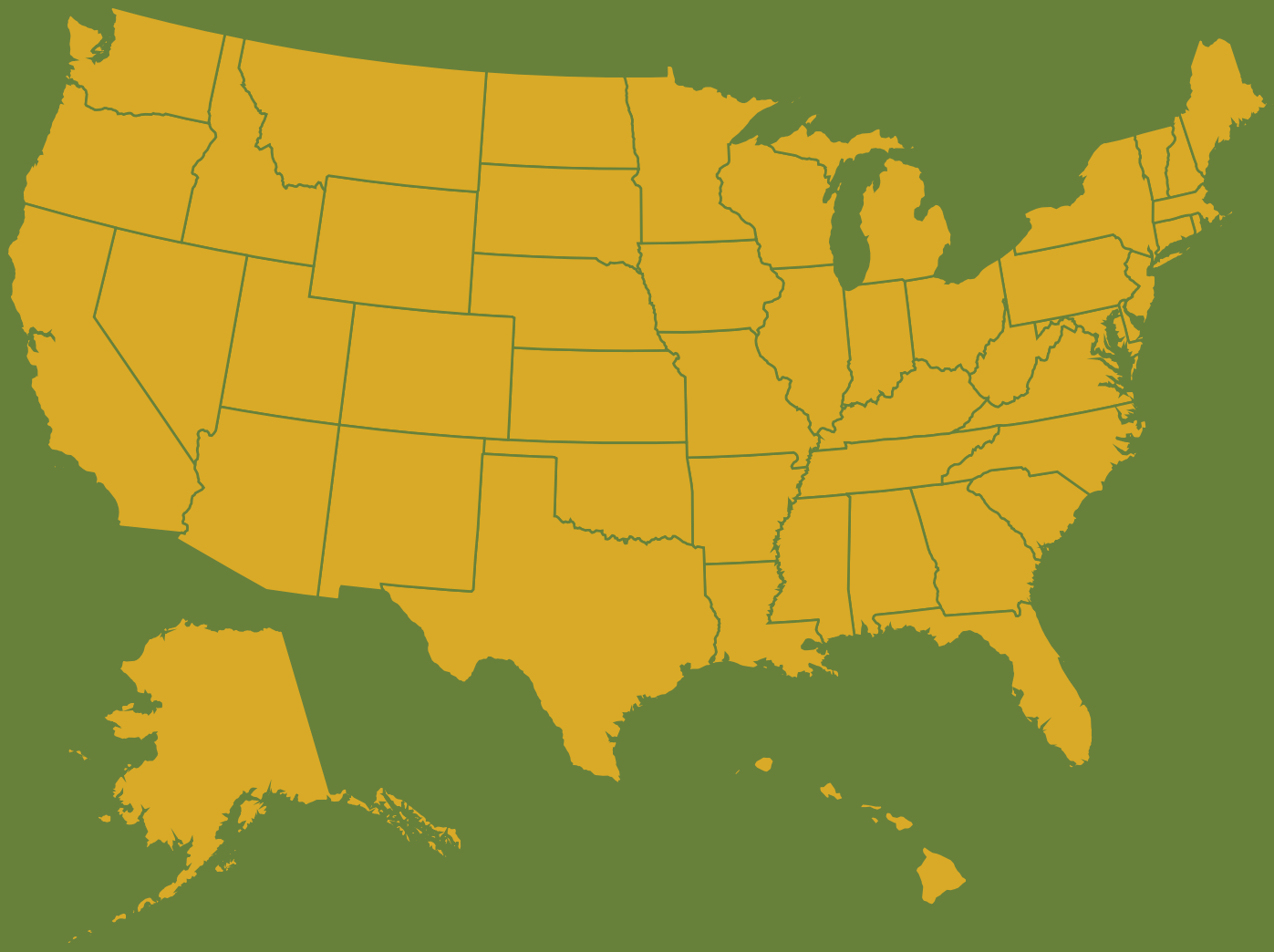
Energy Efficiency Jobs in America

2.16 MILLION AMERICANS WORK IN ENERGY EFFICIENCY



E2

E4 THE FUTURE

DECEMBER 2022

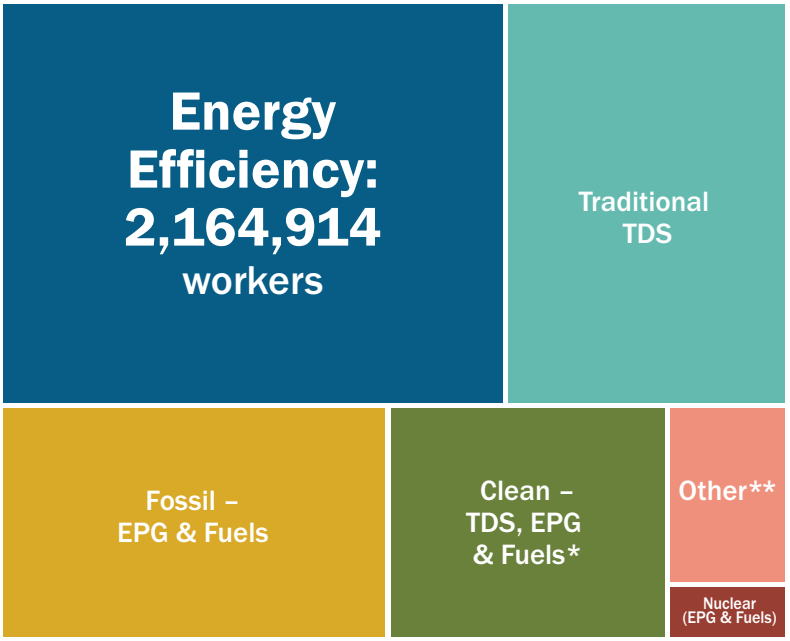
#FacesOfEE

A STRONGER U.S. ENERGY EFFICIENCY WORKFORCE

The Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) bring historic investments in energy efficiency to all sectors of the U.S. economy. Added to ongoing federal investments in energy efficiency (EE), they confirm efficiency's vital role in the economy and underscore its necessity as a prerequisite to address climate change in our built environment.

To achieve the goals of these federal investments, the EE workforce—already the largest workforce within the clean energy industry—will need to grow significantly. America must prioritize EE workforce development and training in every state. Positioning it squarely at center stage will enable more-diverse new hires, improving gender and racial/ethnic balances to better match area populations.

In construction—the largest portion of EE jobs—work often involves skills training and certifications to assure quality building performance. Efficiency workers are in demand; professionals who earn key credentials are highly compensated. Careers focused on creating better buildings and energy efficient infrastructure are helping everyday Americans in myriad ways.



TDS = Transmission, Distribution & Storage
