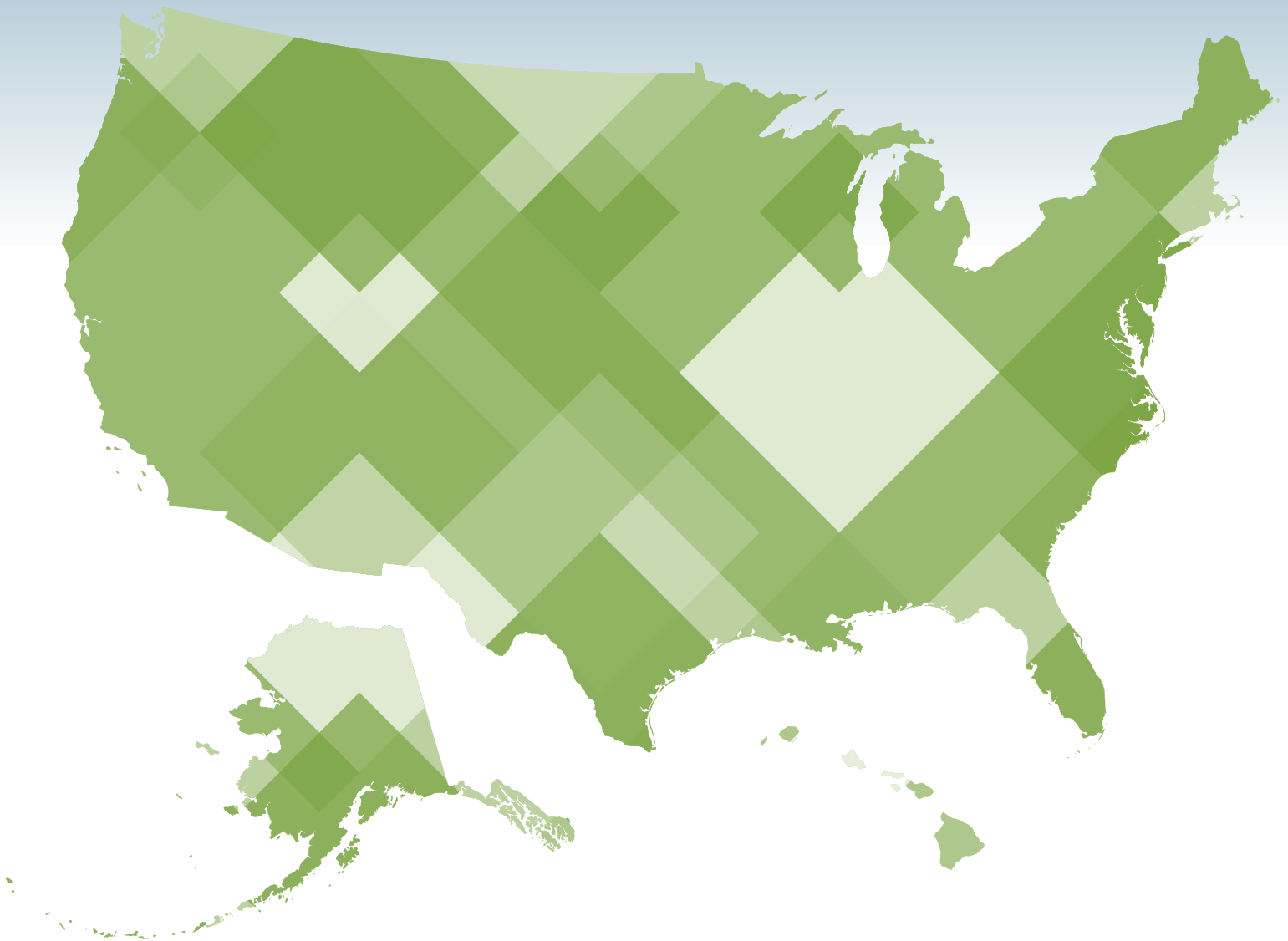


Energy Efficiency Jobs in America

OCTOBER 2021



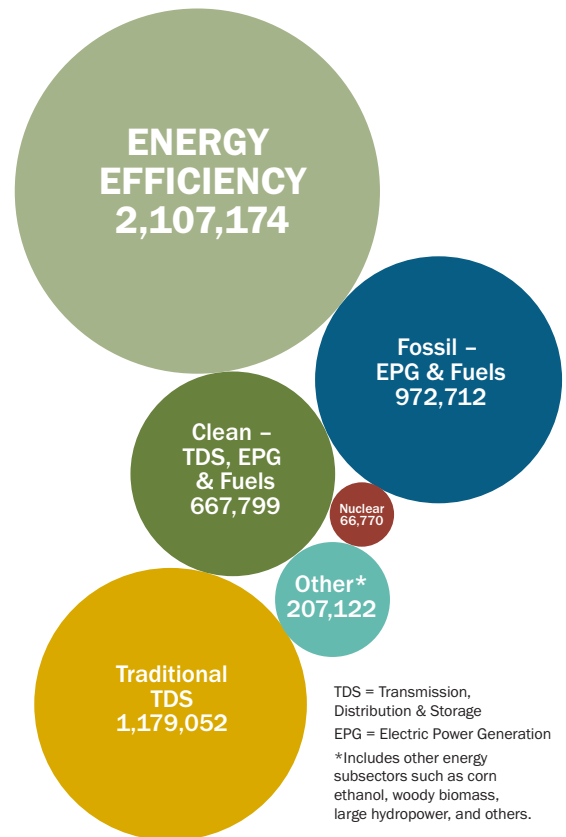
AMERICA'S ENERGY EFFICIENCY WORKFORCE: REDUCES COSTS, DRIVES ECONOMIC GROWTH

More than 2.1 million Americans now work in energy efficiency (EE), representing the biggest part of the entire energy sector. Workers in every state and community pull on their gloves and boots daily to help make our homes, offices, schools and other buildings more efficient. And some “boot up” in an office rather than out in the field, like developers of advanced energy management software, architects and designers, and administrative staff.

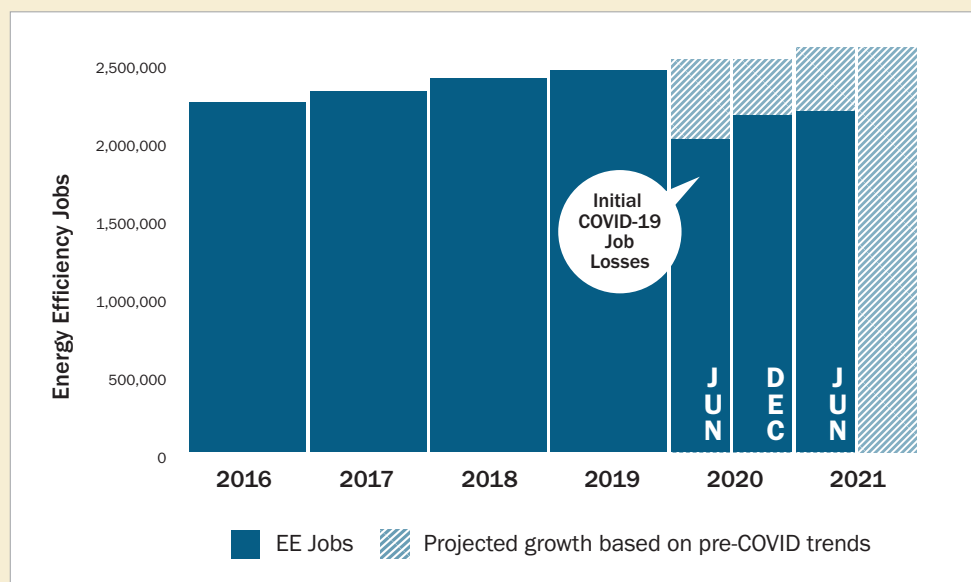
Whether EE workers upgrade heating/cooling systems or improve building enclosures, manufacture Energy Star equipment and appliances or install advanced lighting systems, they're also helping American consumers, businesses and local governments to save money, reduce emissions and fight climate change.

“Maximizing the deployment of building demand management technologies could avoid the need for up to one-third of coal- or gas-fired power generation.”

Source: Lawrence Berkeley National Laboratory. [How Managing Building Energy Demand Can Aid the Clean Energy Transition](#)



How is the energy efficiency industry recovering?



Source: [E4TheFuture/BW Research job analysis, July 2021](#)

The EE workforce is recovering, but is still below pre-pandemic total job numbers.

Public investment NOW will make our buildings, manufacturing facilities, and overall economy more efficient and resilient. It can help address climate change while driving economic growth and creating jobs.

ENERGY EFFICIENCY SAVINGS CREATE JOBS AND HELP LOCAL ECONOMIES NATIONWIDE

All buildings provide efficiency opportunities in design, construction, operation, and maintenance. “Mining” inefficient older buildings for energy savings can create local good-paying careers and customer savings through improved insulation, better HVAC and appliances, and new digital controls — among other upgrades.

