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ENVIRONMENT, CLIMATE AND HEALTH

Fact Sheet

States Provide Education, Training, Technical Assistance, and Workforce Development on Energy Efficient Heat Pumps

Introduction

Heat pumps are appliances that may have the ability to provide heating, cooling, and hot water heating. Heat pumps extract heat from the air or ground and then pass heat through a refrigerant line. If the heat pump is being used to cool indoor air, the refrigerant absorbs heat from the indoors in an evaporator coil and then releases heat to the outdoors through a condenser coil. If the heat pump is being used to heat indoor air, the refrigerant absorbs heat from the outdoor air (even very cold air has some heat) in the condenser coil and then uses the evaporator coil to transfer the heat and warm the indoor air. This reversible quality is a distinguishing feature of heat pumps. Because heat pumps transfer heat, rather than generate it, they can be 3 to 4 times as efficient as furnaces and air conditioners. As a result, heat pumps generally result in fewer emissions of carbon dioxide, fine particulate matter, and other harmful substances than furnaces, air conditioners, and other hot water heaters, no matter what the source of the energy to operate the heat pump.

Heat pumps today are more versatile and effective in both hot and cold climates than they were decades ago.[1] With research support from government programs such as the U.S. Department of Energy's Residential Cold Climate Heat Pump Challenge, heat pump technology has improved steadily.[2] Options include dual fuel heat pumps, in which an air source heat pump is paired with a furnace for a hybrid heating and cooling system.[3] Word is getting out -- heat pumps outsold gas furnaces in each of the past 3 years.[4] Yet outdated information based upon previous limitations of heat pumps still influences the purchasing decisions and behavior of many homeowners, landlords, building contractors, and HVAC installers.

Education about Heat Pumps as a Public Health Intervention

There is no silver bullet to mitigate and adapt to the health impacts of climate change, but heat pumps offer an impressive array of benefits. Heat pumps provide relief from extreme heat and from the cold. They provide increased energy efficiency, which results in lower energy consumption, and correspondingly lower harmful

emissions. All of this leads to improved indoor and outdoor air quality, and fewer of the adverse health impacts associated with poor air quality. In general, after the initial purchase and installation, heat pumps lead to lower energy bills compared with other types of heating and cooling methods and can alleviate the energy burden on lower income households.

In some states, such as California and Minnesota, there may be accompanying laws and policies to support equitable access and the adoption of heat pumps to increase energy efficiency and transition to renewable energy, but even in the absence of such laws, laws and policies that support education, training, technical assistance, and workforce development can contribute to meaningful progress for public health and health equity. At a time when shifts in federal policy create an uncertain financial and legal environment, education and workforce development are comparatively low-cost interventions that can help protect air quality and climate resilience by directly increasing heat pump installations, and indirectly by creating knowledgeable advocates and champions.

California's Regional Energy Networks

California has a particularly well-developed framework for providing education, training, and workforce development related to heat pumps through its regional energy networks. The regional energy networks are cross-sector partnerships among local government and other entities that administer energy efficiency programs tailored to their local communities.

California's Regional Energy Networks began over 15 years ago, with seed funding under the Energy Efficiency and Conservation Block Grant Program, which was itself created under the American Recovery and Reinvestment Act of 2009, and administered through the Better Buildings Neighborhood Program.[5] A number of local governments began offering workforce training, outreach, energy retrofit programs, loans, and incentives in order to achieve more energy efficient buildings. Operating as the Local Government Sustainable Energy Coalition, these local governments approached the California Public Utilities Commission (CPUC) for ongoing funding to sustain these efforts. In a 2012 rulemaking decision, the CPUC directed investor-owned utilities to use ratepayer funds to support regional energy networks as a primary vehicle for promoting energy efficiency.[6]. In a 2019 rulemaking, the CPUC affirmed the regional energy network structure, and set forth procedures for new regional energy networks.[7] While the first regional energy networks were located in Los Angeles County, the San Francisco Bay Area, and Santa Barbara, smaller population centers and more rural areas have established regional energy networks in recent years.

