England Heat Pump Accelerator	2,455,236	10,057,729
Market Hub (\$300 million)	1,921,489	7,871,266
Innovation Hub (\$100 million)	533,747	2,186,463

Table 9 shows the cumulative GHG emission reductions for the 2025-2030 period by state and in total.

Table 9 Cumulative GHG emission reductions for New England Heat Pump Accelerator by State, 2025-2030

State	CT	MA	ME	NH	RI	Total
Cumulative CO₂e Savings (2025-2030, MT)	564,704	810,228	392,838	368,285	319,181	2,455,236

b. Magnitude of GHG Reductions from 2025 through 2050

Table 10 shows the cumulative GHG emission reductions for the 2025-2050 period by state and in total. As a market transformation program, the New England Heat Pump Accelerator is designed to achieve permanent GHG emission reductions. These lasting impacts happen in two ways:

- **Lasting changes in the HVAC and water heating market:** The Accelerator seeks to make heat pumps standard practice across the region's heat pump supply chain, such that nearly every space and water heater sold in New England will be a heat pump by 2040.
- **Long-lived measures:** When households with fossil-fuel space and water heaters replace existing systems with heat pumps, GHG emission reductions will persist for the lifetime of the measures, approximately 15 years.

Table 10 Cumulative GHG Emission Reductions for New England Heat Pump Accelerator by State, 2025-2050

State	CT	MA	ME	NH	RI	Total
Cumulative CO₂e Savings (2025-2050, MT)	2,313,278	3,319,051	1,609,237	1,508,659	1,307,505	10,057,729

Cumulative GHG emission reductions for 2025-2050 period account for both ways that the Accelerator is designed to achieve lasting impacts. First, direct savings from the heat pumps installed in 2025-2029 persist for an average 15-year measure lifetime. Second, we assumed a modest amount of ongoing savings due to market lift during the 2025-2050 period. Market lift, sometimes referred to as market effects, encompasses additional energy savings that occur because of a change in the market structure that leads to increased adoption of an energy efficiency measure, services, or behavior that can be attributed to the program market intervention. In many jurisdictions, utility regulators stipulate an "adder" to the calculated value of attributable savings in energy efficiency programs. For example, market lift adders

ranging from 5% to 7.5% are applied in California and Hawaii.³³ Following those approaches approved by utility regulators for efficiency programs, we applied a 5% market lift to the calculated GHG emission reductions for the Accelerator.

c. Cost-Effectiveness of GHG Reductions

The New England Heat Pump Accelerator is highly cost-effective. The cost-effectiveness of this application, inclusive of all measures, is **\$204 of CPRG funding requested per metric ton of CO₂e reduced between 2025 and 2030**. The emissions reductions continue well beyond 2030 given the long-term measure lifetime of the equipment, and the Accelerator is more cost-effective when considered over a longer period. Over the 2025-2050 time horizon, cost-effectiveness for the Accelerator is estimated to be \$50 of CPRG funding requested per metric ton of CO₂e reduced.

The Accelerator is designed with cost-effectiveness and efficiency at the forefront. Factors improving cost-effectiveness include:

- Providing incentives at the distributor level, where a smaller incentive can create a greater shift in market behavior;
- Deploying a midstream incentive design that reduces administrative burden for both program administrators and program participants;
- Designing the program pillars to fill gaps and seamlessly integrate with existing heat pump programs in New England, avoiding costly program redesign and market confusion;
- Sharing resources across states to rapidly scale best practices and avoid duplication of effort; and
- Driving permanent market transformation to deliver savings even after program funding ends.

Costs associated with each program component are detailed in Appendix A: Budget Narrative.

d. Documentation of GHG Assumptions

GHG emission reductions for the Accelerator were calculated by aggregating the emission reductions for individual buildings that receive program support to install heat pumps. For a given building that replaces a fossil fuel system with a heat pump, GHG emission impacts are based on the net impact of the decreased emissions from nonelectric onsite fuel consumption and the increased emissions from the additional electricity consumption. Energy consumption impacts for heat pump upgrade scenarios were calculated using the NREL ResStock model.³⁴ Energy consumption impacts were then converted into GHG emission impacts based on emission factors for electricity and fossil fuels. Assumptions for housing stock, fuel types, heat pump efficiency levels, and emission factors are provided in Appendix B: Technical Appendix.

As described in Section 1.b, coalition states have access to other funding sources for consumers to support heat pump adoption, such as utility rebates and IRA tax credits for heat pumps. The Accelerator is thoughtfully designed to complement these existing customer-facing rebates by targeting incentives to distributors, thereby filling a critical gap in the program landscape. To quantify the savings attributable solely to CPRG implementation grant funding, we estimated the number of households participating in the Accelerator that would also be expected to participate in each state's existing heat pump programs and to receive federal tax credits. GHG emissions impacts for these customers were reduced to the

³³ "CA PUC (California Public Utilities Commission). (2020, April). *Energy efficiency policy manual*. CA PUC. <https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/e/6442465683-ee-policy-manual-revised-march-20-2020-b.pdf> Evergreen Economics. (2013). *Net-to-gross issues in Hawaii energy efficiency programs: Challenges, near-term options, and a longer-term approach*. <https://hawaiienergy.com/wp-content/uploads/PY20-EMV-Annual-EMV-Report.pdf>.

