

U.S. DEPARTMENT OF  
**ENERGY**

Office of  
ENERGY EFFICIENCY &  
RENEWABLE ENERGY

# Strategies to Equitably Expand the Energy Codes Workforce

Building Energy Code Webinar Series

Building Technologies Office

October 19, 2023



# BECP WEBINAR SERIES LINEUP

Catch the entire lineup of sessions the third Thursday of each month @ 1p ET.

- 9/21/23: How Building Codes Facilitate Resilient Communities
  - 10/19/23: Strategies to Equitably Expand the Energy Codes Workforce
  - 11/16/23: What You Need to Know About the New Energy Standard for Commercial Buildings: ASHRAE 90.1-2022
  - 1/18/24: Best Practices for Understanding and Improving Compliance: Field Studies, Circuit Riders, and More
  - 2/15/24: Addressing Existing Buildings: Building Performance Standards and Implementation Support Tools
  - 3/21/24: Energy Code Enforcement Challenges and Opportunities in Rural Communities
- ....and more to come

> Learn more: [www.energycodes.gov/becp-energy-code-webinar-series](https://www.energycodes.gov/becp-energy-code-webinar-series)

# Today's Speakers



Corie Anderson, Pacific Northwest National Laboratory (PNNL)

Monica Guevara, Emerald Cities Collaborative

Andy Winslow, Northeast Energy Efficiency Partnerships (NEEP)

Maggie Kelley Riggins, Southeast Energy Efficiency Alliance (SEEA)



# Highlighting Current Workforce Development Programs

DOE-funded programs helping to grow the codes workforce

DOE Webinar: Strategies to Equitably Expand the Energy Codes Workforce

October 19, 2023





Building  
Energy  
Education

fundamentals

## Teach Energy Efficiency

Hands-on Curriculum | Instructor Training | Resources

- Developed by The Smart Energy Design Assistance Center (SEDAC) at the University of Illinois at Urbana-Champaign in partnership with the states of Hawaii, Nevada, and Illinois.
- Teaches energy code fundamentals and highlights job opportunities related to energy efficiency and energy codes
  - Information on basic energy efficiency and building science principles and hands-on training opportunities
- Audience
  - Community college instructors
  - Students in the building design, construction, and sustainability fields

Learn more: [https://smartenergy.illinois.edu/bee\\_fundamentals/](https://smartenergy.illinois.edu/bee_fundamentals/)



# Nebraska Energy Codes Training Program

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In-person and online energy code compliance trainings from the Midwest Energy Efficiency Alliance (MEEA).

- Audience:
  - Builders, contractors, design professionals, code officials, and more
- Topics:
  - Changes in the energy code from amended 2009 IECC to unamended 2018 IECC
  - Building science principles
  - Advanced technologies
- Additional Aspects:
  - Code consultant/circuit rider
  - Duct and envelope tightness (DET) verifier trainings and train-the-trainer
  - Metropolitan Community College energy code courses

Learn more: [www.mwalliance.org/nebraska-energy-codes-training-program](http://www.mwalliance.org/nebraska-energy-codes-training-program)



# Next Gen Energy Code Training

A training program to provide the growing clean energy workforce with the knowledge and skills they need to create energy efficient, resilient, and healthy homes and apartments. Hosted by Newport Partners.

- Audience:
  - Builders, architects, engineers, building officials, trade contractors, entry-level laborers, and building owners/managers
- Topics:
  - Energy code requirements and compliance
  - Advanced building practices and career opportunities
  - Whole-house mechanical ventilation
  - Net zero strategies/all-electric homes in cold climates



Learn more: [www.newportpartnersllc.com/next-gen-energy-code-training](http://www.newportpartnersllc.com/next-gen-energy-code-training)