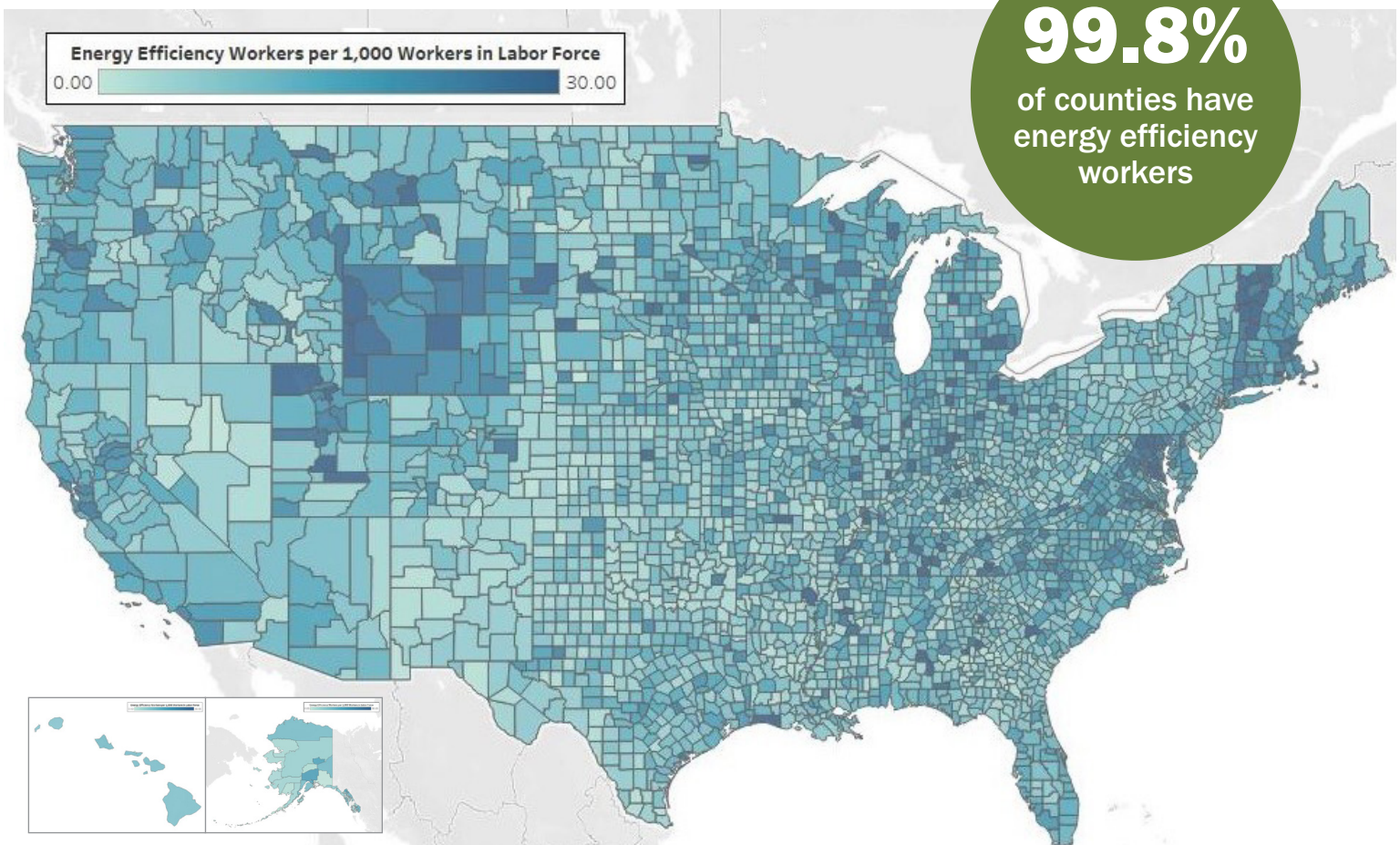
New
net-zero
buildings produce
more
energy
than they consume.

Just as important is making new buildings efficient and grid-interactive from the start. Stronger building codes and smart incentives spur fresh innovation in the design and construction project phases.

Investing in efficient and flexible buildings is smart climate and economic development policy for cities and rural communities alike. Constructing to standards such as LEED and Passive House for net zero energy use is the future of building in America.

Potential to
reduce
national residential
electricity use by
32%*

99.8%
of counties have
energy efficiency
workers

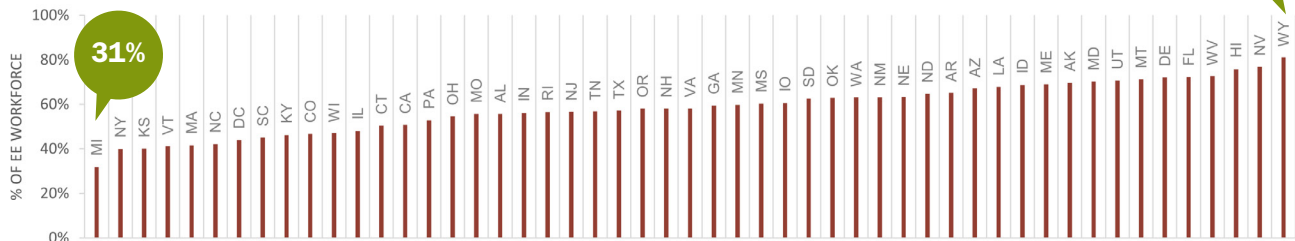


*Sources: [E4TheFuture/BW Research retrofit analysis, July 2021](#), [U.S. Census Bureau QuickFacts](#) and [State and Local Planning for Energy \(SLOPE\) Platform](#)

ENERGY EFFICIENCY WORKFORCE NEEDS VARY BY STATE

While most EE jobs are in construction, opportunities extend across manufacturing, professional services and other sectors. The distribution of current EE jobs is a good place to start when considering how to best match workforce training with job paths, to better serve employers and potential employees.