³⁴ NREL (National Renewable Energy Laboratory). (2024). ResStock. <https://resstock.nrel.gov/>.

proportion attributable to the Accelerator, per EPA’s guidance. Further information on attribution methods and assumptions is provided in Appendix B: Technical Appendix.

Section 3: Environmental Results

The outcomes of the New England Heat Pump Accelerator align directly with the coalition states’ PCAPs and support EPA Strategic Plan Goal 1, “Tackle the Climate Crisis,” Objective 1.1, “Reduce Emissions that cause Climate Change.”³⁵ In the Strategic Plan, EPA outlined the “importance of overcoming market barriers, supporting partnerships in the public and private sectors to channel marketplace ingenuity towards climate action.”³⁶ As a market transformation program, the Accelerator will tackle persistent market barriers and partner with the supply chain to make heat pumps standard practice in New England.

a. Expected Outputs and Outcomes

The Accelerator will reduce GHG emissions and air pollution, improve health, and create lasting market change. Outputs and outcomes are provided in the logic model in Section 1.c and below in Section 3.b.

Estimated annual reductions in criteria air pollutants (CAPs) and hazardous air pollutants (HAPs) from the Accelerator, and specifically in LIDACs, are provided in Table 11 for the 2025-2030 period. Modeled health benefits from reduced air pollution are provided in Section 4.a.

Table 11 Reduction in Annual CAP and HAP Emissions, 2025-2030

CAP or HAP	Annual kg Reduced (Accelerator Total)	Annual kg Reduced (LIDACs)
NH ₃	296	103
NO _x	8,242	2,867
PM _{2.5}	802	279
SO _x	2,868	998
VOC	1,077	375

b. Performance Measures and Plan

Table 12 reviews the outputs and outcomes from the logic model in Section 1.c and explains how the Accelerator will track progress towards these metrics.

Table 12 Outputs, Tracking, and Outcomes for Accelerator

Outputs	Tracking Method	Outcomes
Increased heat pump distributor and contractor participation, including in LIDACs	Number of distributors with signed participation agreements Number of contractors purchasing qualified equipment through participating distributors Number of contractors from LIDACs participating in training and certification programs and hired for full-time work	Lower installation costs for heat pumps due to greater market scale and data transparency Significant job growth in electrification industry, including in LIDACs
Distributor sales data for ASHPs and HPWHs	Monthly invoices submitted by distributors for incentive payment indicating installed equipment type Technical Reference Manual measure characterizations and savings estimates for heat pump measures	2,455,236 MT of cumulative GHG reductions by 2030; 10,057,729 MT by 2050 Reductions in criteria air pollutant emissions and associated health benefits

³⁵ US EPA. (n.d.). FY 2022-2026 EPA strategic plan overview. <https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan-overview.pdf>. (hereinafter EPA Strategic Plan Overview 2022 - 2026).

³⁶ EPA Strategic Plan Overview 2022 – 2026.

Outputs	Tracking Method	Outcomes
Measure installation data and other results from Innovation Hub projects	Annual reports on State Initiatives and Quick Start Grants, with information on heat pumps installed (including data on LIDAC installations), barriers overcome, and scalable solutions	2,455,236 MT of cumulative GHG reductions by 2030; 10,057,729 MT by 2050 Reductions in criteria air pollutant emissions and associated health benefits Increased uptake of heat pumps in LIDACs
Updated contractor sales/technical trainings focused on heat pumps	Updated training materials available on Resource Hub Number of contractors from LIDACs participating in training and certification programs	Increase in New England homes fully electrified by 2030 Significant job growth in electrification industry, including in LIDACs
At least 40% of Accelerator spending to LIDACs	Spending on Innovation Hub projects Share of Market Hub spending on incentives and trainings serving LIDACs Share of Resource Hub spending on LIDAC and equity resources	LIDACs have full access to equitable and affordable home electrification solutions, resulting in lower energy burdens and improved health outcomes
Data and educational resources collected and shared	Resource Hub launched and regularly updated with new content	Supports achievement of all outcomes across the region

The Accelerator will track progress through the Regional Implementer and the Program Evaluator, which will conduct third-party impact and process evaluations on an annual basis and provide fast feedback for continuous improvement. Every state in the coalition has existing energy efficiency programs with robust evaluation processes; the Accelerator will work to gather data from these existing sources as well. The Resource Hub will serve as a central location to collect and track data and make key metrics visible to the public. In addition to the Resource Hub, CT DEEP, with the help of the Regional Implementer, will provide a status update on each performance measure to EPA in the semiannual reports and final report.

