**Growing the Heat Pump Workforce to Meet Connecticut’s Climate Goals**

The availability of licensed heat pump installation professionals remains a persistent challenge that is hampering the growth of the clean energy industry and workforce in Connecticut. Hiring enough licensed personnel to complete heat pump installations represents one of the most significant barriers to growth for the industry and to reducing emissions from the building sector.

* Heat pump installation companies have advertised multiple heat pump and HVAC installer jobs which have remained unfilled for months due to lack of available licensed professionals.
* As of February 2023, there are over 350 companies advertising open apprenticeship opportunities for heating and cooling equipment installation, with many companies looking for multiple apprentices.

Heat pump installers have spent significant effort recruiting licensed HVAC installers from within the state of Connecticut, but there simply aren’t enough licensed professionals to meet customer demand.

**Context: Connecticut is Falling Behind its Building Decarbonization and Workforce Goals**

* To meet the decarbonization requirements of the Global Warming Solutions Act, Connecticut will need to fully decarbonize over a million residences by 2050; this is more than 35,000 homes per year, every year until 2050, generating over 5,000 residential HVAC jobs by 2030.
* In 2022, Connecticut utilities issued rebates for less than 2,000 whole-home heat pump projects – only a fraction (6%) of the required pace to meet Connecticut’s climate goals.

**Problem: License Requirements for Heat Pump Installers is Slowing Installations**

A key barrier to increasing heat pump deployment is lack of a sufficient workforce, which drives long wait times for heat pump installations. There are over 350 HVAC companies looking to sponsor apprentices, but existing training programs simply are not producing enough trained professionals to meet demand. The 5,000 projected jobs will not materialize without license reform.

* All workers require a license to work on heat pump systems, even small, standardized residential systems. This increases barriers for workers to enter the HVAC workforce, raising training costs and timelines which deter workers from seeking a career in the heat pump industry.
* All current heating license categories require fossil-fuel training and experience.Heat Pumps operate without any fossil fuel combustion, making these skills unnecessary for professionals focused on heat pump installations. Table 1 below details the primary categories of heating and cooling installer licenses, along with example fossil fuel training and experience requirements.
* Employers may only hire one apprentice for each contractor or journeypersonoverseeing the work, which limits opportunities for heat pump installers to rapidly expand their workforce.

**Solution: Establish a Dedicated Small-Systems Heat Pump Installer License Category**

The legislature and the Department of Consumer Protection (DCP) should establish a dedicated license category for small-system heat pump installers to enable workforce growth to meet market demand.

* A tailored Small-System Heat Pump Installer license would focus training and apprenticeship requirements on heat pumps and the decommissioning of fossil fuel equipment, while removing requirements regarding installation and maintenance of fossil fuel technologies.
* Massachusetts exempts systems under 10 tons of thermal capacity from licensing requirements,[[1]](#footnote-0) and the Legislature should use a similar threshold for establishing a small-systems heat pump license.
* Connecticut has established similar tailored license categories for certain technologies such as gas fireplaces, refrigeration, and solar thermal equipment. These licenses which help streamline the training process and accelerate workforce growth for these technologies. Multiple Connecticut licenses also include size or capacity limits (e.g. the S-5 Limited Heating, Hot Water, and Steam license applies up to 41 tons, and the SM-3 Limited Sheet Metal license applies up to 35 tons).

**Benefits and Impact: Faster Licensing with Greater Heat Pump Experience**

A Heat Pump Installer license would make heat pump training programs more accessible to professionals starting in the field by reducing the time required from training to full licensure – accelerating workforce development and heat pump deployment.