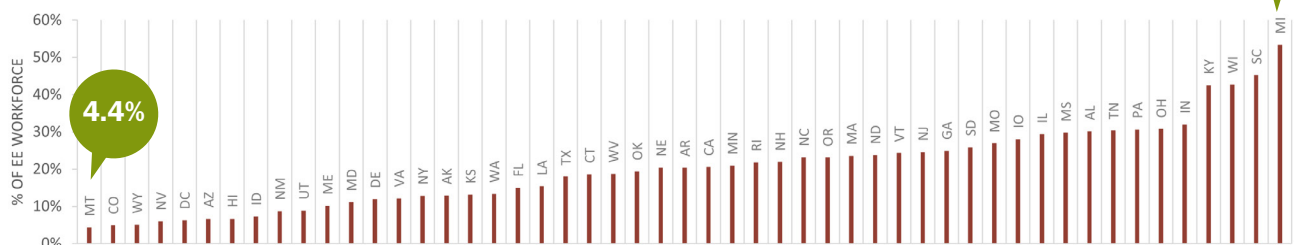
EE Workers in Construction



86%

In metro and rural areas, and in-between, over 1.1 million EE construction workers are employed everywhere buildings exist. About 16% of total U.S. construction workers spend at least 50% of their time on energy efficiency.

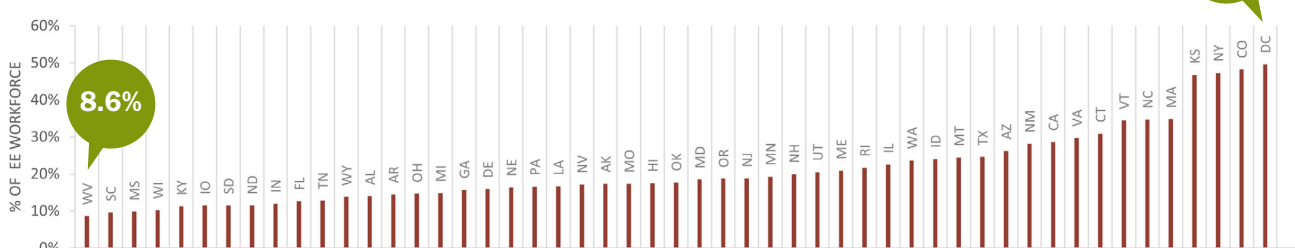
EE Workers in Manufacturing and Trade



53%

A robust domestic manufacturing industry of energy efficient products supports over 468,000 U.S. jobs. These products are installed and maintained by trained professionals in your community.

EE Workers in Professional and Other Services



50%

Engineers, designers, architects, financial services, and legal professionals create concepts and plans, and finance projects – representing nearly 495,000 U.S. efficiency workers.

ENERGY EFFICIENCY HAS A LONG VALUE CHAIN ACROSS CONSTRUCTION, MANUFACTURING, AND PROFESSIONAL SERVICES

EE includes jobs across a wide range of the U.S economy, including:

- a strong manufacturing sector making products from insulation to heat pumps to sophisticated digital controls — with potential for enormous growth
- a diverse professional services sector of architects, engineers and financial services experts who translate clean energy vision into executable project plans
- a robust construction sector ranging from small residential contractors to unionized experts who construct and insulate mechanical systems that heat and cool our larger buildings and industries



*Professional Services include finance/accounting, architecture, engineering, R&D, etc. and Other includes maintenance, and business and nonprofit organizations.

CREATING AN ENERGY EFFICIENCY WORKFORCE TO MEET THE MOMENT

Roads, transmission lines, and water systems were created largely to support the places where we live, work, and play. Most of today's existing buildings — whether privately or publicly owned — will remain in use in 2050. This represents a huge opportunity.

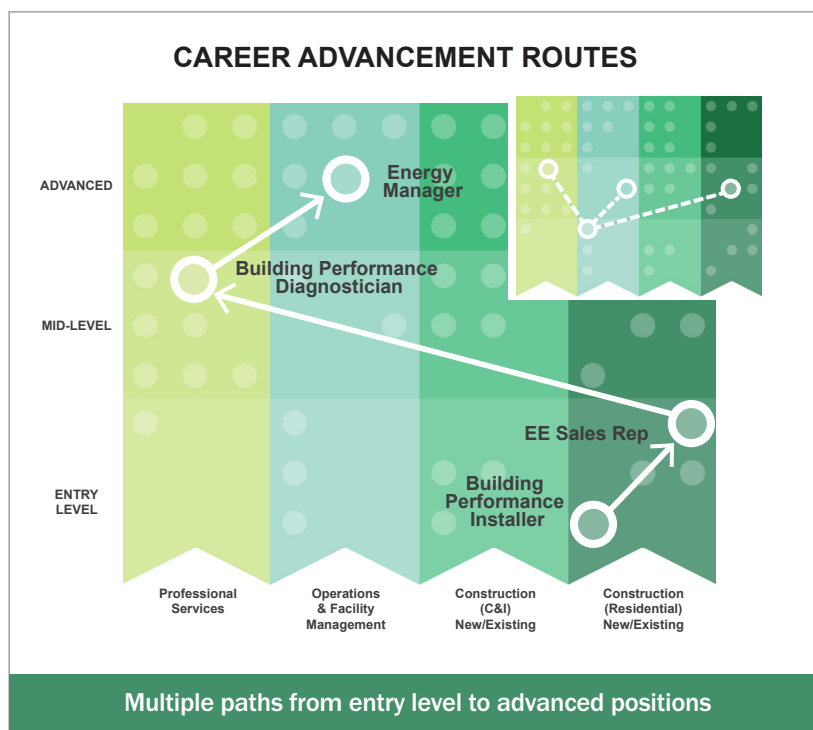
Source: ACEEE, [Mandatory Building Performance Standards: A Key Policy for Achieving Climate Goals](#)



