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Community Energy Advocate Training

PROGRAM OVERVIEW

The Community Energy Advocate Training is a comprehensive ten-hour course for Energy Managers, community volunteers or paid coaches. Focusing mainly on clean heating adoption, the curriculum covers heat pump technology, best practices on heat pump design and installation, and industry insights. This training will also explore the fundamentals of residential building science, weatherization and home mechanical systems as a foundation, and important soft skills for working with homeowners and contractors to achieve positive outcomes—three additional, optional modules for other decarbonization technologies are also available. This training can be provided in-person, virtually, or with a hybrid approach, and is supported by our learning management system. Participants who complete the training will have access to a community message board and supplemental resources.

PROGRAM BENEFITS

- Build capacity from within your community to help residents adopt clean energy solutions.
- Drive meaningful and sustained increases in heat pump + weatherization adoption rates in participating communities.
- A blend of in-person and virtual classroom experiences.
- A comprehensive curriculum including technical information, building science basics, best practices on heat pump design and installation, industry insights and important soft skills for working with homeowners and contractors to achieve positive outcomes.

LEARNING OBJECTIVES

- The ability to discuss the technology, theory and science behind heat pump technology.
- Preparing homeowners to speak with contractors and make informed decisions to purchase heat pumps for their homes.
- Help homeowners understand the most relevant information without overwhelming them.
- The ability to field a wide variety of questions that may arise.
- Understand the basics of mechanical systems and building envelope characteristics of the New England housing stock.

FOR MORE INFORMATION & REGISTRATION: 339-707-0918 | www.AbodeEM.com | training@AbodeEM.com

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WEATHERIZATION AND BUILDING ENVELOPE *(ONE HOUR)*

Understanding the thermodynamics of how a house works as a system is extremely helpful when assisting homeowners in making informed decisions about their heating and cooling systems. This is due to the importance of weatherizing a home as much as possible before installing heat pumps. For this lesson, we'll discuss the basics of air sealing, insulation and efficiency with a focus on the impact of architectural decisions and building practices on heat pump sizing.

PARTICIPANTS WILL:

- Understand how a home uses and loses energy and how the basic principles of thermodynamics apply to energy-efficient heating and cooling.
- Apply concepts of safe retrofitting strategies for improving existing homes to make heat pump adoption more affordable while also leading to lower operation costs and carbon footprint.

HOME MECHANICAL SYSTEMS *(ONE HOUR)*

Explore the mechanical systems within a home and the different existing heating and cooling systems that are being replaced.

Participants will:

- Gain a basic understanding of how steam, forced-hot water and forced-hot air heating systems operate.
- Compare the different control strategies of these systems and discuss how existing distribution systems can be incorporated or will need to be abandoned as we look to electrify our homes.
- Evaluate the pros and cons, and costs of the different fossil fuel-based options and understand where heat pumps fit into the mix.

HEAT PUMP FUNDAMENTALS *(TWO HOURS)*

What are air source heat pumps (ASHPs) and how do they work? What qualifies a heat pump for cold climates and what are their abilities? We'll discuss the various types of heat pumps including ducted, non-ducted (mini-splits), air to air, air to water and ground source. This module will cover both indoor and outdoor units, refrigerants, modulation and inverters. We'll explain ratings such as COP, SEER and HSPF, as well as relevant data such as cost ranges, operational costs and CO2 comparisons.

PARTICIPANTS WILL:

- Understand the refrigerant process and the core mechanisms of the ASHP.
- Identify the differences between cold climate and non-cold climate ASHPs, outdoor and indoor ASHP equipment, single zone versus multi-zone, ducted versus ductless and air source (ASHP) versus ground source (GSHP).
- Evaluate different adoption strategies, particularly the displacement or replacement of existing mechanical equipment. If pursuing a displacement strategy, weigh the capacity balance point, economic balance point and carbon balance point.

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SIZING, SELECTION AND DESIGN
(ONE HOUR)

Explore an array of topics relating to sizing, design and equipment selection. We'll review heating and cooling loads, and sizing tools used to estimate loads such as Manual J calculations. This lesson will also focus on the pros and cons of indoor unit types, turndown ratios, best practice designs for floor plan configurations, re-using existing ductwork, dual fuel systems and integrated controls.

PARTICIPANTS WILL:

- Discuss different indoor equipment options for air source heat pumps, as well as the impact of budgets and local incentives on equipment selection.
- Evaluate the consequences of undersized versus oversized equipment in relation to rated capacities and the true performance of the equipment.
- Become familiar with efficiency guidelines within the NEEP database and the manufacturer submittal process.
- Differentiate between Manual J heat load options and understand how existing usage data can help inform system sizing. Utilize contractor best practices to identify what can be done to ensure equipment is properly sized.