* **On-the-Job-Training (OJT):** Current D-2 licenses require 4,000 hours of OJT, including fossil fuel experience consistent with the license scope. A Small-System Heat Pump Installer license would focus OJT on small heat pump installations, which are more standardized and routine, leading to higher levels of heat pump experience. Removing fossil fuel-specific OJT requirements would increase worker retention, as employees at heat-pump only companies would still be able to gain all required experience without having to switch employers to work on fossil fuel systems.
* **Curriculum:** DCP and the Examining Board should consider updates to the required training curricula for heat pump installers to reduce costs and make programs more affordable and accessible to all interested workers. HVAC instructors estimate that removing fossil fuel training could reduce curriculum modules by 25%-30%, saving students thousands of dollars in tuition, and allowing more people to enter the heat pump workforce from across Connecticut.
* **Testing:** Current D-2 tests include 15 to 20+ questions on fossil fuel systems (25-33% of 60 total questions) and less than 5 questions dedicated to heat pump systems (8% of 60 total questions); the Examining Board should design the test for the new Small-System Heat Pump Installer license, replacing the fossil fuel systems questions with heat-pump focused test questions.

**Accelerated Employment Pathway for Workforce Development Programs**

The EnergizeCT energy efficiency programs currently include funding for workforce development and energy education programs of approximately $2.5 million per year, representing just over 1% of total plan funding. The program also supports various workforce development efforts through training offerings, partnerships with community groups and educational institutions, and other outreach – all of which will need to be significantly scaled to meet growing workforce demands. Licensing reforms to streamline the licensing process will further enable these workforce development programs by providing ready jobs for program graduates.

| **Table 1: Example Heating and Cooling License Categories (Journeyperson)** | | |
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| **License Category** | **Covered Technologies** | **Fossil Fuel or Industrial Training Requirements[[2]](#footnote-1)** |
| B-2 Limited Gas and Oil Burner Journeyperson | Gas or oil systems, domestic and light commercial | Oil burner (1,750 hours) |
| B-4 Limited Gas and Oil Burner Journeyperson | Any gas or oil fired burner | Oil burner (3,000 hours) |
| D-2 Limited Warm Air, Air Conditioning, and Refrigeration Journeyperson | Any warm air, air conditioning, and refrigeration systems | Furnaces and fuel gas  (~750 hours) |
| D-4 Limited Cooling Journeyperson | All refrigeration systems | Cooling only; Commercial/Industrial Refrigeration (1,500 hours) |
| G-2 Limited Heating, Piping, and Cooling Journeyperson | Gas piping systems and approved gas appliances, gas utilization equipment, accessories for use with LP gas supplied by gas containers and/or natural gas | Fossil fuel-focused requirements |
| HPG2 - Heating, Piping & Cooling Limited Journeyperson | Propane or natural gas fired fireplace, fireplace insert, stove or log set | Fossil fuel-focused requirements |
| S-2 Unlimited Heating, Piping, and Cooling Journeyperson | All heating, piping and cooling work | Oil Burner (900 hours)  Steam/Hot Water  (1400 hours) |
| S-4 Limited Heating, Piping, and Cooling Journeyperson | Any apparatus for piping, appliances, devices or accessories for heating systems, boilers, including steam; hot, chilled and condenser water, as well as steam. | Oil Burner (1,000 hours)  Steam/Hot Water  (2,000 hours) |
| ST2 - Solar Mechanic | Solar thermal systems | None; solar only. |

1. “Guidelines Re: Pipefitting and Refrigeration Apprenticeships Registration and Licensing Requirements,” Massachusetts Division of Apprentice Standards and Division of Occupational Licensure Office of Public Safety and Inspections, May 12, 2022, <https://www.mass.gov/doc/guidelines-re-pipefitting-and-refrigeration-apprenticeships-registration-and-licensing-requirements/download> [↑](#footnote-ref-0)
2. “Occupational Licensing Heating, Piping and Cooling Trades Candidate Information Bulletin,” Connecticut Department of Consumer Protection, May 11, 2021, <https://candidate.psiexams.com/bulletin/display_bulletin.jsp?ro=yes&actionname=83&bulletinid=59&bulletinurl=.pdf> and “Work Schedules - Apprenticeable Trades,” Office of Apprenticeship Training, Connecticut Department of Labor, accessed December 20, 2022, <https://www.ctdol.state.ct.us/progsupt/appren/WorkSchedules/apptoc1.htm> [↑](#footnote-ref-1)