c. Authorities, Implementation Timeline, and Milestones

Figure 6 provides a summary timeline for the Accelerator. High-level roles and responsibilities of each coalition member are detailed in Section 1 of this proposal. A detailed implementation timeline—including tasks, key milestones, and key actions needed to meet measure goals and objectives by the end of the grant period—is provided in Section 1.a.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Ongoing		
EPA Deadline							SemiAnnual Update						Annual Update						EPA Semi Annual and Annual Reports		Final Report to EPA
Program Milestones	Select Regional Implementer							*Accelerator Kick Off		Select Program Evaluator					Innovation Hubs Solicitations				Innovation Hubs Solicitations		

Figure 6 High-Level Timeline

Each coalition state has clear authority to offer heat pump programs and take in grant funds. Specific information on each state’s authority was provided in each state’s PCAP, linked below in Table 13.

Table 13 State Authority Statements

Agency	PCAP and Page Numbers
CT DEEP	Connecticut: A Priority Climate Action Plan , page 38.
ME GOPIF	State of Maine: Priority Climate Action Plan , page 45.
MA DOER	Massachusetts Priority Climate Action Plan , page 114.
NH DES	State of New Hampshire: Priority Climate Action Plan , page 87
RI OER	State of Rhode Island Priority Climate Action Plan , page 33.

Section 4: Low-Income and Disadvantaged Communities

The Accelerator will deliver substantial benefits and avoid disbenefits to LIDACs. Each program pillar includes a LIDAC component, and all Innovation Hub efforts will invest in and deliver benefits to LIDACs.

a. Community Benefits

Electrifying homes by installing heat pumps provides a broad range of benefits to communities, including lower energy costs, enhanced public health by reducing air pollution, improved energy efficiency and resilience, job creation, and improvement of housing quality.³⁷ Nationally, people of color are exposed to nearly twice as much PM_{2.5} from residential gas equipment, such as furnaces and water heaters, as white people.³⁸ This exposure leads to negative health impacts, including asthma, chronic obstructive pulmonary disease (COPD), and premature death. In New England, many LIDACs are located in rural areas. Rural households are reliant on expensive and highly polluting delivered fuels such as heating oil, propane, and kerosene and experience associated health harms and high energy burdens.

A list of LIDACs in the five coalition states based on census tracts identified in the Climate and Economic Justice Screening Tool (CEJST) is provided as an attachment to this application. Currently, households in these communities face persistent barriers that limit their access to the many benefits of heat pumps and whole-home electrification. The Accelerator will ensure benefits flow to LIDACs through targeted outreach and programs that expand access to heat pumps and grow the workforce of LIDAC-based contractors that can install them. Specifically, the Accelerator will direct at least 40% of program funding to LMI households and disadvantaged communities to ensure benefits can be realized in these communities. It will do this by dedicating 100% of Innovation Hub funding to LIDACs, designing Market Hub incentives and workforce development offerings to meet LIDAC needs, and engaging with LIDAC communities through the Resource Hub. Accelerator interventions targeting LIDACs are described below.

- The **Innovation Hub** will expand heat pump access in LIDACs by funding state- and community-based projects that scale solutions to persistent barriers to electrification. Critical barriers to heat pump access in LIDACs include: high upfront costs of equipment; cost and complexity to make necessary housing upgrades to accommodate electrification (such as weatherization, structural repairs, and wiring upgrades);³⁹ risk of higher energy bills for households that convert from natural gas to heat pumps; limited ability to reach renters; lack of commercially available heat pump solutions for multifamily buildings and mobile homes; lack of information and trusted messengers for LIDACs; and low-income programs that do not offer heat pumps as a standard

³⁷ CT PCAP.

³⁸ Source: Christopher W. Tessum et al., *PM_{2.5} Polluters Disproportionately and Systematically Affect People of Color in the United States*, 7 *Sci. Adv.* eabf4491 (2021).

³⁹ For example, the TECH Clean California Low Income Integration Pilot worked with disadvantaged communities in the San Joaquin Valley to fund housing remediation and repairs that were not allowable expenses for other funding sources, enabling electrification to move forward. Source: *TECH 2021- 2022 Annual Report*.

practice or are difficult to access or navigate. Specific LIDAC priorities and projects will be developed in partnership with states and communities to ensure that the projects target the most critical barriers. LIDAC representatives will be compensated for their participation, and Quick Start Grants will directly fund projects implemented by community-based organizations. LIDAC stakeholders will also be engaged throughout project design and implementation and will be partners in sharing successes and lessons learned.