EPG = Electric Power Generation
*Also includes jobs in energy storage and grid modernization that enable renewable electricity
**Includes other subsectors such as corn ethanol, woody biomass, large hydropower

Reducing energy use in buildings can avert "up to one-third of coal- or gas-fired power generation." —LBNL

Lawrence Berkeley National Laboratory. How Managing Building Energy Demand Can Aid the Clean Energy Transition

HISTORIC FEDERAL INVESTMENT WITH IRA AND IIJA SETS THE STAGE FOR JOB CREATION AND CARBON SAVINGS

49,000 full time EE jobs for **10 years***

$85 billion reduction in energy expenditures by 2030**

92 million tons of CO_2 **reductions** by 2030***

*BlueGreen Alliance

**Energy Innovation Policy and Technology LLC

***From buildings. U.S. Department of Energy

UNLOCKING POSSIBILITY

The passage of the Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) unlocks billions in federal funding for efficiency investments in buildings. Investments include rebates and tax credits for upgrades such as insulation and better appliances, and installing highly efficient "two-way air conditioners"—heat pumps—that heat and cool.

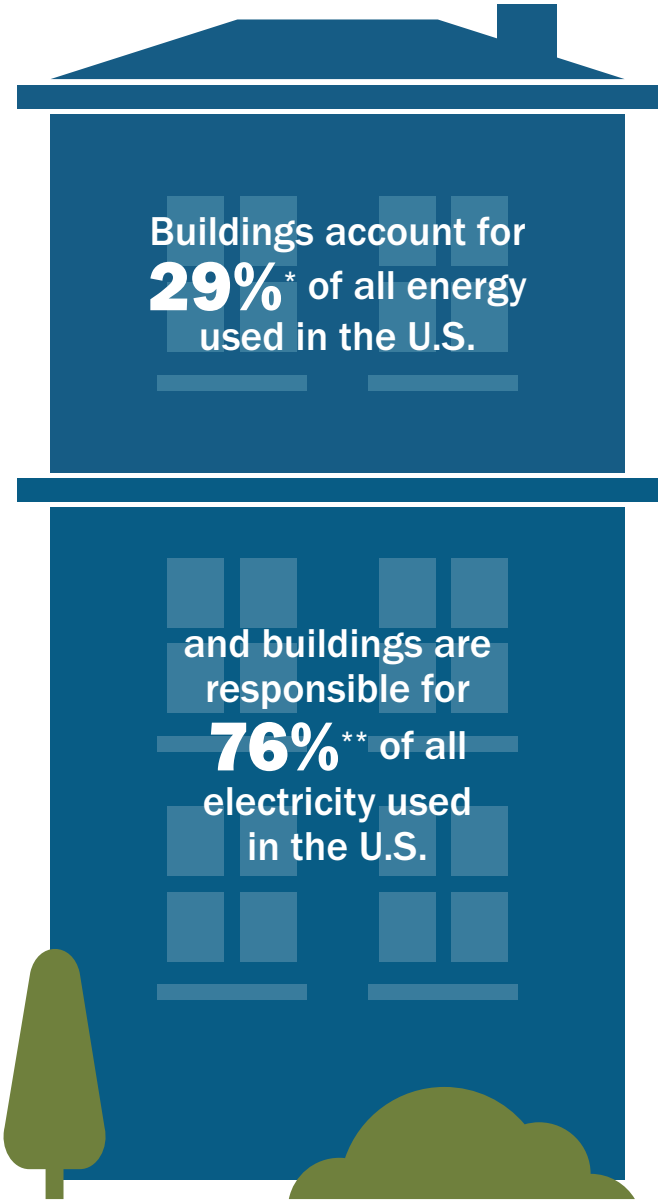
Thousands of workers will be needed to design, manufacture, and install insulation, controls, replacement appliances, upgraded HVAC, and more. Efficiency improvements especially benefit low-income consumers who are historically burdened with energy costs.