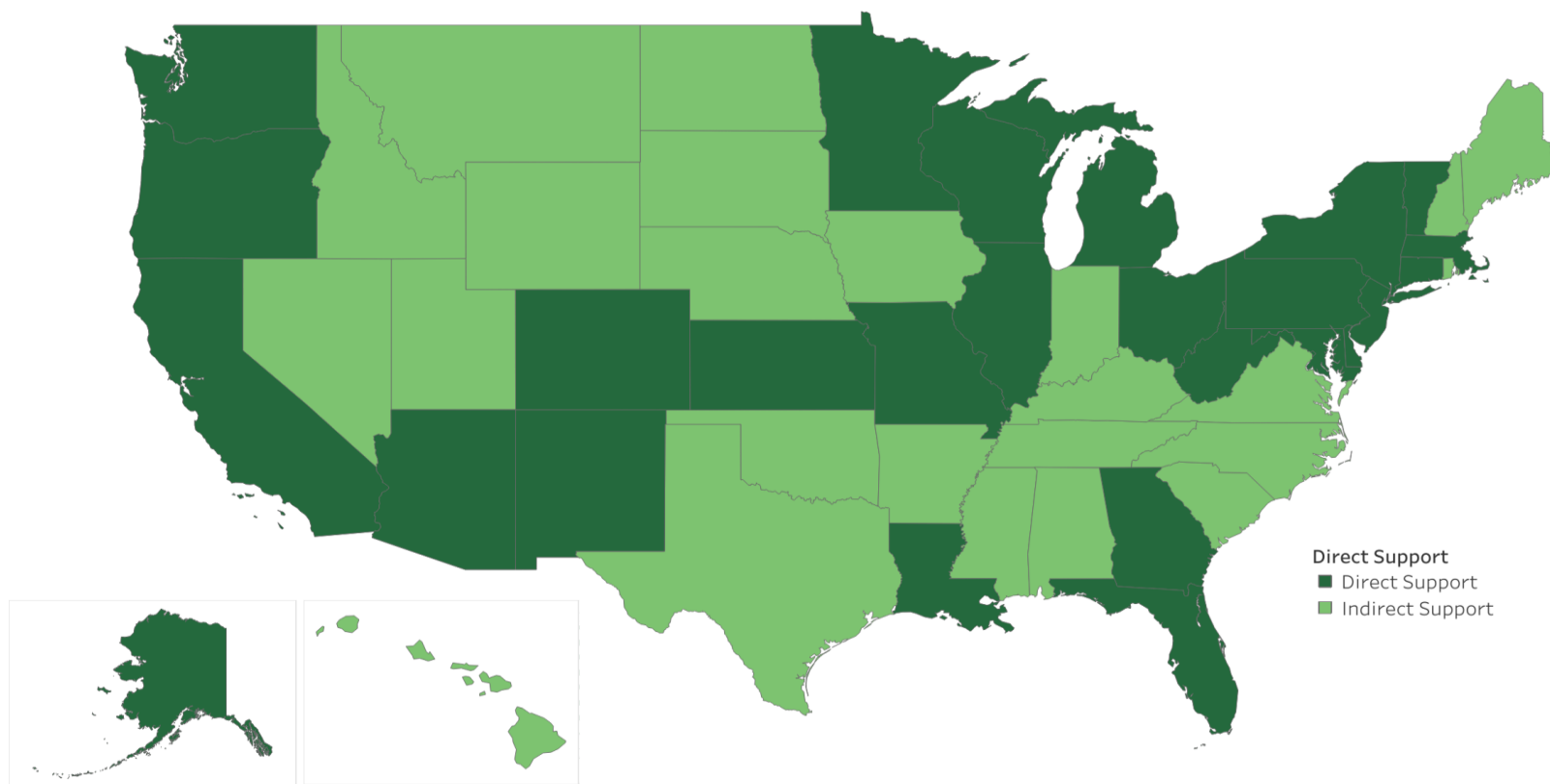
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Newport Partners L.L.C.

# New Workforce Projects Funded through BIL

>All States are supported through a national collaborative or regional TA program—and 27 states are targeted directly.

> Projects are crosscutting, with workforce development at the center of many.



Learn more: <https://www.energy.gov/eere/buildings/articles/meet-btos-newest-projects-support-more-resilient-and-efficient-building>



# Thank you



## Contact

Corie Anderson, PNNL

[corie.anderson@pnnl.gov](mailto:corie.anderson@pnnl.gov)

## Building Energy Codes Program

<https://www.energycodes.gov/>



# Emerald Cities

October 19, 2023 | Presented By: Monica Guevara

# ABOUT US

Emerald Cities is a national nonprofit that works at the nexus of equity and environment. The Emerald Cities Collaborative (ECC) envisions high-road regional economies that are more sustainable, economically just and democratic. We focus on:

- Greening Our Cities
- Building Our Communities
- Strengthening our Democracy



# Topics



Workforce Needs



Challenges Faced by Workforce & Contractors of Color



Solutions





# Population – Energy Efficiency

- Mechanical / HVAC
- Electrical
- Plumbing
- Weatherization
- Workers / employees
- Contractors / employers



# #FACTS

- Diversity is complicated
  - The Latine population is overrepresented in construction <sup>1</sup>
  - Black/African-American, Asian, Native Americans and women are underrepresented
  - White males dominate skilled trades and construction management positions
- Federal programs will be creating additional demand for an already tight labor market in clean energy sector <sup>2</sup>
- White Managers and supervisors hire and promote fewer BIPOC workers than BIPOC managers and supervisors <sup>3</sup>

1. [CEA and Census Data](#)
2. [High-Road Workforce Guide for City Climate Action](#)
3. [Seattle's Energy Efficient Construction and Building Occupations Workforce and The Organizational Reproduction of Inequality](#)

# SOLUTIONS FROM WITHIN

“Successful in the face of institutional racism and unfair standards, black and brown energy entrepreneurs should be at the forefront of clean energy investments.”

“There is more than enough untapped genius and qualified minority-owned businesses that could solve the economic and climate problems we face.”

~Gilbert Campbell & Harry Johnson II



# Workforce Challenges for BIPOC and Women

- Career pathways are opaque
- Informal networks are a large source of the current workforce reinforcing current race/ethnicity/gender disparities
- Retention in apprenticeship programs and in jobs is a challenge
- Entrepreneurship is a career pathway option utilized by BIPOC and women that stay within the industry



# Contractor Challenges for BIPOC and Women

- Wealth disparity has cascading effects
- Minimal financial resources / start-up capital
- Limited access to financing to start/grow
- Sufficient levels of bonding and insurance can be challenging
- Access to decision-making networks
- Access to mentorship
- Sustaining operations and marketing tasks in smaller organizations




# THE OPPORTUNITY - What is Economic Inclusion?

Economic inclusion takes proactive steps to create jobs and business opportunities for disadvantaged and underrepresented populations in all sectors to create an inclusive market economy.

