Pacific Northwest
NATIONAL LABORATORY

Strengthening the Workforce for Nationwide Decarbonization of Buildings

Pacific Northwest National Laboratory (PNNL) leads research projects and works with partners in government, industry, unions, academia, community groups, and more to energize workforce development in the buildings sector. The aim is to support national decarbonization objectives and climate mitigation.

THE TASK AT HAND

The federal government has set ambitious goals to substantially reduce carbon emissions from America's homes and commercial buildings by 2050 and has provided significant funding toward that outcome. High-efficiency technologies that enable decarbonization—e.g., heat pumps, advanced building controls, efficient lighting, and more—exist and are ready for use.

As consumer demand for installation and operation of these technologies accelerates—likely exponentially—the need for a sufficient, well-trained workforce grows.

From basement to attic, expanded installation of efficient and environmentally beneficial technologies will require an ample, trained workforce for both homes and commercial buildings.

PNNL CONTRIBUTES WORKFORCE SOLUTIONS

PNNL, in partnership with the U.S. Department of Energy (DOE) Building Technologies Office (BTO), applies its expertise and capabilities in buildings-related research and development to help evaluate and foster a skilled and sufficient workforce in the buildings sector.

Workforce development-related efforts at PNNL cover a wide spectrum. Expert research teams explore and assess workforce supply and demand, coordinate certification and training programs, and develop toolkits to recruit workers and students for jobs in residential building efficiency and related disciplines. They also help develop university-level curricula and create approaches that empower homeowners to install their own energy-saving improvements.

TAKING A BIRD'S-EYE VIEW OF THE COMMERCIAL BUILDINGS WORKFORCE

PNNL partners with BTO to assess the nation's workforce development needs for technology deployment in commercial buildings and helps identify the primary job categories expected to be in demand as decarbonization moves forward. The effort involves gathering information from stakeholders—including unions and workforce organizations—through workshops, in-depth interviews, and surveys.

The resulting data have, to date, provided a clearer understanding of the current state of the U.S. workforce, including identification of four high-priority job areas: heating, ventilation, and air conditioning (HVAC) technicians focused on heat pumps; electricians specializing in electrification; building network professionals to operate smart buildings; and resource conservation managers to advance efficiency projects. PNNL is focused on informing future pathways for reaching and training workers for these priority areas—which will offer good, green, and impactful jobs—and other needs.

CULTIVATING AN ENERGY SKILLED™ RESIDENTIAL WORKFORCE

A range of organizations, agencies, and educators facilitate energy-related workforce certification and training across the nation. It can be difficult for these entities and individuals to keep current with evolving technological and societal changes.

DOE created a program that focuses on the residential buildings sector and assists certification and training providers in delivering up-to-date curricula. The program includes a set of criteria and supporting resources that help providers attain Energy Skilled recognition. This special status signifies alignment with DOE efforts to prepare a capable clean energy workforce to install and operate the newest technologies.

Researchers at PNNL manage the Energy Skilled program for DOE, including review of participant organizations' certification or training approaches and requests for Energy Skilled™ recognition. The program currently focuses on cold climate air source heat pumps, heat pump water heaters, and energy assessments, with plans to add envelope retrofits (walls, windows, etc.) and other technology areas.

The Energy Skilled™ designation signifies a credential's alignment with DOE workforce development goals focused on expanding the clean energy workforce.

ENERGY SKILLED
RECOGNIZED BY THE
U.S. DEPARTMENT OF ENERGY
TM

ESTABLISHING PARTNERSHIPS TO BOLSTER THE WORKFORCE

As noted, PNNL understands the value of partnerships with government, industry, academia, and others to cultivate workforce development. Some additional examples of PNNL's collaborative efforts include:

- Establishing a national heat pump and heat pump water heater partnership to help drive adoption of these energy-saving technologies in both residential and commercial buildings. One of the four core committees within this partnership, Workforce Development, is also led by PNNL.
- Involving national laboratories, industry, and installers in the creation of online technology decision and installation tools for cold climate heat pumps and heat pump water heaters.
- Teaming with a disadvantaged community and a community development organization to establish resources that help community organizations create a clean energy workforce that will benefit citizens in terms of both technology installation resources and job opportunities.
- Solving workforce limitations in a remote area of Alaska by partnering with a local heating and cooling company to enable new heat pump installation services.
- Working with Tennessee State University, which is among America's Historically Black Colleges and Universities, to help advance the university's planned Clean Energy Academy, which seeks to support a knowledgeable, skilled, and diverse workforce for the clean energy industry.

DO-IT-YOURSELF (DIY) TOOLS: A WAY TO GROW THE WORKFORCE

When the roof leaks or the faucet drips, some home occupants call a service provider—but others make their own repairs and are capable of completing a range of home improvements.

PNNL is helping harness and leverage this "elbow grease" to advance efficiency and decarbonization by providing DIY guidance for low-risk, high-value energy efficiency projects.

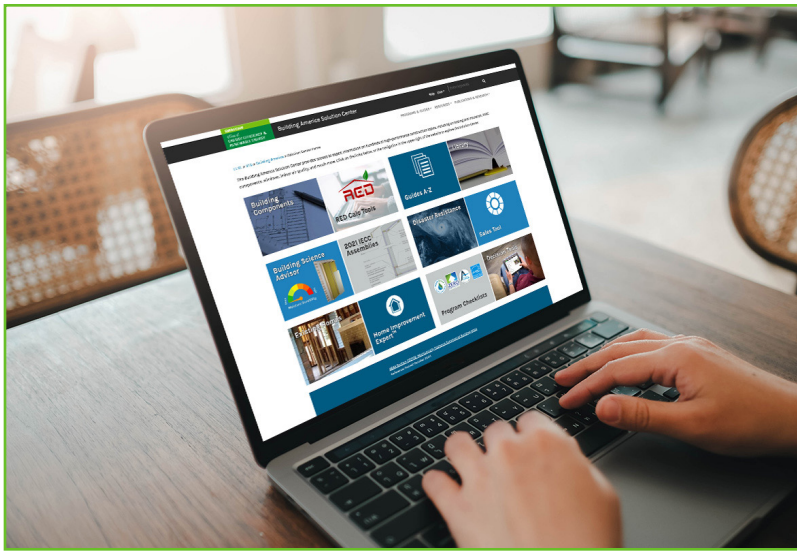
This information will help empower homeowners to save energy and perhaps qualify for some of the upcoming DIY-allowed Home Energy Rebates offered through the Inflation Reduction Act. One section of each DIY tool will offer more information about becoming a contractor in the energy efficiency space. This approach enables homeowners to test this type of work on their own home and, if they like it, potentially turn that interest into a career.

Also in the DIY space, the PNNL-developed "Opportunity Knocks" tool provides homeowners with a triage capability that can help capitalize on and infuse energy efficiency into common home issues and renovation projects.

PNNL SUPPORTS BASC – A RESOURCE FOR PRACTICING CONTRACTORS

The Building America Solution Center (BASC), a longstanding DOE resource created and curated by PNNL, serves as a wellspring of information for those studying and installing efficiency technologies. BASC provides access to expert information on hundreds of high-performance construction topics, including air sealing and insulation, windows, indoor air quality, and HVAC.

The Weatherization Assistance Program and BTO collaborated to purchase the RED Calc Free and RED Calc Pro web application software tools. The entire suite of tools is free for all to use on the BASC.



The BASC is a key resource for workers and others seeking expert information on a wide range of technology installation topics.

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