"The Inflation Reduction Act could cut the social costs of climate change by up to $1.9 trillion by 2050," noted a White House spokesperson upon passage of the IRA.

CNBC

Avoided carbon emissions from energy savings also help to mitigate the worst impacts of climate change. And community resilience to severe weather and power outages increases as a result.

For workers, consumers, and the environment, this historical federal investment in buildings is a WIN-WIN-WIN!



*U.S. Energy Information Administration
**Department of Energy: An Assessment of Energy Technologies and Research Opportunities

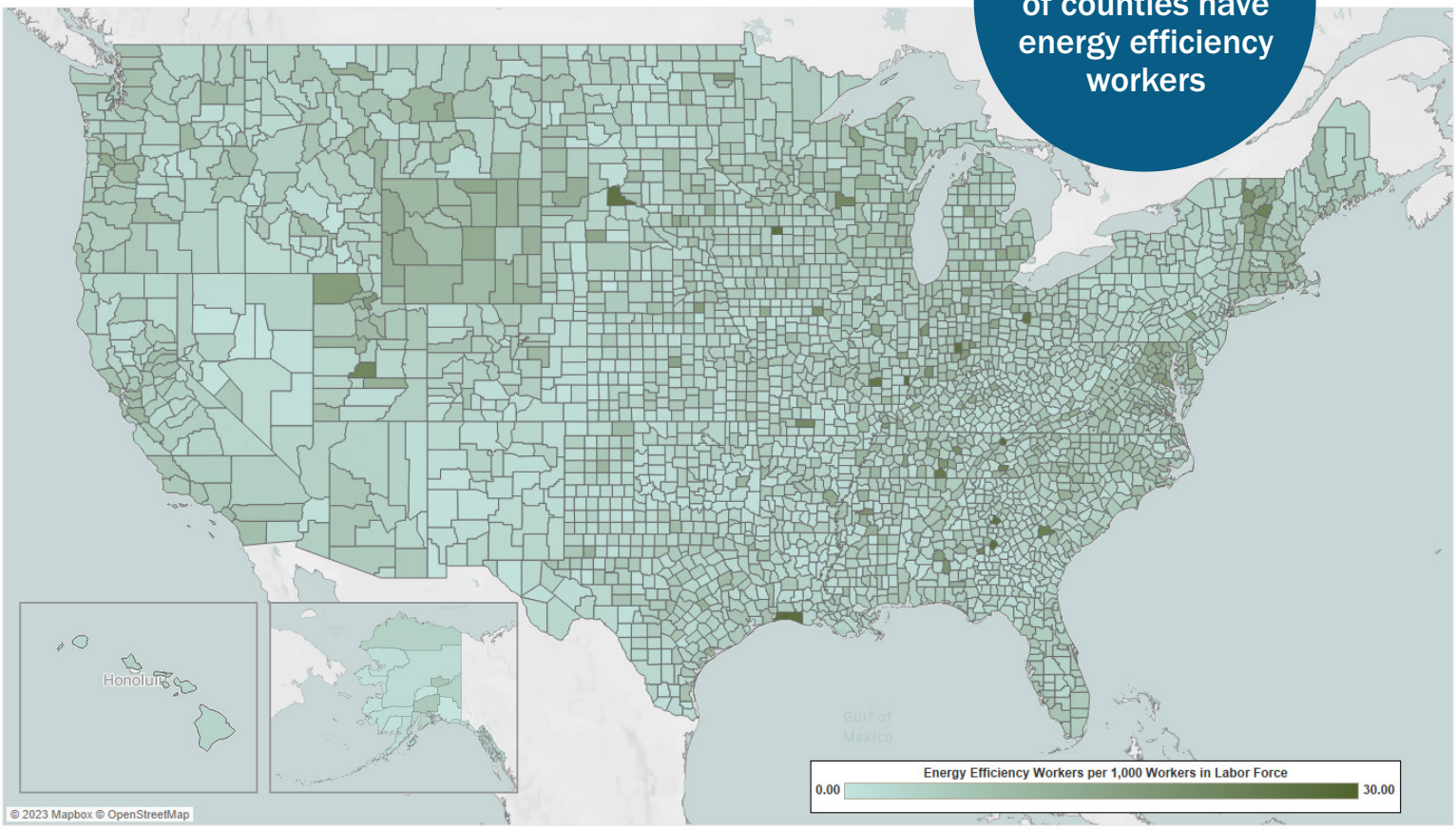
U.S. Energy Information Administration and U.S. Census Bureau QuickFacts

ENERGY EFFICIENCY HELPS ALL LOCAL ECONOMIES

Whether a building is old or new, opportunities to improve efficiency are always available. Design, construction, operation, and maintenance are all vital to increasing energy efficiency, and most of that work must be done by local workers, thereby creating long-term local jobs. “Mining” inefficient older buildings for big energy savings as also generates customer savings, which frees up more money to circulate in the local economy. Improved insulation, better HVAC and appliances, and new digital controls are a few of the most common key upgrades.