WORKFORCE TRAINING: FOUNDATION FOR SOLID CAREERS

A 2021 [U.S. Dept. of Energy career map](#) shows paths to achieving the most high-paying jobs, even for workers who begin without a college degree.

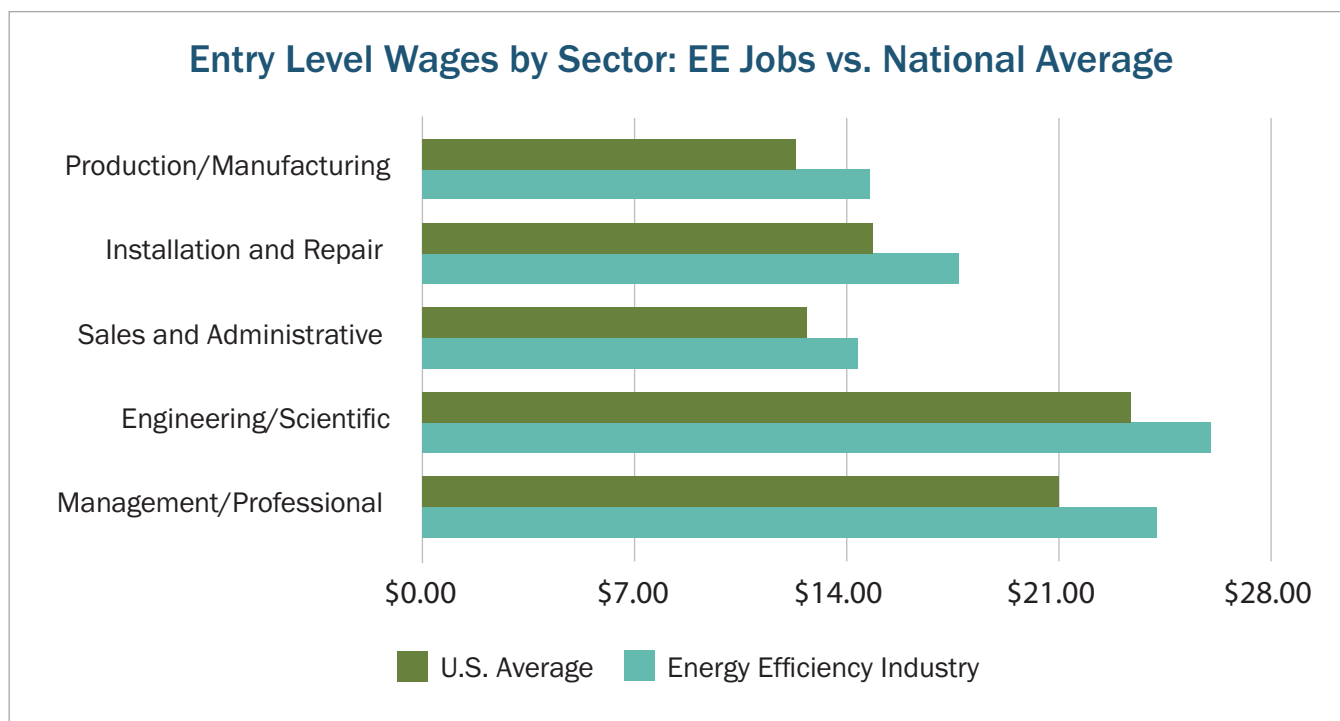
Workforce development and training are vital to economic health. As an industry essential for meeting climate goals with thousands of opportunities in every region and metro area, energy efficiency offers on-ramps for workers in transition and young people entering the workforce.



ENERGY EFFICIENCY CAREERS COME WITH GOOD PAY, BENEFITS

Efficiency workers receive good compensation when compared to their peers. The compensation advantages are particularly seen in entry-level positions, making energy efficiency training a very attractive option for programs in vocational high schools and community colleges.