- The **Market Hub** will serve LIDACs in two ways: incentivizing heat pump technologies and program models that are relevant in LIDACs and growing the qualified workforce in LIDACs. Currently, there is a lack of commercially available electrification solutions for multifamily buildings and mobile homes where higher shares of LMI households live;⁴⁰ incentives will be provided for heat pumps suited for these types of buildings. Additionally, the midstream program incentive model is designed to reduce time and effort needed for the customer to access the program and receive an incentive. The Accelerator will have streamlined reporting and administrative procedures to encourage adoption and braiding of funding. The Market Hub will also engage the workforce in LIDACs, as described in Section 5.
- The **Resource Hub** will employ a multilayered approach to outreach and engagement with LIDACs and other stakeholders. It will serve as a space to collect resources for equitable building electrification policies, programs, and processes that center the needs of communities. The Accelerator will also provide stipends for LIDAC representatives and community members to participate in the Advisory Council and other stakeholder processes.

Coalition states highlighted a range of community benefits from installation of heat pumps in their PCAPs, noting that heat pumps improve health, reduce energy burden, and can lower costs and harmful pollutants for homes that heat with delivered fuels. These benefits are discussed in more detail below:

- **Improved indoor and outdoor air quality:** Heating appliances release a wide range of air pollutants, linked to many health problems, including respiratory irritation and illness, cardiovascular disease, fatigue, and damage to kidneys, liver, and central nervous system. In indoor spaces the concentration of air pollutants can be up to five times higher, especially if equipment used to heat the home requires combustion.⁴¹ Table 14 shows estimated health benefits from reduced criteria air pollution due to Accelerator activities, based on an analysis using EPA’s CO-Benefits Risk Assessment (COBRA) tool.

Table 14 Health Emissions from CAP Emissions Reductions, 2025 - 2030

Health Endpoint	Cases, Annual		Dollars, Annual	
	Low	High	Low	High
Mortality	0.022	0.051	\$239,038	\$541,076
Nonfatal Heart Attacks	0.002	0.023	\$389	\$3,613
Infant Mortality	0.000	0.000	\$992	\$992
Hospital Admits, All Respiratory	0.004	0.004	\$199	\$199
Hospital Admits, Cardiovascular	0.004	0.004	\$261	\$261
Acute Bronchitis	0.026	0.026	\$16	\$16
Upper Respiratory Symptoms	0.479	0.479	\$21	\$21
Lower Respiratory Symptoms	0.336	0.390	\$8	\$8

⁴⁰ Levin, E. et al. “Equitable Electrification: Solving the Affordability Catch-22 for LMI Households that Heat with Natural Gas.” 2022 ACEEE Summer Study on Buildings Proceedings. <https://www.veic.org/clients-results/reports/equitable-electrification-solving-the-affordability-catch-22-for-lmi-households-that-heat-with-natural-gas>.

⁴¹ CT PCAP.

	Cases, Annual		Dollars, Annual	
Emergency Room Visits, Asthma	0.015	0.015	\$7	\$7
Asthma Exacerbation	0.510	0.510	\$38	\$38
Minor Restricted Activity Days	16.589	16.589	\$1,454	\$1,454
Work Loss Days	2.813	2.813	\$563	\$563
Total Health Effects			\$242,986	\$548,248

- **Lower energy costs and energy burden for delivered fuel customers:** Propane and home heating oil are “the most expensive options for heating on a dollar-per-BTU basis alongside electric baseboard heating.”⁴² Four of the coalition states have among the highest energy burdens in the nation, with LIDAC households bearing the brunt of this burden.⁴³ NREL found that nearly all households that use fuel oil and propane for heating would lower their energy bills from switching to heat pumps, with greater savings in colder climates including New England.⁴⁴
- **Improved housing quality and comfort:** The Accelerator will emphasize quality installation of heat pumps and associated upgrades that enable whole-home electrification. Installing heat pumps may require upgrading outdated electric panels and wiring and remediating health and safety issues such as structural or moisture problems. Heat pumps can be paired with weatherization and/or solar to improve performance and lower energy bills; benefits of weatherization will be emphasized in the Accelerator’s workforce education. Heat pumps will also provide cooling to households that currently lack air conditioning, improving comfort and resilience to extreme heat.
- **Local, well-paying jobs:** The Accelerator will grow and upskill the workforce in LIDACs by offering training and supporting job creation and entrepreneurship opportunities for high-quality jobs in HVAC and water heating.

Stakeholders have identified several potential disbenefits from heat pump adoption as a concern: operational affordability of heat pumps when electricity rates are high (particularly for natural gas customers), reliability in cold weather, strain on the grid, and potential for housing displacement or gentrification. The Accelerator will employ a range of strategies to avoid these disbenefits. Based on market economics, households currently heating with propane, kerosene, and oil will most likely see greatest uptake in the program, and therefore benefit from reduced energy bills. To address the risk of increased energy costs for natural gas customers, the Accelerator will educate contractors, provide tools to assess customer cost impacts, and promote comprehensive upgrades that incorporate weatherization and high-efficiency equipment. The Accelerator will also train contractors on cold-climate installations and equipment sizing to ensure sufficient heating in cold weather and work with utilities and regulators to address concerns about grid and rate impacts. GSHPs’ high efficiencies can further reduce strain on the grid, as can some of the potential quick start programs such as thermal storage with hydronic systems.