Energy efficiency jobs are in nearly every county across the United States. These good-paying jobs can be found in rural economies, suburban developments, and in the heart of our largest cities. Investing in this industry benefits ALL local economies and communities. Wherever there are buildings, there is potential to reduce energy expenses, while creating local jobs that cannot be outsourced.

99.7%
of counties have energy efficiency workers



BEYOND THE BIG CITIES

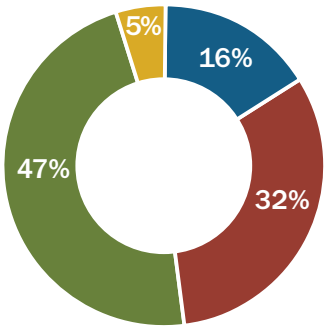
286,208
Americans living in rural areas work in energy efficiency

280,388
U.S. energy efficiency jobs are in counties with fewer than 100,000 residents

925,074
Energy efficiency jobs are outside America’s top 50 metro areas

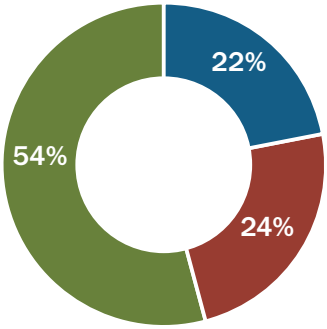
ENERGY EFFICIENCY WORKERS—WHERE DO THEY WORK?

Energy efficiency professionals work in factories, offices, design studios, and data centers. They do much more than reduce energy use. They improve operations of existing buildings and design and build a better future. Squeezing out energy waste drives job creation. Most U.S. energy efficiency jobs are related to construction in the building sector.



ACROSS POSITIONS

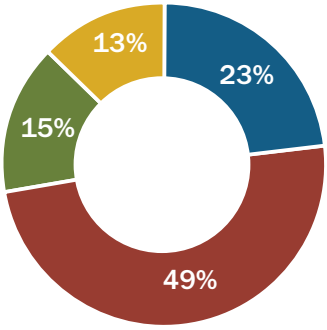
- Production & Manufacturing
- Installation & Repairs
- Administration, Sales, & Management
- Other



ACROSS INDUSTRIES

- Manufacturing & Trade
- Professional Services & Other*
- Construction

*Professional services include finance/accounting, architecture, engineering, R&D, etc.; "other" includes maintenance, and business and nonprofit organizations



ACROSS TECHNOLOGIES

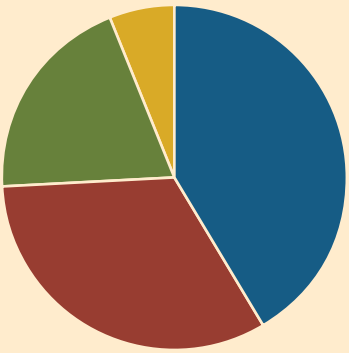
- ENERGY STAR Appliances & Efficient Lighting
- HVAC*
- Building Materials & Insulation
- Other**

*Heating, Ventilation, Air Conditioning of higher-than-standard efficiency/renewable heating & cooling
**Other such as energy audits, building certifications, and software services

#FacesOfEE

SMALL BUSINESSES FUEL SUCCESS ACROSS AMERICA

There are
381,527
energy efficiency establishments in the U.S.



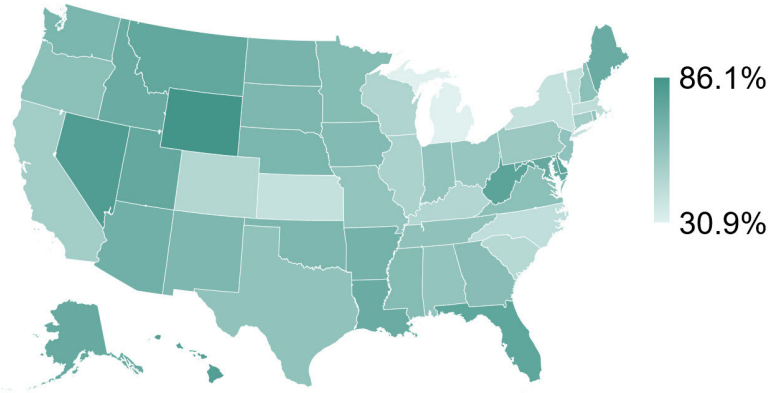
1-4 Employees: 42%
5-19 Employees: 33%
20-99 Employees: 20%
100+ Employees: 6%

WORKFORCE NEEDS BY STATE: MAXIMIZING SUCCESS

To achieve the goals of the massive investments provided by IIJA and IRA, the EE workforce will need to grow significantly. How can decisionmakers best match EE workforce training with job paths, to better serve employers and potential employees?

Factoring in the distribution of current EE jobs is a good place to start. These maps provide key information to use for that strategy. While most EE jobs are in construction, many opportunities exist in manufacturing and professional services. It helps to see how they vary by state.