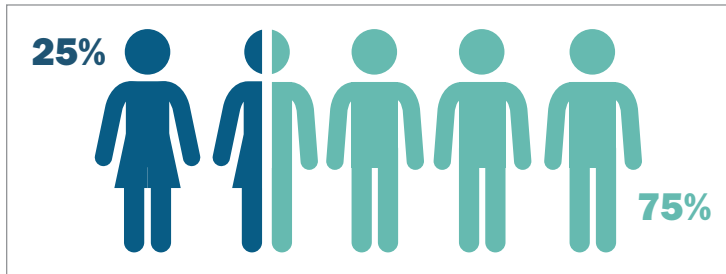
The median hourly wage of \$24.44 for EE exceeds the median hourly wage across the US economy (\$19.14) – about 28% above the national median.



Source: [2020 U.S. Energy and Employment Report \(USEER\) supplemental Wage Report](#)

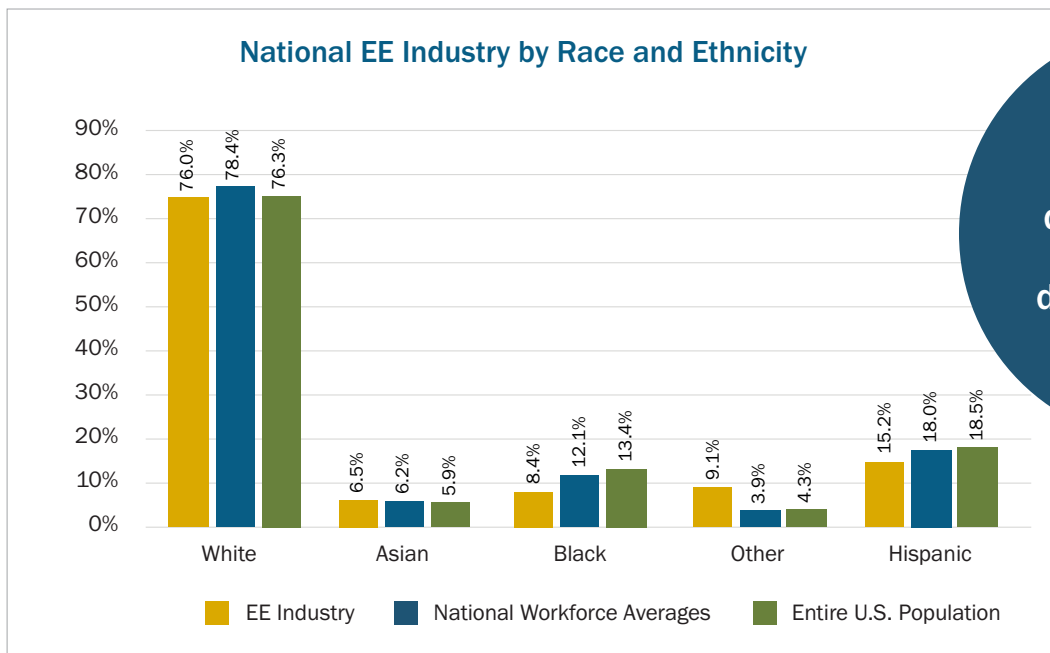
BUSINESS THRIVES WITH A DIVERSE WORKFORCE

Demographic data is crucial for measuring progress in the EE industry. Increasing diversity in the efficiency sector means a more robust and more inclusive industry. Diversity in hiring will be key to maintaining a future workforce of talented professionals and ensuring that communities across the nation are better represented in the efficiency sector. Investing resources to ensure energy efficiency projects are deployed in diverse communities will enable potential workers to see EE as a viable career choice.



The EE industry needs to do more to prioritize minorities and women for training and support that enables access to employment at EE businesses.

Note: The U.S. Bureau of Labor Statistics (BLS) only includes two genders in their survey. Non-binary gender data is missing from this document due to this limitation.

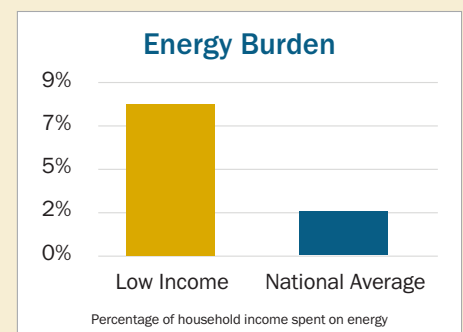


Robust investment in workforce development is essential for diversity, equity, and inclusion.

*Includes non-Hispanic and Hispanic whites.

EFFICIENCY PROVIDES FINANCIAL RELIEF

Low-income households and households of color consistently spend a large portion of their income on energy bills (and are therefore saddled with an “energy burden”). Weatherization upgrades, including thermal efficiency measures like insulation, can reduce these burdens by 25%. Too few households historically receive such upgrades. More attention and increased resources can help.