Because the Regional Energy Networks are designed to develop approaches to meet the needs of their communities, including by engaging with communities that might otherwise be excluded, there is no one-size fits-all description of their education, training, and workforce development activities. Several RENs provide regular workshops for different audiences, including tenants, homeowners, building developers, landlords, contractors, and installers. Most RENs also provide individualized technical assistance, including support with code compliance and program requirements for the TECH Clean California Initiative and the BUILD Program.

The TECH Clean California Initiative[8] seeks to facilitate the adoption of clean space and water heating technologies in single and multifamily homes. It is guided by an equity strategy to ensure that language isolated communities, low-income communities, rural regions, tribal areas, historic redlined neighborhoods, and other disadvantaged areas, as identified by CalEnviroScreen, have access to clean technologies.[9] The equity strategy involves incentives, financing, workforce education and training, quick start grants, low-income

pilots, and a strategic early replacement pilot program.[10] The BUILD Program, or Building Initiative for Low-Emissions Development Program, administered by the California Energy Commission, provides technical assistance and incentives for developers who build new, all-electric residential buildings for low-income housing.[11]

Minnesota Air Source Heat Pump Collaborative

Minnesota facilitates expanded heat pump adoption through a public-private partnership, known as the Minnesota Air Source Heat Pump Collaborative, which is a program of the Minnesota Efficient Technology Accelerator.[12] Funding is provided by investor-owned utilities, administrative services are provided by the Division of Energy Resources at the Minnesota Department of Commerce, and program implementation is provided by the nonprofit Center for Energy and Environment. The Minnesota Air Source Heat Pump Collaborative provides information, training, and technical assistance to a variety of audiences on the technical, financial, and legal aspects of the increased adoption of heat pumps.

Minnesota's 2021 Energy Conservation and Optimization (ECO) Act requires utilities to invest a percentage of gross operating revenues in a Conservation Improvement Program. Increased use of both ground source and air source heat pumps can help achieve the energy efficiency and conservation goals of a Conservation Improvement Program and the ECO Act. Minnesota passed a new clean energy law in 2023, with ambitious goals for a transition to renewable energy across the state.[13] In order to achieve these goals, the Minnesota Advanced Energy Codes Partnership was formed, with funding from the Minnesota Department of Energy and sponsorship by the state Department of Commerce and Department of Labor and Industry, and leadership from the Center for Energy and Environment.[14] The Partnership seeks to use energy codes to drive reductions in emissions and energy consumption in new commercial and residential building as well as existing buildings. It operates an online learning hub, BuildUp MN, to provide education and training to code officials, design professionals, and contractors to improve energy code compliance.[15]

The Minnesota Air Source Heat Pump Collaborative is a member of the Midwest Energy Efficiency Alliance, which recently hosted a webinar on how to hold a summit for contractors to build knowledge, confidence, and enthusiasm for adopting heat pump technology at the local level.[16] The Minnesota Efficient Technology Accelerator commissioned a report on communication strategies to overcome barriers to adoption of heat pump technology.[17]

Northeast States for Coordinated Air Use Management (NESCAUM) Memorandum of Understanding

With leadership by the Northeast States for Coordinated Air Use Management or NESCAUM), nine states entered into an agreement in 2024 to take steps to increase heat pumps to 90% of the share of residential heating, air conditioning, and hot water sales in their jurisdictions by 2040.[18] The participating states are California, Colorado, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon and Rhode Island.[19] A draft multistate action plan to implement the MOU was published in the spring of 2025; as one might expect, education, training, technical assistance, and workforce development play key roles.[20] States are not waiting for the action plan to be finalized, however. For example, the state of Massachusetts has issued a request for proposals for Community College Heat Pump and HVAC Workforce Training, Equipment and Planning Grants, as part of a new Heat Pump and HVAC Training Network.[21]

U.S. Climate Alliance

The U.S. Climate Alliance, a coalition of 25 governors, has also provided a forum for states to collaborate with respect to climate resilience.[22] In 2023, the Alliance announced a goal of quadrupling heat pump installations by 2030, as part of a predictable and equitable transition to zero emission buildings.[23] Oregon incorporated the goals into state law, and emphasized the education, training, and workforce development strategies that would help achieve the goal.[24] Member states have engaged in a variety of educational activities. For example, Maine has offered instruction in heat pump installation at community colleges as part of its "Maine Wont' Wait" campaign.[25] New York and Illinois have offered similar instruction.