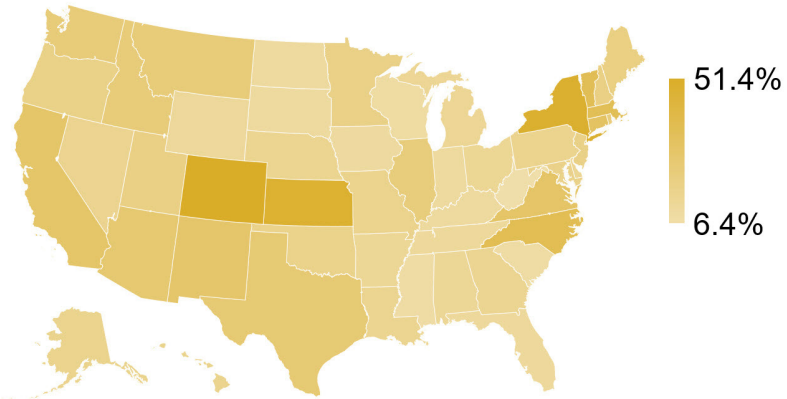
Percent of EE Workers Employed in Construction



CONSTRUCTION

In metro and rural areas, and in-between, almost 1.2 million EE construction workers are employed everywhere buildings exist. Over 16% of total U.S. construction workers spend at least 50% of their time on energy efficiency.

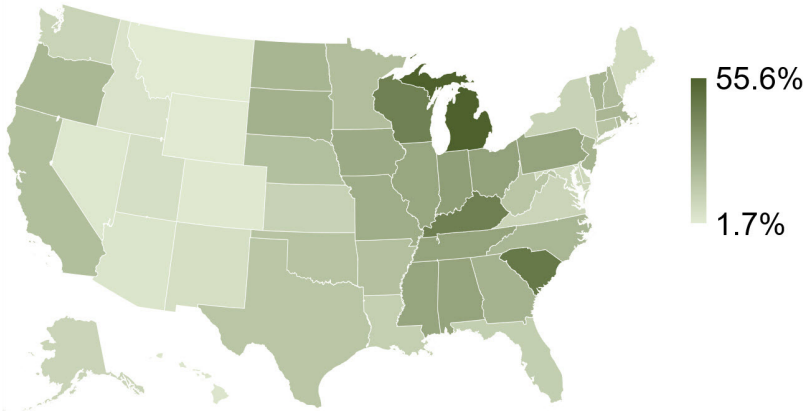
Percent of EE Workers Employed in Professional Services and Other



PROFESSIONAL SERVICES

Engineers, designers, architects, financial services, and legal professionals create concepts and plans, and finance projects – representing nearly 514,000 U.S. efficiency workers.

Percent of EE Workers Employed in Manufacturing and Trade

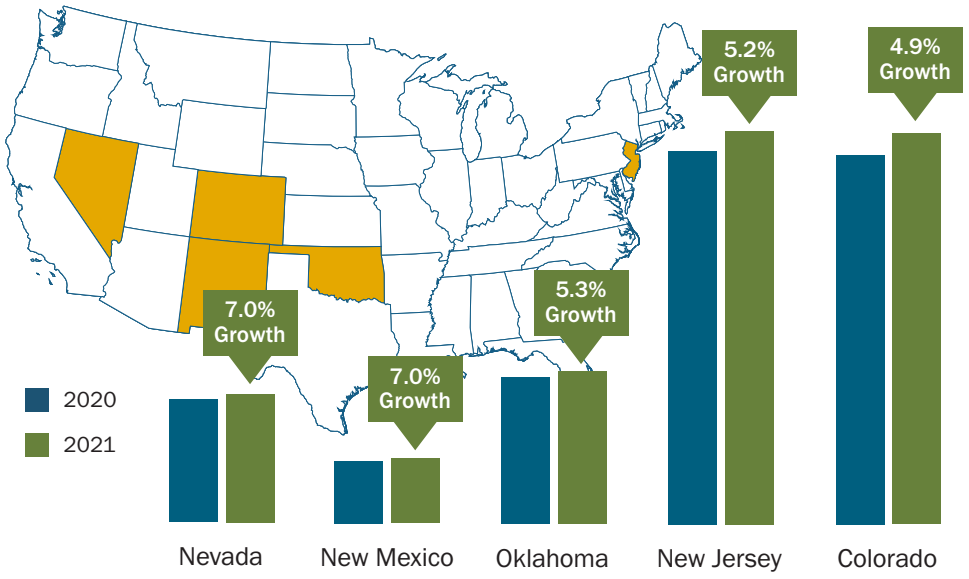


MANUFACTURING

A robust domestic manufacturing industry of energy efficient products supports nearly 482,000 U.S. jobs. These products are installed and maintained by trained professionals in your community.