Source: [Low-Income Households, Communities of Color Face High “Energy Burden” Entering Recession](#)

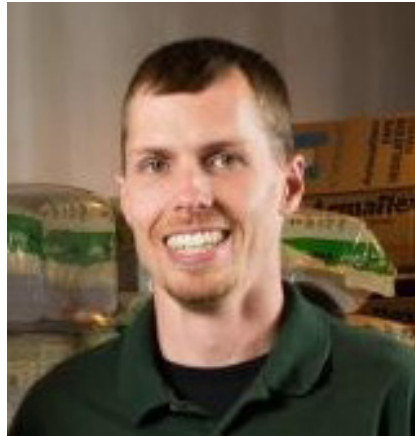
WORKFORCE TRAINING BENEFITS BOTH WORKERS AND EMPLOYERS



Darius Fells
Walker-Miller Energy Services
Detroit, Michigan

“Since earning my BPI Building Analyst certification, I advanced in my career from a direct installer role to Energy Auditor. Energy efficiency trainings assist in performing comprehensive, whole-home assessments, approaching the house as a system. I can identify root causes of problems within a home and help our customers better understand how certain measures affect their utility costs [and] to prioritize energy efficient solutions that save them money.

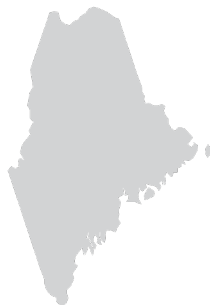
I look forward to participating in additional trainings and am excited about the opportunity to progress in my career.”



Bryan Pringle
Evergreen Home Performance
Portland, Maine

“The energy efficiency training program I accessed through Southern Maine Community College was the critical first step in my career. It was through this training program that I obtained BPI certification.

That BPI certification helped me get my first energy efficiency job, and provided a springboard for fast advancement at my company. I have now been an energy advisor for the last four years and I am not looking back.”



Demont Murphy
Energy Efficiencies Solutions
Hartford, CT

“I started working at Energy Efficiencies Solutions (EES) in 2012 as an entry-level technician. After I demonstrated excellent hard work and loyalty, EES enrolled me in a state energy efficiency training program.

Before working at EES, I was unemployed. I am now a building scientist and lead technician. I see it as a gift to be paid to help people in the community save money and energy, while I make their homes safer and more comfortable.”



Energy efficiency:
America's
Job-creation
powerhouse



BUILDING EFFICIENCY AND RESILIENCE MATTERS

Unprecedented heat and cold snaps in 2021 reveal the necessity of making updates to heating and cooling systems, and better insulating structures to help prevent energy waste.

Older buildings were not designed for such extreme weather conditions. Examples include:

- Northwest U.S. states like Oregon suffered recurring deadly heat waves that *“exposed how communities built for the mild summers of decades past are grossly unprepared”* (Mike Baker, Sergio Olmos, NYT)
- When Texas power plants failed in icy conditions, people used to living without winter worries were instantly in serious crisis.

“Texas’ buildings waste a massive amount of energy. Two-thirds of our homes predate a statewide building code and lack adequate insulation. That’s one reason that more than 100 Texans died of hypothermia during the blackouts. Among the 28 states that have adopted an energy efficiency goal, Texas ranks last in the amount of energy it saves.”
(Doug Lewin, Dallas Morning News)

Energy efficient buildings allow occupants to remain safe during extended power outages, which are becoming more frequent.

Using updated international building codes that further advance energy efficiency is a key component of a more successful path forward. Enforcing compliance with mandatory code provisions is essential.

Buildings account for
29%* of all energy
used in the U.S.
76%** of all
electricity used.

Although most
**existing
buildings**
will still be used in 2050,
**80% are
already 20+
years old.*****



Thermal imaging. Photo: Zone 6 Energy

*Source: [U.S. Energy Information Administration](#)

**Source: [Department of Energy: An Assessment of Energy Technologies and Research Opportunities](#)

*** Sources: [U.S. Energy Information Administration](#) and [U.S. Census Bureau QuickFacts](#)

CLIMATE BENEFIT POTENTIAL FROM RETROFITTING ALL 111 MILLION RESIDENTIAL UNITS CONSTRUCTED BEFORE 2000

To shed light on the scale of energy efficiency's contribution to meeting 2030 climate goals, we modeled an investment in U.S. homes (which account for 29% of all energy and 75% of all electricity consumed).

How could a national energy efficiency investment benefit our existing older homes?

Assumptions: Insulation, doors, and windows are upgraded; at the end of equipment's useful life, existing HVAC or water heater replacements would be ENERGY STAR-rated for any homes constructed prior to 2000.



Results: Investing in this initiative could employ over one million full time workers for a decade. It would pump billions of dollars back into the economy as consumers experience lower energy bills, which benefits every community.

Thousands of workers would be needed to design, manufacture, and install insulation, controls, replacement appliances, upgraded HVAC units, and more. Energy efficiency disproportionately benefits low-income consumers historically burdened with energy costs. For workers, consumers, and the environment, energy efficiency is a WIN-WIN-WIN!

Avoided carbon emissions from these energy savings also help to mitigate the worst impacts of climate change. And the improvements increase community resilience to severe weather events and power outages.