Coalition partners will assess, quantify, analyze, and report on associated community benefits based on actual data collected during implementation. The Accelerator will track indicators such as deployment of heat pumps through distributors, communities, and environmental justice groups engaged, and Innovation Hub investments to quantify reduction in GHG and co-pollutant emissions and other community benefits. This will include running COBRA or another health benefits analysis model to assess the Accelerator’s impacts. The coalition will include results of these assessments in semiannual reports and the final report to EPA and make the information publicly available through the Resource Hub.

⁴² CT PCAP.

⁴³ DOE Lead Tool.

⁴⁴ NREL, *Benefits of Heat Pumps*.

b. Community Engagement

Engagement from community members and LIDAC stakeholders leads to greater knowledge, creative solutions, and more effective and inclusive implementation practices. Each coalition state performed extensive community outreach, including to LIDACs, during development of the measures contained in this proposal as part of their PCAP development process. States engaged with the following groups to inform their PCAPs and plan to expand collaboration with these groups to guide Accelerator design and implementation. Additional details can be found in each state's plan.

- **Connecticut's LIDAC Advisory Group** provided insight, identified ways to promote inclusivity, and addressed the potential challenges and disbenefits.
- **Maine's PCAP reflects recommendations of the Maine Climate Council's Equity Subcommittee**, including supporting increased participation in state climate and energy processes.
- **Massachusetts** convenes monthly **Justice40 and Equitable Investment Working Group** meetings where statewide stakeholders meet to discuss environmental justice issues as the state develops and implements its climate and building decarbonization policy.
- **New Hampshire** convened **New Hampshire Listens**, a community engagement group comprised of stakeholders from across the state. NH DES also met with the New Hampshire Office of the Consumer Advocate, Community Loan Fund, and Southwest Region Planning Commission (SWRPC) to gather feedback on the proposal.
- **Rhode Island** DEM recently hired a **Climate Justice Specialist**, who helps facilitate the stakeholder engagement process and provided grants to six community-based organizations that will lead community engagement activities through workshops, educational opportunities, and discussions with specific stakeholders.

Additionally, states plan to coordinate with regional partners Northeast States for Coordinated Air Use Management (NESCAUM) and Northeast Energy Efficiency Partnerships (NEEP) to conduct additional stakeholder engagement and provide targeted resources for LIDACs. Each coalition state participates in NESCAUM's Building Electrification Initiative, and NESCAUM has convened an EJ Advisory Group with representatives of EJ and community-based organizations from the Northeast to guide the initiative. Coalition states can coordinate with NESCAUM to engage the EJ Advisory Group. NEEP's Equitable Building Decarbonization initiative also has a wealth of resources that the Accelerator can leverage, such as a policy brief, "Near-Term Solutions for Centering Energy Equity," identifying solutions for equitable building decarbonization in the residential sector.⁴⁵

Coalition states will continue meaningful engagement with LIDACs through the design and implementation process, across all three pillars of the Accelerator. As outlined in the milestones provided in Section 1.a, the coalition plans to meet with LIDACs early on to ensure meaningful input on program design. The coalition will also provide opportunities for feedback from LIDAC stakeholders on what worked and what didn't, and will continuously adjust the implementation strategy to ensure that the Accelerator delivers meaningful benefits to LMI households and disadvantaged communities.

The Accelerator received letters of commitment from the following representatives and organizations in the region⁴⁶: Governor McKee of Rhode Island; Governor Mills of Maine*; Berkshire Regional Planning Commission; Building Decarbonization Coalition*; City of Cambridge; Clean Energy NH; Climate Jobs RI; CT Coalition for Economic and Environmental Justice; CT Roundtable on Climate and Jobs; Daikin; Efficiency Maine Trust*; Emerald Cities Collaborative; Energize CT Energy Efficiency Board; Emerson Swan;

⁴⁵ NEEP. *Equitable Home and Building Decarbonization*. <https://neep.org/solutions-low-carbon-states-and-communities/equitable-home-and-building-decarbonization>.

⁴⁶ These are all included as attachments to the application. Groups marked with (*) sent letters of support.