DETAILS PAINT A FULLER PICTURE

Top States for Growth



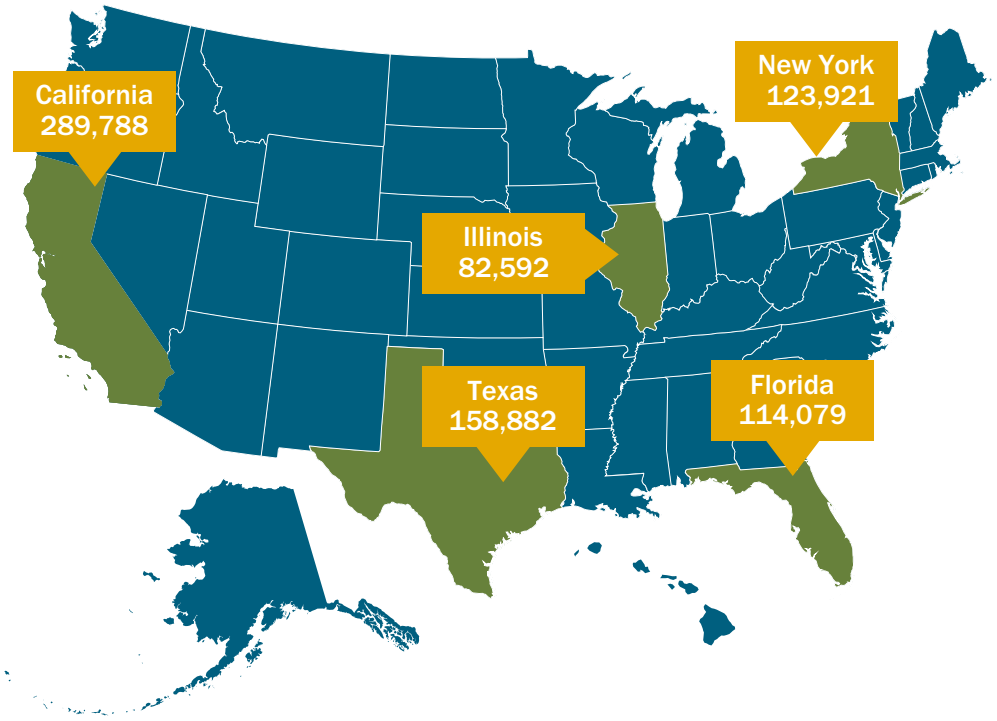
11%
of EE pros are **represented by a union** compared to the national average of 6%

(private sector)

GOOD JOBS FOR VETERANS

8% of EE workers are veterans, higher than the national average of 6%

Top States Total Gross Jobs



NO BETTER TIME TO BUILD WORKFORCE DIVERSITY

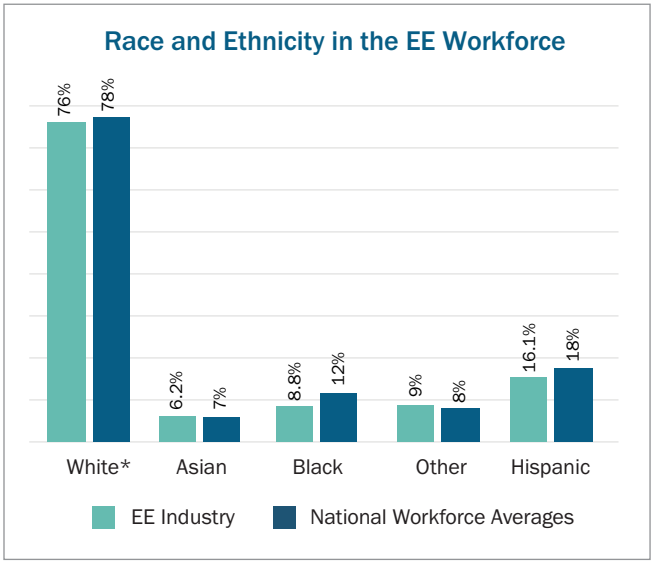
Demographic data is crucial for measuring progress in the EE sector. With historic investments in clean energy workforce development through the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, this year marks a new opportunity to increase diversity as we grow the industry.

Boosting diversity in hiring practices is key to expanding a future workforce of skilled professionals, and to ensuring that all U.S. residents are better represented in the efficiency sector. As we deploy new workforce development funding, we must also ensure that energy efficiency projects are implemented in diverse communities.

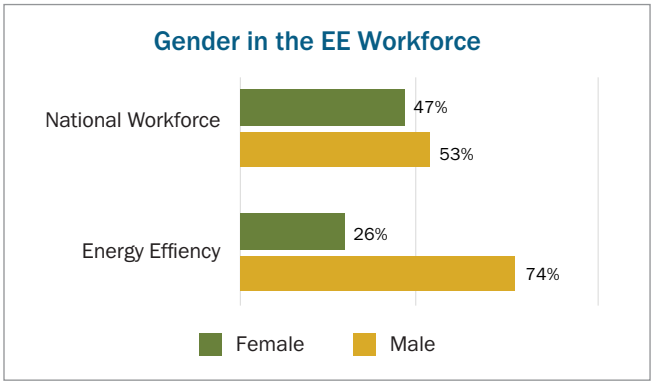
Prioritizing people of color and women for training and support will increase access to EE jobs. Ultimately, this will help to enable the long-term success of the EE industry and efforts to decarbonize our economy.

"Let's come together on energy, health, environmental and economic goals, as we tear down walls, and build bridges to economic prosperity."