Conclusion

Education, training, technical assistance, and workforce development are critical elements for equitable advances in the adoption of heat pumps, and thus, cleaner air and healthier communities. Even when the federal environment and funding are uncertain, states can make substantial steps forward to protect health.

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This document was developed by Jill Krueger, J.D., Director, Climate and Health, Network for Public Health Law. The Network promotes public health and health equity through non-partisan educational resources and technical assistance. These materials provided are provided solely for educational purposes and do not constitute legal advice. The Network's provision of these materials does not create an attorney-client relationship with you or any other person and is subject to the Network's Disclaimer.

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[1] Liam McCabe, *Can Heat Pumps Actually Work in Cold Climates?*, CONSUMER REPORTS (April 9, 2024) , available at https://www.consumerreports.org/heat-pumps/can-heat-pumps-actually-work-in-cold-climates-a4929629430/ .

[2] U.S. Department of Energy, *Residential Cold Climate Heat Pump Challenge*, available at https://www.energy.gov/eere/buildings/residential-cold-climate-heat-pump-challenge .

[3] Center for Energy and Environment, *Investigation of Air Source Heat Pumps as a Replacement for Central Air Conditioning: Potential Benefits, Market Research, and Technical Analysis, a report to the Minnesota Department of Commerce* (Dec. 22, 2022), available at https://mn.gov/commerce-stat/pdfs/187376_CEE_HP-for-AC_Report_Final%20Secure.pdf .

[4] Hannah Wallace, *How Heat Pumps Became America's Hottest Home Energy System*, REWIRING AMERICA (2025), available at https://www.rewiringamerica.org/stories/heat-pumps-becoming-hottest-home-energy-system .

[5] *California's Expanding Regional Energy Network: A Federal Grant Success Story*, CALIFORNIA REGIONAL ENERGY NETWORKS, available at https://californiaregionalenergynetworks.org/blog/blog-post-title-four-5pf6r-nkk3l . Funding for the EECDBG was also included in the Infrastructure Investment and Jobs Act of 2021.

[6] Decision 12-05-015, California Public Utilities Commission (May 18, 2012), available at .https://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/166830.PDF .

[7] Decision 19-12-021, California Public Utilities Commission (December 12, 2019), available at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M321/K507/321507615.PDF .

[8] TECH Clean California, available at https://techcleanca.com/ .

[9] For additional information on the equity strategy and associated budget data, see https://techcleanca.com/about/our-approach/equity-strategy/ . For more information on CalEnviroScreen, a mapping tool to identify communities most affected by pollution, see https://oehha.ca.gov/calenviroscreen/about-calenviroscreen.

[10] For an example of how a quick start grant was used to generate data to better understand barriers to financing heat pump adoption in affordable housing, see, Thelma Briseno, et al., *Scaling Heat Pump Retrofits in Housing with Cost Barriers*, CLIMATE RESOLVE and US GREEN BUILDING COUNCIL – CALIFORNIA, available at https://techcleanca.com/about/news/scaling-heat-pump-retrofits-in-housing-with-cost-barriers/ .

[11] For more information on the Building Initiative for Low Emissions Development Program -- BUILD, see https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program-build .

[12] Dan Wildenhaus and Rabi Vandergon, *Heat Pumps 101: Cold Climate Air Source Heat Pumps: A Primer and Launch Pad*, Feb. 22, 2023), Minnesota Air Source Heat Pump Collaborative, available at https://minnesotapower.blob.core.windows.net/content/Content/Documents/EnergyDesignConference/PresentationMaterials/2023/8.30%20ASHP%20101%202-22-23.pdf .