Fujitsu; F.W. Webb; Greater Bridgeport Community Enterprises, Inc.; Laminar Collective; MA Building Electrification Accelerator; Mitchell Environmental Health Associates; Mitsubishi*; NEEP; NESCAUM; NH Community Loan Fund; New Hampshire Housing; National Grid*; Northern Middlesex Council of Governments (NMCOG); North Hartford Partnerships/SWIFT; People's Action for Clean Energy (PACE); Plumbers' Supply Company; PowerOptions; Pioneer Valley Planning Commission (PVPC); Resilient Buildings Group; Save the Sound; Vital Communities; Yale Center for Environmental Justice; The Sierra Club, CT*; Sierra Club, MA*; The Nature Conservancy of NH*; Upper Valley Lake Sunapee Regional Planning Commission*; Rewiring America*; and RI AFL-CIO; RMI.*

Section 5: Job Quality

The Accelerator will drive the creation of high-quality energy efficiency and electrification jobs. TECH Clean California found that there is “clear value in having comprehensive, easy-to-understand program information and contractor training materials available through a centralized source.”⁴⁷ Contractors are often hesitant to break away from existing, profitable sales models and invest time in new technologies with yet-to-be-proven demand. State PCAPs noted a range of workforce challenges, including a critical shortage of HVAC technicians.

New England's workers often cross state lines. The Accelerator will fill a critical need for common workforce requirements and training opportunities across the region, building on successes in states like Maine and Massachusetts. It will identify gaps, align regional practices and guidance, and implement policies and programs that allow contractors to work across states and utility territories more easily, enabling them to expand their businesses. The Accelerator will also tackle emerging topics such as whole-home electrification, hydronic heating replacement, and grid-interactive HPWHs. The Resource Hub will collect online trainings, guidance, and technical information on heat pump sizing, design, installation, and servicing. The Accelerator will bring together successful tools and models from across the Northeast. Some programs that will be used as examples include Mass Save's cold-climate heat pump training⁴⁸ and NYSERDA's supplemental cold-climate ASHP Sizing and Design Training curriculum,⁴⁹ which is delivered through participating manufacturers and sponsors as an add-on to existing curriculum.

The Accelerator will proactively collaborate with utilities and program administrators in the region to leverage existing program infrastructure and add to the current landscape. It will also elevate workforce programs that go beyond training, through alleviating barriers and building partnerships with trusted community organizations. Some examples of workforce initiatives that could be expanded follow.

- **Funding on-the-job training and certifications** can offset the initial costs to enter the field and provide more opportunities for workers to transition, as well as provide support for small businesses to grow their business. For example, New York's Clean Heat Connect program⁵⁰ allows heat pump contractors to sponsor trainees and offers training and wage subsidies, as well as support for advertising and equipment. Maine's Apprenticeship Program⁵¹ allows companies to sponsor an apprentice and provide training through the program with the state covering up

⁴⁷ TECH 2021- 2022 Annual Report.

⁴⁸ Heat pump installer training opportunities. Mass Save. <https://www.masssave.com/en/trade-partners/heat-pump-installer-training>.

⁴⁹ Training provider resources. NYSERDA. <https://www.nyserdanyny.gov/All-Programs/Clean-Energy-Workforce-Development-and-Training/Resources/Training-Provider-Resources>.

⁵⁰ Clean Heat Connect, NYS Clean Heat. <https://cleanheatconnect.ny.gov/>.

⁵¹ Strengthening Maine's clean energy economy. (2020, November 9).

Maine.gov. https://www.maine.gov/energy/sites/maine.gov.energy/files/inline-files/StrengtheningMainesCleanEnergyEconomy_Nov92020.pdf.

to 50% of the cost of classroom instruction. Similarly, Massachusetts' Clean Energy Pathways Program⁵² provides paid training and hands-on experience with nine-month fully paid internships that provide skills, ongoing support, and mentorships.

- **Partnering with existing, experienced local organizations** can effectively coordinate benefits available from different sources and offer mentorships to grow in the field through a support system. In New Jersey, PSE&G's Clean Energy Future Program⁵³ partners with community organizations and the New Jersey Department of Labor to recruit and retain participants.
- **Offering programs that alleviate barriers to entry to increase participation.** Wrap-around programs increase participation and retention by alleviating barriers outside of the requirements of the job, such as lack of childcare, attaining a driver's license, and ensuring stable housing. The District of Columbia Sustainable Energy Utility Workforce Development Program⁵⁴ creates career pathways for unemployed and underemployed workers. Community-based organizations recruit workers, training is offered free of charge, and participants are paid a living wage. The program also provides soft skills training such as interviewing, public speaking, resume drafting, and budgeting and general education classes on clean energy.

The Accelerator is aligned with the Good Jobs Principle of Skills and Career Advancement. One of the main measures of success for the proposed program is "building regional workforce development efforts," including incentives to spur industry expansion and training to create career pathways that include upward mobility for workers. The other two relevant principles, DEIA and Organizational Culture, are broadly applicable because of the program framework, which will value and respect the contribution of all stakeholders and will focus on serving LIDACs. Equity will be integral to the educational component of the program to ensure awareness and access to training materials. The Accelerator will also advertise training opportunities to those typically underrepresented in the industry and collaborate with community-based organizations already serving LIDACs.