An inclusive market economy ensures that anyone regardless of their gender, place of birth, family background, age or other circumstances, over which they have no control, has full and fair access to **labor markets, finance, and entrepreneurship** and, more generally, economic opportunity.

# Emerald Cities Programs



## HVAC/R Training Academy

12 Wks, OSHA 10, EPA 608 Type 2




## Electrical Pathways Program

To be launched 2024



## E-Contractor Academy

WMBE Inclusion in clean energy & construction



## E-Contractor Mini Series

Trade Focused Programs such as EV and Heat Pump programming

# Recommendations - Workforce

- Direct and intentional outreach to organizations present in community
- Wrap-around support services are important to address barriers
- Provide support and education to employers on how to create a supportive and welcoming environment
- Strengthen on-ramp programs, particularly pre-apprenticeship programs
- Collaboration with stakeholders is key





# Recommendations – MWBE Contractors

- Direct connection to work opportunities
- Simplify public contracting and MWBE certification processes
- Increased and direct outreach to organizations directly supporting MWBE firms
- Instituting prompt payment policies
- Increased financing for MWBE firms
- Establishing, tracking, reporting MWBE goals





## The Future

### Woman & Minority Owned Businesses

- [Apex Electric Group](#)
- [CYC Mechanical](#)
- [OP Electric](#)
- [Veritas Electric](#)

# CONTACT INFORMATION



**MONICA GUEVARA**

[mguevara@emeraldcities.org](mailto:mguevara@emeraldcities.org)

[LinkedIn](#)

[Emerald Cities Website](#)



# Total Energy Pathways – Workforce

Andy Winslow

Senior Associate: States & Community Solutions

Northeast Energy Efficiency Partnerships





# About NEEP

A Regional Energy Efficiency Organization



One of six REEOs funded in-part by U.S. DOE  
to support state and local efficiency policies and programs.

# Northeast Energy Efficiency Partnerships

## Vision

We envision the region's homes, buildings, and communities transformed into efficient, affordable, low-carbon, and resilient places to live, work, and play.

## Mission

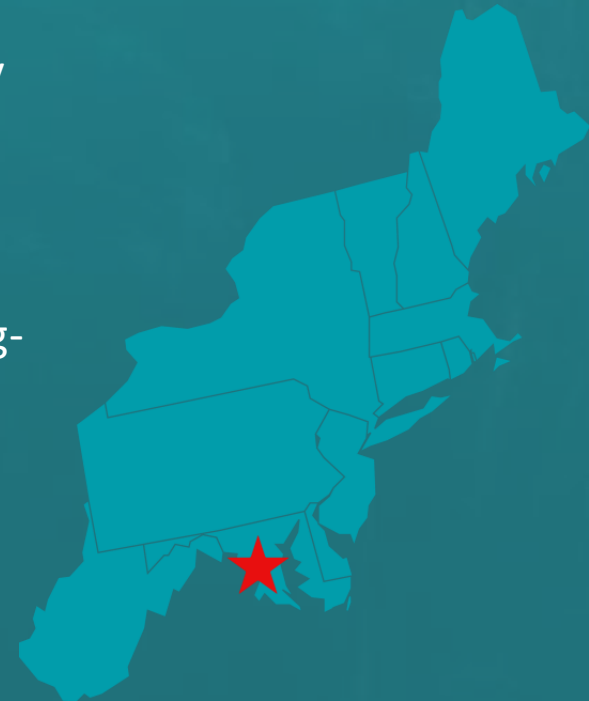
NEEP drives regional collaboration so that the Northeast and Mid-Atlantic can equitably and affordably reduce building sector greenhouse gas emissions through energy efficiency, electrification, and grid integration.

## Goal

Assist the Northeast and Mid-Atlantic states to equitably and affordably reduce building-sector greenhouse gas emissions in alignment with their goals.

## Approach

Drive market transformation regionally by fostering collaboration and innovation, developing research and tools, and disseminating knowledge.