Source: [E4TheFuture/BW Research retrofit analysis, July 2021](#)

POWERFUL PARTNER IN BUILDING A CLEAN ELECTRIC GRID

Efficiency will play a critical role in achieving carbon-free electricity goals. A recent study shows that when combined in a clean energy portfolio with wind, solar and storage resources, energy efficiency more than pulls its weight.

In an optimal clean energy portfolio, EE can:



Source: [Analysis by E4TheFuture based on RMI data](#)

GOOD USA JOBS & GLOBAL COMPETITIVENESS

- Energy efficiency jobs are inherently local; the vast majority cannot be offshored. With on-site work required to improve homes and buildings, it's likely you know efficiency workers.
- A robust domestic manufacturing industry of energy efficient products supports over 290,000 U.S. jobs.
- These products are installed and maintained by trained professionals in your community.



POLICY LEADERSHIP

Energy efficiency saves money, reduces emissions, improves air quality and public health; it also makes us more energy independent – while tackling climate change and creating jobs. It is an energy source we must invest in.

Federal Policy leadership can ensure that energy efficiency and indoor air quality are addressed to benefit property owners, occupants, and the country.

Increase funding for proven federal energy efficiency programs, including:

- State energy programs
- Weatherization programs
- Energy efficiency and conservation grants

Support ENERGY STAR which helps people make smart energy choices.

Support and expand initiatives that incentivize building owners to make smart property upgrades that advance domestic manufacturing of energy efficient technologies and create jobs, such as:

- Commercial and residential building tax credits
- Residential rebate programs to drive efficiency deployment and job creation for local contractors
- Programs to encourage greater efficiency and sustainability in U.S. housing stock
- Programs focused on resilience, energy efficiency, and air quality in public buildings
- Tax credits and rebates for U.S. manufacturing of energy efficient appliances and technologies

Strengthen standards and invest in programs advancing indoor air quality and energy efficiency, e.g.:

- Strengthen building and appliance efficiency standards with training and enforcement
- Direct FEMA (Federal Emergency Management Agency) to ensure rebuilding projects comply with updated international building codes and advance energy efficiency
- Support energy audits, technical assistance, and financing options for large manufacturers

Advance and prioritize diversity, equity, and inclusion in federal energy efficiency programs:

- Strengthen workforce development and apprenticeship programs for the energy efficiency sector
- Create a workforce grant program to help organizations and small businesses hire and train new energy- efficiency employees with a focus on equity, diversity, and inclusion.
- Increase grants and financing to deploy more efficiency projects in underserved communities that often carry greater energy burdens while developing career opportunities for local workers

State and local leaders can keep energy efficiency jobs growing. Leaders can:

- Adopt high efficiency and indoor air quality standards for new construction and existing buildings
- Support workforce development and apprenticeship programs that prioritize equity, diversity, and inclusion
- Adopt energy benchmarking and reporting requirements for existing buildings
- Incorporate broader use of performance contracting in public buildings
- Advance commercial property assessed clean energy (PACE) programs
- Modernize regulations to ensure transparent and comprehensive cost-effectiveness evaluations; align utility incentives with investments in efficiency
- Invest in advanced infrastructure to enable interval data analytics and boost resilience

See the [Energy Efficiency Jobs in America website](#),
with animated key statistics for each state.

ABOUT THE REPORT

The 2020 job numbers come from the national 2021 U.S. Energy and Employment Report (USEER), which focuses on all energy jobs. The USEER analyzes data from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) to track employment across many energy production, transmission, and distribution subsectors. The 2021 USEER also relies on a unique supplemental survey of 35,000 business representatives across the U.S. This survey is used to identify energy-related employment within key subsectors of the broader industries as classified by the BLS and to assign them into their component energy and energy efficiency sectors. Numbers for 2021 come from BLS data analysis by BW Research and U.S. Dept. of Labor unemployment weekly summaries, used to calculate the labor impacts for each month. See appendix A of the USEER for complete methodology details.

For questions regarding this report, visit the Energy Efficiency Jobs in America [FAQ](#) or contact E4TheFuture or E2 directly.



ABOUT E4TheFuture

E4TheFuture is dedicated to bringing clean, efficient energy home for every American and promotes energy solutions to advance climate protection and economic fairness. Visit www.E4TheFuture.org.



ABOUT E2

E2 is a national, nonpartisan group of business leaders, investors and other professionals from every sector of the economy who advocate for smart policies that are good for the environment and good for the economy. E2 members have founded or funded more than 2,500 companies, created more than 600,000 jobs and control more than \$100 billion in private and venture capital equity. Visit www.e2.org.



ABOUT BW Research

BW Research Partnership is a full-service, economic and workforce research consulting firm with offices in Carlsbad, California and Wrentham, Massachusetts. It is the nation's leading provider of accurate, comprehensive energy and clean energy research studies, including the United States Energy and Employment Report (USEER), National Solar Jobs Census, wind industry analyses for the National Renewable Energy Laboratory and the Natural Resources Defense Council, and state-level clean energy reports for Massachusetts, New York, Illinois, Vermont, Iowa, Rhode Island, Florida, Connecticut, Pennsylvania, and Missouri, among others.