The Accelerator received letters of commitment from the following representatives and organizations in the region⁵⁵: Climate Jobs RI; CT Coalition for Economic and Environmental Justice; CT Roundtable on Climate and Jobs; Daikin; Efficiency Maine Trust*; Emerald Cities Collaborative; Emerson Swan; Fujitsu; F.W. Webb; Greater Bridgeport Community Enterprises, Inc.; Mitsubishi*; National Grid*; Plumbers' Supply Company; and RI AFL-CIO.

Section 6: Programmatic Capability and Past Performance

CT DEEP and the coalition partners have successfully implemented other large federal grants and overseen billions of dollars in utility energy efficiency programs in their jurisdictions. Federally funded assistance agreements that CT DEEP is performing or has performed within the last three years are provided below.

a. Past Performance

Diesel Emission Reduction Act (DERA)

- Assistance Agreement Number: DS-00A00174
- Funding Agency: U.S. Environmental Protection Agency (EPA)
- Assistance Listing Number: 66.040 Diesel Emissions Reduction Act (DERA) State Grants (CFDA)

⁵² Clean energy pathways. Mass Save. <https://www.masssave.com/community/clean-energy-pathways>.

⁵³ Utility's all-in approach to clean energy workforce development. (2022, June 28).

ICF. <https://www.icf.com/insights/energy/clean-energy-workforce-development-program>.

⁵⁴ Utilities can diversify the energy efficiency workforce. Here's how. (2020, October 29). ACEEE. <https://www.aceee.org/blog-post/2020/10/utilities-can-diversify-energy-efficiency-workforce-heres-how>.

⁵⁵ These are all included as attachments to the application. Groups marked with (*) sent letters of support.

- Description: This program funds grants and rebates that protect human health and improve air quality by reducing harmful emissions from diesel engines.
- Funding Agency Contact: Patrice Kelly, Patrice.Kelly@ct.gov, 860-424-3410
- Status: DEEP has a history of success administering the DERA program since 2008. This specific award started its period of performance on 10/1/19 and is expected to end on 9/30/24.
- Reporting History: This grant has required quarterly programmatic reporting, quarterly cash drawdown minimum, and annual financial reporting. All financial and programmatic reporting has been satisfied over the course of the performance period to date. Additionally, CT DEEP has continually posted project selections and status reports on its website.

Brownfield Grant Program

- Assistance Agreement Number: RP00A00819-0
- Funding Agency: U.S. Environmental Protection Agency (EPA)
- Assistance Listing Number: 66.817 State & Tribal Response Program Grants
- Description: CT DEEP was awarded this funding to administer to brownfield sites in Connecticut to perform I) environmental assessments and II) cleanup activities. CT DEEP has encouraged applications that enable the creation, preservation, or addition of park space, greenways or other recreational space, or other property used for nonprofit purposes.
- Funding Agency Contact: Mark Lewis, 860-424-3768, Mark.Lewis@ct.gov
- Status: CT DEEP will publicly announce its first round of grant awards to projects in four separate towns. Awardees will utilize the funds to conduct environmental investigation or environmental cleanup to render the subject properties suitable for redevelopment as greenspace or park space.
- Reporting History: CT DEEP has submitted timely interim biannual reports under this agreement, adequately summarizing project progress and providing detailed information on activities, products and deliverables, funds expended, and the project schedule, among others.

Long Island Sound Study (LISS)

- Assistance Agreement Number: 4S00A00824-0
- Funding Agency: U.S. Environmental Protection Agency (EPA)
- Assistance Listing Number: 66.437 Long Island Sound Program
- Description: This grant program advances habitat restoration and access along the Long Island Sound (LIS) coast, river connectivity, integrated environmental characterization of LIS, water quality in embayments, and green infrastructure in the LIS watershed.
- Funding Agency Contact: DeAva Lambert, 860-424-3207, Deava.lambert@ct.gov
- Status: Program supports multiple complex projects. Project is ongoing and progress has been reported as highlighted below.
- Reporting History: CT DEEP has submitted timely quarterly reports and meets regularly with EPA through the Long Island Sound Study workgroups, Implementation Team, and Management Committee. Progress toward achieving the expected outputs and outcomes, challenges to meeting expected outputs and outcomes during the reporting period, and strategies to address such challenges are discussed.

Water Quality Management (604b) awards

- Assistance Agreement Number: C6-00100621-0
- Funding Agency: U.S. Environmental Protection Agency (EPA)
- Assistance Listing Number: 66.454 Water Quality Management Planning
- Description: Funds from this grant program are used to support the Clean Water Act. CT DEEP reserves and awards 40% of the funds to regional planning entities for projects that help meet

Connecticut's water quality goals and program priorities, and the remaining 60% of the funds is used by CT DEEP for water quality management planning purposes and oversight.