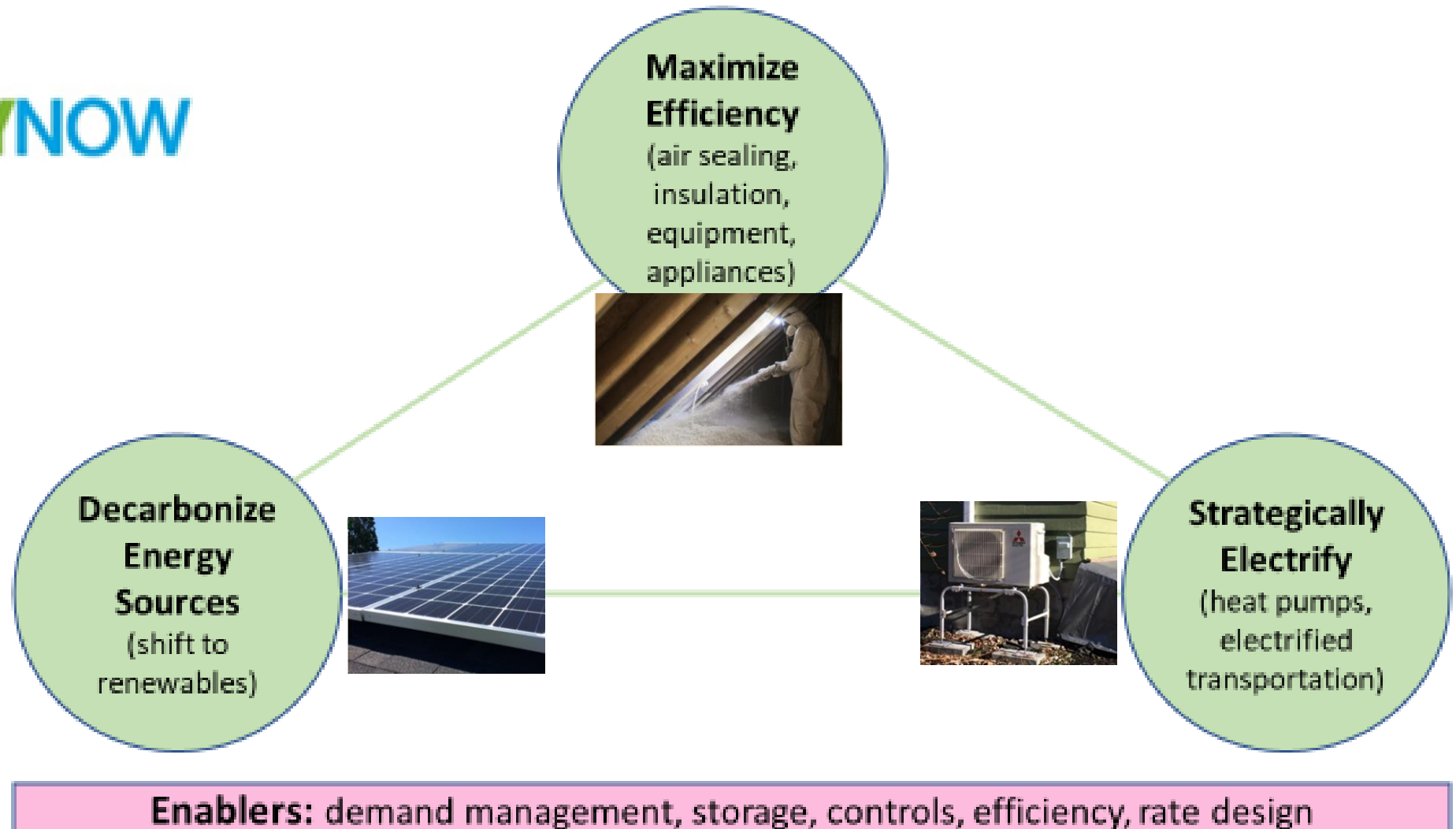


# To Understand Where We Are Now We Need To Go Back...



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# Retrofit Pilots: 2016-2017 & 2020-2022