[13] Jo Olson, *Minnesota's 100% Clean Energy Law Explained*, FRESH ENERGY, (Feb. 20, 2023), available at https://fresh-energy.org/minnesotas-100-clean-electricity-bill-explained .

[14] For more information, see Minnesota Advanced Energy Codes Partnership, available at https://www.mncee.org/minnesota-advanced-energy-codes-partnership .

[15] For more information, see *BuildUp MN*, available at https://www.buildupmn.org/ .

[16] Midwest Energy Efficiency Alliance, *Contractor Summit Toolkit: Hosting Effective Summits to Advance Heat Pump Technology in Local Markets* (May 27, 2025), description available at https://www.mwalliance.org/events/contractor-summit-toolkit-hosting-effective-summits-advance-heat-pump-technology-local .

[17] Center for Energy and Environment and Behavioral Insights Team, *Messaging Strategies to Drive Heat Pump Adoption in Minnesota* (August, 2024), available at https://www.etamn.org/sites/default/files/research-papers/Communication%20Strategies%20to%20Drive%20Heat%20Pump%20Adoption%20in%20Minnesota%20FINAL.pdf .

[18] *Nine States Pledge Joint Action to Accelerate Transition to Clean Buildings*, NORTHEAST STATES FOR COORDINATED AIR USE MANAGEMENT (NESCAUM) (Feb. 6, 2024), available at https://www.nescaum.org/documents/2.7.24-nescaum-mou-press-release.pdf .

[19] *Accelerating the Transition to Zero-Emission Residential Buildings: Multistate Memorandum of Understanding*, available at https://www.nescaum.org/documents/Buildings-MOU-Final-with-Signatures---DC.pdf .

[20] *Multistate Action Plan: Accelerating the Transition to Zero-Emission Residential Buildings (Draft for Public Input)*, NESCAUM, (April 2, 2025), https://www.nescaum.org/documents/25.04.02-NESCAUM-Multistate-Action-Plan---DRAFT.pdf . See especially pages 15 -16 and 29 – 34.

[21] Massachusetts Clean Energy Center, *Request for Proposals: Heat Pump and HVAC Training Network (Community College Heat Pump and HVAC Workforce Training, Equipment, and Planning Grants)* (Jan. 6, 2025), available at https://www.masscec.com/sites/default/files/documents/RFP%20-%20CC%20HVAC%20HP%20Workforce%20Training%20Equip%20Infrastructure.pdf .

[22] United States Climate Alliance, *Building Decarbonization Roadmap* (June, 2021), available at https://usclimatealliance.org/wp-content/uploads/2023/04/USClimateAlliance_Guide_BuildingDecarbonizationRoadmap_2021.pdf .

[23] *U.S. Climate Alliance Announces New Commitments to Decarbonize Buildings Across America, Quadruple Heat Pump Installations by 2030*, U.S. Climate Alliance, (September 21, 2023), available at https://usclimatealliance.org/press-releases/decarbonizing-americas-buildings-sep-2023/ .

[24] Oregon House Bill No. 3409 (July 27, 2023), available at https://olis.oregonlegislature.gov/liz/2023R1/Measures/Overview/HB3409; see also Kavya Balaraman, *Oregon Plans to Install 500,000 New Heat Pumps by 2030: Who's Going to Do the Work?* UTILITY DIVE, (July 13, 2023), available at https://www.utilitydive.com/news/oregon-heat-pumps-2030-bill-legislature/686904/ .

[25] *Maine: Transforming America One Heat Pump at a Time* (2025), available at https://www.youtube.com/watch?v=pjxqjEd-Zcg; see also *Maine Governor's Energy Office, 2024 Annual Report*, available at https://lldc.mainelegislature.org/Open/Rpts/hd9502_u53m29_2024.pdf .