- Funding Agency Contact: Erik Bedan, 860-424-3386, Erik.Bedan@ct.gov
- Status: CT DEEP has received and managed Water Quality Management (604b) awards for over 15 years. The referenced award was successfully completed through the implementation of a carefully crafted and thoroughly reviewed work plan, one full-time staff devoted to the work of the project, full support of Bureau of Central Services for financial and administrative needs, and state matching funds to supplement funds.
- Reporting History: All required financial and technical reports were filed in accordance with the agreed-upon award. The work plan had details regarding Grant Administration, Reporting, CT Water Quality Reporting Standards, Stream Flow, and Water Use Data Collectables to help ensure that all-award objectives were met and reports were filed in an accurate and timely manner.

State Energy Program (SEP)

- Assistance Agreement Number: DE-EE0008645
- Funding Agency: DOE
- Assistance Listing Number: 81.041 State Energy Program
- Description: This grant supports Connecticut's Comprehensive Energy Strategy (CES). These funds can be used to pay for projects that promote energy efficiency, energy security, or environmentally friendly economic growth. Projects are selected by DEEP in alignment with the goals of the Comprehensive Energy Strategy.
- Funding Agency Contact: Benjamin McMillan, 860-827-2737, Benjamin.McMillan@ct.gov
- Status: The project is ongoing and the grant ends on 6/30/2024. Most work funded through the grant has been completed, and the agency is currently finalizing payment to contracted entities.
- Reporting History: This work was successfully managed by Bureau of Energy and Technology staff and its management team. CT DEEP submitted timely quarterly reports to DOE about progress toward achieving the expected outputs and outcomes, challenges to meeting them during the reporting period, and strategies to address such challenges. Regular monthly meetings were held with a designated DOE Project Officer.

b. Reporting Requirements

See reporting history in Section 6.a, above.

c. Staff Expertise

Coalition state agencies have substantial expertise related to building electrification and heat pumps, oversight of utility-administered energy efficiency programs, and effective and efficient management of federal grants. These qualifications are summarized in Table 15. Biographical sketches for key staff at CT DEEP and NESCAUM are included in Appendix C. Additional information on state experience and qualifications can be found in each state's PCAP.

Table 15 State Agency Expertise

State Agency	Expertise
CT DEEP	CT DEEP has expertise in energy efficiency, HVAC electrification measures, GHG tracking and decarbonization measures, and program/grant administration. DEEP serves as a statutory member of the state's Energy Efficiency Board, which oversees the development, implementation, and evaluation of energy efficiency plans for Connecticut. DEEP also serves as the current chair of the 11-state Regional Greenhouse Gas Initiative cap-and-invest initiative and Chair of the Governor's Council on Climate Change.

State Agency	Expertise
Efficiency Maine Trust (EMT)	EMT is a quasi-state agency established by the Maine Legislature to administer programs that improve energy efficiency and reduce GHG emissions in Maine. EMT provides consumer information, discounts, rebates, loans, and investments in energy efficiency, beneficial electrification and strategies to manage energy demand. EMT will serve as the program design lead for Maine, in partnership with ME GOPIF, the CPRG coalition lead.
MA DOER	MA DOER has expertise in energy efficiency and HVAC electrification measures. DOER chairs the Energy Efficiency Advisory Council, which oversees the development, implementation, and evaluation of the energy efficiency plans for Massachusetts investor-owned utilities and municipal aggregators with certified efficiency plans.
NH DES	NH DES has over 30 years of combined experience deploying grant and loan funds, including experience with energy efficiency projects and ensuring compliance with requirements associated with those funds.
RI OER	OER is the lead entity within Rhode Island with expertise in administering energy programs aiming to reduce the carbon intensity of the state's building stock including Clean Heat RI.

Coalition experience. All coalition member agencies have significant experience collaborating in a regional coalition, with nearly two decades of experience with the Regional Greenhouse Gas Initiative (RGGI), which was the nation's first cap-and-invest program and was established through a regional memorandum of understanding (MOU).⁵⁶ RGGI has achieved significant reductions in carbon dioxide (CO₂) emissions and lowered dangerous air pollutants from the electric power sector.⁵⁷ The member agencies will build on this experience in launching the New England Heat Pump Accelerator. All of the coalition states also participate in NESCAUM's Building Electrification Task Force, working to implement the multistate MOU to accelerate the transition to zero-emission residential buildings through shared targets and development of a shared action plan.

Regional nonprofit support. Coalition states benefit from strong preexisting relationships with regional nonprofit entities, NEEP and NESCAUM, which have both submitted letters of commitment. NEEP has nearly three decades of experience in energy efficiency and environmental programs, market transformation, regional convening, and NESCAUM convenes and provides technical support to air and environmental agencies in the Northeast.

⁵⁶ RGGI (Regional Greenhouse Gas Initiative). (n.d.). Model Rule and MOU Versions. <https://www.rggi.org/program-overview-and-design/design-archive/mou-model-rule>.

⁵⁷ Acadia Center. (2023, April 25). RGGI. <https://acadiacenter.org/work/rggi/>. Since the program went into effect in 2008, CO₂ emissions from power plants in RGGI states have fallen by 50%, outpacing the rest of the country by 10%.