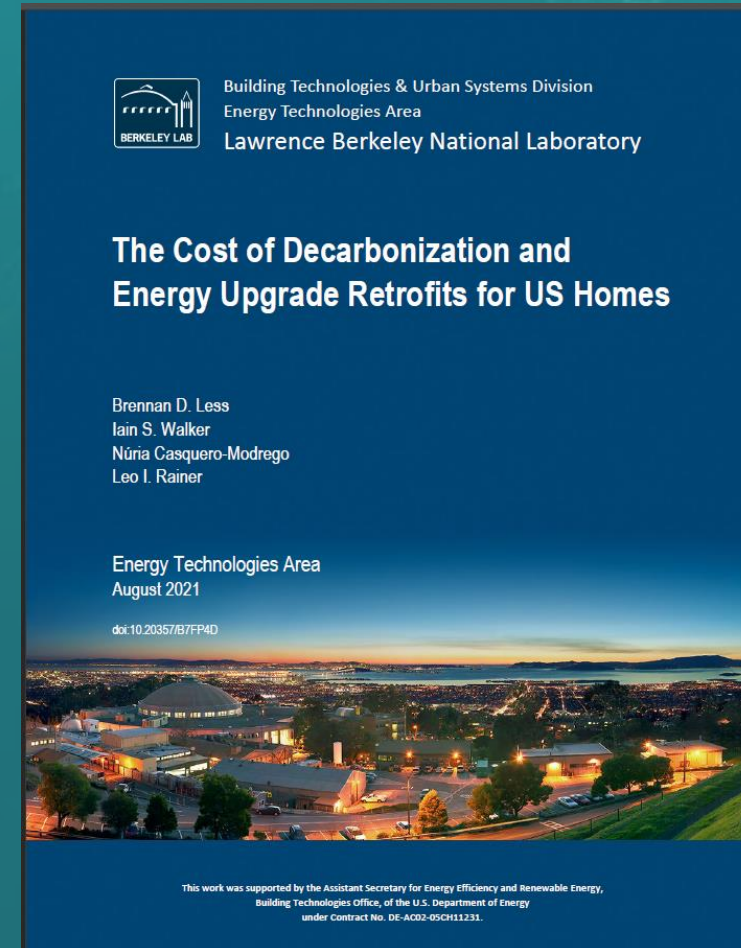




# Comprehensive Retrofits Are Clear Winners



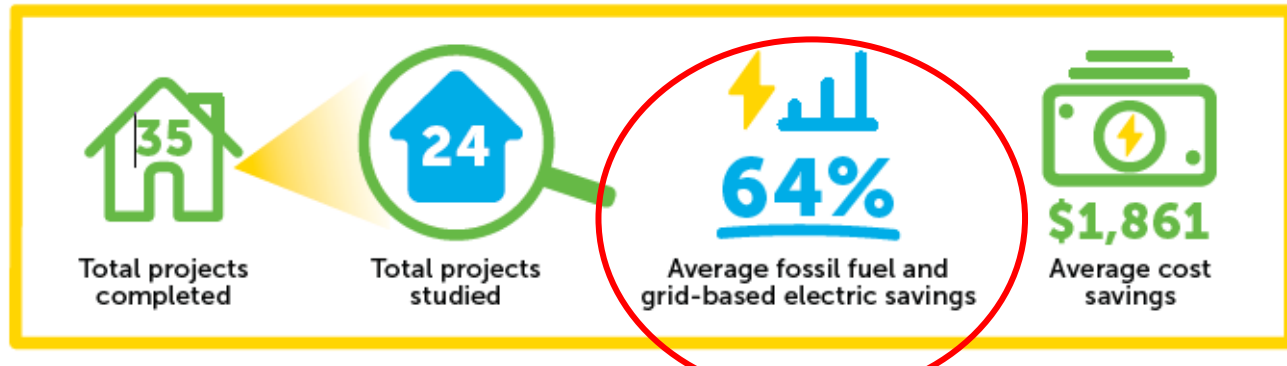
- *"In the LBNL database, projects combining moderate envelope sealing and insulation, heat pump upgrades and solar PV installation were clear winners. Compared with traditional deep retrofits, these projects saved substantially more CO2 at half the cost."*
- Brennan Less, Lawrence Berkeley National Lab



# Zero Energy Now – Lots of Potential Savings



## Zero Energy Now 2016-2017 Pilot Program at a Glance



“  
We’re able to hit the zero energy target; and we’re warmer now because we can afford to keep the house warmer.”  
- ZEN Homeowner

“  
People would seek us out; work seemed to find us. The projects were bigger so the profit margin for time put into it was better.”  
- ZEN Contractor



2020-2022 30 Homes	Envelope Improvement Consumption MMBtus*	Equipment Improvement Consumption MMBtus	Renewable Energy Offset Post Efficiency MMBtus	Total Fossil & Grid Energy Savings MMBtus	Total Energy Cost Savings Dollars	Total Carbon Savings lbs CO2
Average	32	40	56	107	\$3,011	14,103
Average Pctg	28%	42%	85%	90%	68%	94%



# Total Energy Pathways: Regional Implementation of Vermont Pilots



## Potential Impact as a Regional Model

- Helps individuals dramatically reduce energy bills, their carbon footprint, and create a more comfortable home – all at an affordable cost
- Builds and supports market capabilities and workforce development to provide comprehensive zero energy/carbon home energy retrofits at scale
- Helps states achieve their building energy efficiency and decarbonization goals



# Total Energy Pathways: Workforce



- In order to scale the TEP program and projects, we need
  - A more **sustainable**,
  - **Diversified workforce** – focus on **women and BIPOC**
  - Qualified to speak to a **whole-home retrofit** approach.