—Leticia Colon de Mejias, on Efficiency For All workforce development initiatives

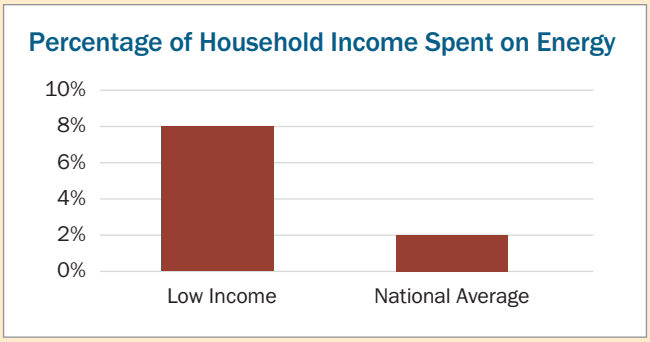


*Includes non-Hispanic and Hispanic whites.



Note: Due to this report's reliance on federal agency data, non-binary gender data is missing. Greater representation of people of all gender identities and expressions in energy efficiency will create a stronger industry.

ENERGY EFFICIENCY HELPS TO ADDRESS ENERGY BURDENS



Low-Income Households, Communities of Color Face High "Energy Burden" Entering Recession. American Council for an Energy-Efficient Economy (ACEEE)

Low-income households and households of color consistently spend a large portion of their income on energy bills (and are therefore saddled with a larger "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.

THE ENERGY EFFICIENCY WORKFORCE: REAL PEOPLE, ADDING ENORMOUS VALUE

Yvette Maskrey
Honeywell Smart Energy
Honolulu, HI

"Energy efficiency is a significant factor in working towards global resiliency."

Martins Pecholcs
Accella Polyurethane Systems
Cottonwood Heights, UT

"Saving energy is one of the most important objectives we all face. I manage regional sales of spray foam to save energy and reduce utility bills.".

Brandon Walker
Positive & Productive Innovations
Belleville, IL

"I'm the sustainability coordinator, and we help families and businesses establish the best sustainability and EE solutions available."

Patrick Addler
ThermAir Systems
Phoenix, AZ

"We work with owners, engineers, and contractors to design and build commercial buildings. My team finds methods to reduce overall building electric loads."

Jessica Azarelo
Attic Queen, LLC
Tampa, FL

"There is no better feeling than a customer reaching out after a job is complete to say how much better they feel, how much more comfortable they are in their home or how much money they've saved."

Renee Clair
Johnson Controls
Williams Bay, WI

"I work on promoting EE through leadership programs and on regulatory advocacy for our product teams."

RESILIENCE MATTERS: EFFICIENT BUILDINGS CAN HELP

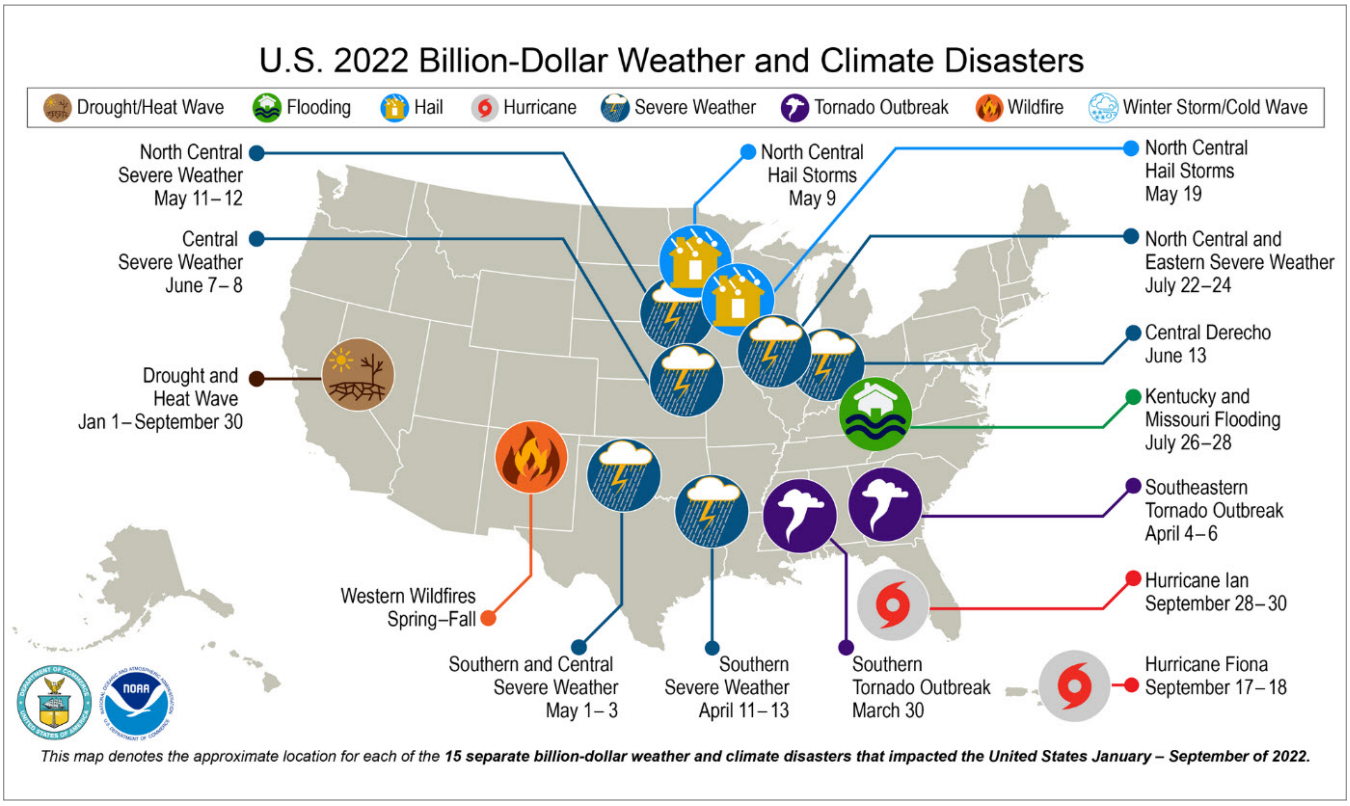
Storm damage, heat waves, and extreme weather impact more lives each year. During severe events people rely on buildings in order to survive—so it matters how well they stand up. Many buildings were not designed for the harsh conditions now becoming commonplace. Damage can result in uninhabitable homes, and cause sustained power outages. Repair costs are high.