INSTALLATION BEST PRACTICES OF COLD-CLIMATE ASHP *(ONE HOUR)*

Discover industry best practices for quality installation, including the location of outdoor units, line sets, ground clearance and pressure testing refrigerant lines.

PARTICIPANTS WILL:

- Understand what goes into installing all components of an air source heat pump system, including optimal indoor unit locations, outdoor locations and considerations regarding line sets.
- Identify what to look for when installing ducted systems, such as trade-offs with placing equipment in unconditioned spaces.
- Evaluate if redundancy and resiliency can be addressed in the design, or the existing mechanical equipment should be left in place.

END USE STRATEGIES *(ONE HOUR)*

Homeowners often need additional support after installing their new heat pump systems, as heat pumps do not operate the same way as fossil-fuel systems. This lesson will advise on control strategies and staging, user tips for efficient use, and economic and capacity balance points. We will also address what to expect out of heat pump systems in low-load homes, and the order of operation for lowering load versus electrifying.

PARTICIPANTS WILL:

- Review best practices on how to use and optimize an air source heat pump system.
- Evaluate if usage strategies that are true during winter apply to performance in the summer, focusing on the minimum/maximum performance at 5 degrees versus 95 degrees.
- Understand if the equipment is designed for displacement or replacement, and how to best operate the equipment in both scenarios.

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BEING AN EFFECTIVE ADVOCATE
(ONE HOUR)

Being an effective advocate for heat pump adoption includes empowering homeowners and working with contractors simultaneously. The goal is ensuring homeowners are connected to the systems and equipment that fit their unique needs while encouraging a successful sales process. This module covers the nuanced role of the Advocate and the importance of setting expectations and focusing on 'what matters.'

PARTICIPANTS WILL:

- Review valuable resources for new heat pump advocates.
- Ensure the tools make sense and understand the logic and importance of existing resources.
- Perform self-assessments on personal capacities and ensure advocates have strategies for asking for help and directing clients to appropriate parties.

CLEAN HOT WATER: SOLAR THERMAL OR HEAT PUMP HOT WATER
(ONE HOUR OPTIONAL)

Solar Thermal technology captures heat from the sun and uses it to heat water. Heat Pump water heaters harvest heat from un/semi-conditioned spaces and transfer that energy into a storage tank for domestic hot water. Advocates will become familiar with the pros and cons of both technologies to better direct residents toward decarbonization. We will focus on appropriate emerging and market-ready solutions.

PARTICIPANTS WILL:

- Weigh the economic and decarbonizing benefits of market-ready hot water heating solutions that do not rely on fossil fuels.
- Evaluate the pros and cons of adopting these technologies in different home types.
- Discuss the unique challenges that New England weather poses and the equipment options that are best suited for our region.

CLEAN ELECTRICITY: SOLAR PV + STORAGE *(ONE HOUR OPTIONAL)*

Onsite Solar PV and Energy Storage enables homes to be resilient, fossil-fuel free and self-generating. In this lesson, we will explore the basics of electrification and how it influences what technologies can and should be utilized in homes. We will discuss solar policy, retail net metering and examine if there is an opportunity for existing homes in Massachusetts to become "net-zero" without a deep energy retrofit.

PARTICIPANTS WILL:

- Examine the economics of different Solar PV options in Massachusetts.
- Become familiar with the basic components of a Solar PV system and how to navigate the marketplace. Explore home battery solutions, how they compare to a backup generator and the incentive landscape in Massachusetts to promote the adoption of Solar PV and Energy Storage technology.

CLEAN TRANSPORTATION: ELECTRIC VEHICLES AND THE HOME

(ONE HOUR OPTIONAL)

Electric Vehicles (EVs) are rapidly gaining market share and will eventually become the norm on U.S. roads; however, many homes are not equipped with the infrastructure to optimally charge their vehicles. In this lesson we will discuss expectations regarding charging infrastructure and explore how EVs will tie into the grid and home.

PARTICIPANTS WILL:

- Examine the pros and cons of different electric vehicles and answer common misconceptions.
- Become familiar with different charging types and how they affect an EV's range.
- Discuss the health benefits of EVs with attached garages.
- Understand time-of-use rates and what EVs can mean for the grid and offsetting peak demand.

ABOUT ABODE ENERGY MANAGEMENT

Abode Energy Management is an energy consulting firm driving efficiency improvements for New England's built environment. We are passionate about helping our industry grow through a training-based, collaborative approach. Our collective experience in building performance, renewables, clean energy financing, utility program implementation, community engagement, and workforce development form the foundation that enables us to deliver data-driven results for our partners, clients, and their customers.