# Total Energy Pathways – Workforce

Andy Winslow

Senior Associate: States & Community Solutions

Northeast Energy Efficiency Partnerships



# Project Team



U.S. DEPARTMENT OF  
**ENERGY**



Northeast Energy Efficiency Partnerships



**BUILDING  
PERFORMANCE**  
ASSOCIATION



# Total Energy Pathways: Workforce 2

## Componentenets



### 1. Online Resource Library

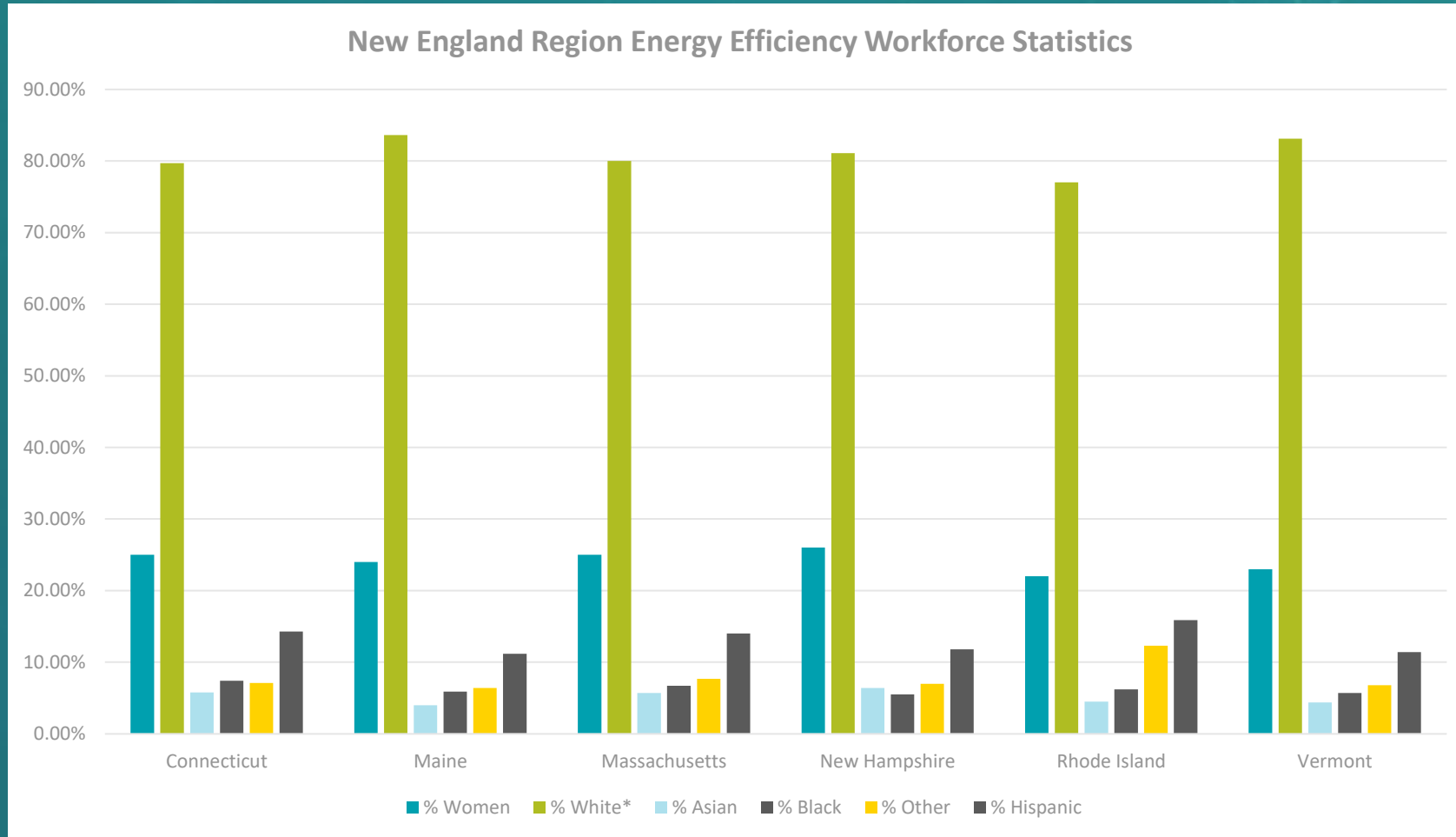
- Provides **flexibility** for varied educational needs and time commitments
- **On-demand** trainings such as class, webinar, downloadable training tools
- <https://neep.org/tep/tep-resource-library>

### 2. Building Performance Institute Total Building Performance (TBP) Certificate

- Contractor achieves a nationally recognized **certificate**
- **8** knowledge areas are tested
- **Free** training modules made public
- <https://www.bpi.org/total-building-performance-certificate>