However, help is available: Constructing new buildings using stronger energy codes is one solution. Another is fixing older buildings. Both approaches reduce damage and increase safety and comfort.

Well-constructed homes enable occupants to remain safe during extended power outages. Updated heating and cooling systems, and better insulation to help prevent energy loss, maximize resilience.

Almost 80% of existing U.S. homes were built before 2000.* Retrofitting them for efficiency will also make them more resilient in the face of severe weather. Construction codes put in place to reduce risk of disaster also complement efficiency codes. For example, windows required to meet "wind codes" are also more highly efficient windows. Addressing multiple resilience factors provides building owners and communities with maximum benefits.**

Efficient, resilient buildings can save lives and reduce the severity of property loss. Smart leaders support commitments to follow up-to-date international building codes, and to enforce compliance of those provisions.



*This map denotes the approximate location for each of the **15 separate billion-dollar weather and climate disasters that impacted the United States January – September of 2022.***

Sources: Axios; map: National Oceanic and Atmospheric Administration.

Statistics as of 10/11/22; United States suffered 15 events with losses exceeding $1 billion each, resulting in the deaths of 342 people; for comparison, in 1980–2021 the annual average was 7.7 events and for 2017–21 it is 17.8 events (CPI-adjusted).

*Energy Information Administration

**Energy Efficiency: A Critical Component to Preparedness for Extreme Weather

POLICY LEADERSHIP

Energy efficiency saves money, reduces emissions, improves air quality and public health, and makes us more energy independent—while also tackling climate change and creating jobs. The Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA) included historic investments aimed at advancing energy efficiency across the country. The effective implementation of the energy efficiency provisions in IRA and IIJA, and the continued funding for government-led energy efficiency activities, are both crucial to realizing the benefits of this critical energy source.

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

Maintain robust funding for proven federal energy efficiency programs, including:

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

Use Historic Investments Wisely

Ensure effective implementation of key incentives and rebates included in the IRA and the IIJA for building owners, households, and public buildings to make smart property upgrades that create jobs and improve building performance, such as:

Inflation Reduction Act

- Commercial and residential building tax credits (179D Energy Efficient Commercial Building Deduction; 25C Energy Efficient Home Improvement Credit; 45L New Energy Efficient Home Tax Credit)
- Residential rebate programs to drive efficiency and electrification deployment and job creation for local contractors—the Home Energy Saving Performance-Based, Whole-House Retrofit (HOMES) program, and the High-Efficiency Electric Home Rebate (HEEHR) Program
- State-Based Home Energy Efficiency Contractor Training Grants to expand the EE and electrification workforce
- Greenhouse Gas Reduction Fund (GHGRF) competitive grants to mobilize financing for clean energy and climate projects that reduce emissions (may include efficiency)
- Green and Resilient Retrofit program to support energy and water efficiency, and climate resilience of HUD-assisted multifamily properties
- Funding for the General Services Administration to invest in low-carbon, high performance green buildings

Infrastructure Investment and Jobs Act

- Energy Auditor Training grant program for states to train individuals to conduct energy audits or conduct surveys of commercial and residential buildings
- Energy Efficiency Revolving Loan Fund Capitalization Grant Program for states to establish revolving loan funds in support of loans and grants for EE audits, upgrades, and retrofits to increase building efficiency

Support other policy initiatives to further advance energy efficiency nationwide, including:

- 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
- Stronger building and appliance efficiency standards, with training and enforcement
- ENERGY STAR, which helps people make smart energy choices
- Energy audits, technical assistance, and financing options for large manufacturers
- Directing FEMA (Federal Emergency Management Agency) to ensure that rebuilding complies with updated international building codes and advances energy efficiency

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

- Strengthen workforce development and apprenticeship programs for the EE sector
- Create a workforce grant program to help organizations and small businesses hire and train new EE 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, leveraging IRA funds to support assistance for the latest (net zero) building energy code adoption for state and local governments
- 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 of energy use, and to boost resilience

ABOUT THE REPORT

The 2021 job numbers come from the national 2022 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 2022 USEER also relies on a unique supplemental survey of 33,000 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. See appendix C 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, Maine, New Hampshire, California, Vermont, Iowa, Rhode Island, Florida, Connecticut, Pennsylvania, and Missouri, among others.