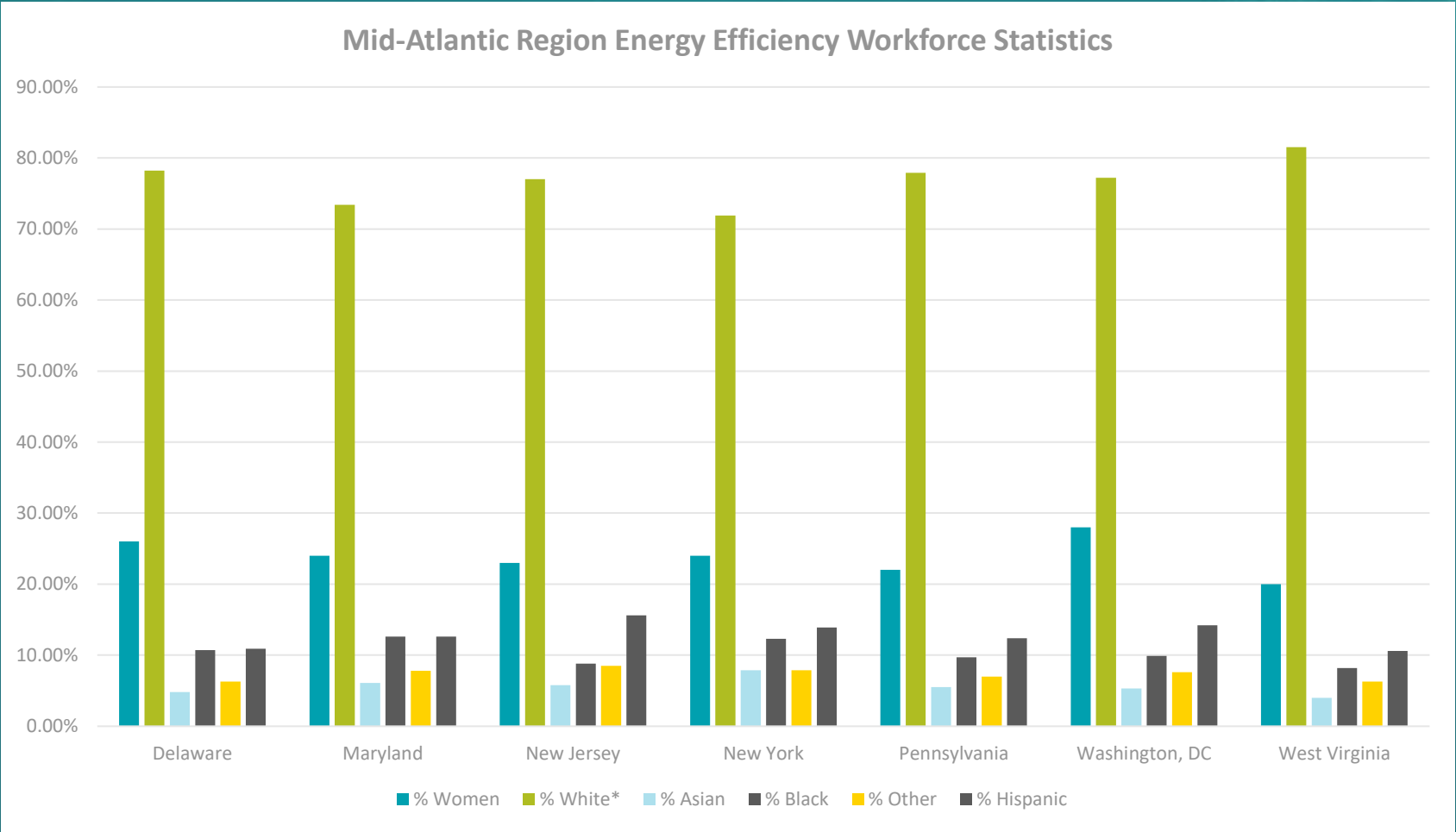
# Energy Efficiency Jobs – New England



Source: E4 The Future Jobs Report, based on the national 2021 U.S. Energy and Employment Report (USEER)



# Energy Efficiency Jobs – Mid-Atlantic



Source: E4 The Future Jobs Report, based on the national 2021 U.S. Energy and Employment Report (USEER)

# What is the Total Building Performance (TBP) Certificate?



- *BPI's Total Building Performance (TBP) Certificate is designed to prepare individuals with the holistic knowledge to plan, manage, and deliver whole-building retrofits that center customer satisfaction and maximize residential energy and emissions savings.*
- [tbp\\_certificate\\_employer\\_resource\\_0](#)

# What does a TBP Certificate holder offer?

Once an individual has completed TBP Certificate coursework and passed the exam, they will be able to:



## *Demonstrate Proficiency in Designing a Building Decarbonization Project*

Project design and planning, including developing and overseeing scope of work, timeline, budget, and documentation

## *Understand Project Financial Analysis for a Building Decarbonization Project*

Project finance, including sharing resources such as tax incentives, rebates, and loans with clients



## *Demonstrate Proficiency in Communication to Clients*

Communication for accessibility and collaboration in goal setting and carbon literacy throughout a project's lifespan

## *Understand Energy Modeling, Load Calculations and Measure Analysis of a Building Decarbonization Project*

Energy modeling, demand, and load in order to meet project needs, including considerations of climate and renewables, as well as effective sequencing of tasks



# What does a TBP Certificate holder offer?



## *Understand Building Science and Whole-Building Concepts*

Project impacts beyond standalone tasks, including projected conditions, building systems, and energy efficiency implications

## *Understand Project Carbon Impacts*

Carbon literacy, including utility-related greenhouse gas (GHG) emissions, governmental regulations and goals, and embodied as well as operational impacts



## *Identify Electrification/Decarbonization Technologies*

Available and emerging technologies, including home appliances to help clients reach their savings goals



## *Understand the Post Retrofit Process*

Close-out and post-occupancy procedures, including ensuring client understanding of and benefit from equipment upgrades, rebates, and other incentives





Collection

# Total Building Performance

Training Modules for the Total Building Performance Certificate of Knowledge Exam

Get started

The certificate exam was designed through a multi-year process with a group of building science experts. Eight domains of knowledge were identified for an ideal whole-home retrofit general contractor. The certificate exam tests for these eight domains of knowledge. In preparation for the exam, participants can review free training modules for each domain. Training modules can be taken in any order.

Ready to take the exam? [Click here!](#)

We want to hear from you! If you encounter any



1 Training Module 1



2 Training Module 2



3 Training Module 3



4 Training Module 4



5 Training Module 5



6 Training Module 6



7 Training Module 7



8 Training Module 8

# Communication and Outreach is key

- Working with BPA and BPI Marketing teams
- Need to reach different populations
- Working to identify communication partners who can spread the message about the certificate
  - Let me know if you have ideas!
- Plan to do targeted outreach to trade associations and trade schools





# Looking Ahead

Training for Residential Energy Contractors (TREC).

- Funding for states from the Inflation Reduction Act (IRA)
- States will be designing contractor training programs
  - TBP and the training materials could be leveraged

Great for Program Administrators or Community Coaches

- There are many use cases for TBP for new and experienced contractors alike

# Upcoming Events



Heating Electrification Workshop	Fall 2023
Ready, Set, Scale.	Year-long Webinar Series

**For more information, contact:**  
**[awinslow@neep.org](mailto:awinslow@neep.org)**



**SEEA**  
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

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# Equitable Energy Codes Workforce Expansion in the Southeast

Maggie Kelley Riggins, senior program manager

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## OUR MISSION

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To optimize the use and impact of energy to enhance the quality of life in the Southeast.

## OUR VISION

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All people in the Southeast live and work in healthy and resilient buildings, utilize clean and affordable transportation, and thrive in a robust and equitable economy.

## OUR VALUES

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### Take Initiative

We take responsibility for realizing a better quality of life in the Southeast.



### Value Others

We seek, respect, and promote diverse perspectives.



### Earn Trust

We pursue our work with benevolence, competence, and reliability.



### Pursue Equitable Solutions

We recognize, acknowledge, and account for a history of prejudice and inequality in Southeastern communities.



# Our Building Codes Partners

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Built Environment, LLC

Healthy Homes of Louisiana



# Growing Energy Codes & the Energy Codes Workforce

- Most SE states ~2009 IECC Residential and ~ASHRAE 90.1-2016
- Enforcement primarily at the local jurisdiction level, especially in states with high building volume.
- Similar challenges to other regions/national
  - Energy training/inspection is not well-resourced
  - Limited field resources for energy code compliance
  - Amended codes can cause confusion in the field
- Growing vacancies in building departments

# Workforce Diversity in the Southeast

State	Table 1. Overall Workforce Race/Ethnicity (%)				
	Asian	Black	Hispanic	White	Other
Alabama	1.7	27.9	3.8	68.8	1.6
Arkansas	1.8	17.2	6.7	78.4	2.7
Florida	4.3	22.2	2.2	71.3	24.3
Georgia	4.7	35.1	7.4	58.6	1.6
Kentucky	1.7	9.8	3.6	86.9	1.5
Louisiana	2.1	33.1	4.9	63.3	1.5
Mississippi	1.3	39.2	2.8	58.6	1
North Carolina	3.4	24.2	7.1	69.9	2.5
South Carolina	2	29.9	5	66.4	1.6
Tennessee	2.1	19.1	4.4	77.3	1.5
Virginia	7.2	22.7	8	67.7	2.4
Southeast (avg)	3.0	25.5	5.1	69.7	3.8

State	Table 2. EE Workforce Race (%)			
	Asian	Black	White*	Other
Alabama	5	11.4	75.3	8.3
Arkansas	4.6	5.8	82.4	7.2
Florida	5.6	8.2	76.7	9.4
Georgia	10	8	75.6	6.4
Kentucky	5	10.2	70	14.7
Louisiana	4.5	7.7	80.9	6.9
Mississippi	4	7.5	82.2	6.3
North Carolina	10	8.2	69.5	12.3
South Carolina	4.3	22.1	66.3	7.2
Tennessee	4.6	6.2	81.3	7.9
Virginia	7.4	9.5	72	11
Southeast (avg)	5.9	9.5	75.7	8.9

\*Includes non-Hispanic and Hispanic whites.

Total EE Jobs in 2021

# Workforce Diversity in the Southeast

State	Table 4. EE Workforce Gender (%)	
	Male	Female
Alabama	80	20
Arkansas	78	22
Florida	74	26
Georgia	74	26
Kentucky	72	28
Louisiana	78	22
Mississippi	79	21
North Carolina	74	26
South Carolina	78	22
Tennessee	70	30
Virginia	76	24
Southeast (avg)	76	24



We must work to increase the representation of women and workers of color, specifically the Black workforce. It is also imperative that we provide resources and materials in multiple languages.

# We want to know...

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- Demographic data on Building Officials across the region
- The demographic breakdown of the folks we directly work with and train
- Specific learning needs of our trainees
- The breakdown of people who need additional accommodations to join our industry
- Which resources, tools, and information are most critical to have in different languages



# We're trying to learn more!

Surveying our trainees & building program design for inclusion

- BENEFIT – Advanced Ready Workforce Southeast
- BECP Technical Assistance
- Energy Codes Circuit Rider Program

Energy Efficiency workforce partnerships

- Securing Energy Codes in Louisiana RECI project
- YouthBuild in Georgia

Evaluating tools and resources for language and inclusion

- Spanish language availability
- Plain language where possible
- Neurodivergence and reading challenges





# Thank You

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**SMART ENERGY. STRONG ECONOMY. FOR ALL.**

**[WWW.SEEALLIANCE.ORG](http://WWW.SEEALLIANCE.ORG)**

# THANKS

**Building Energy Codes Program**

[www.energycodes.gov/training](http://www.energycodes.gov/training)

**BECP help desk**

<https://www.energycodes.gov/technical-assistance/help-desk>

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