



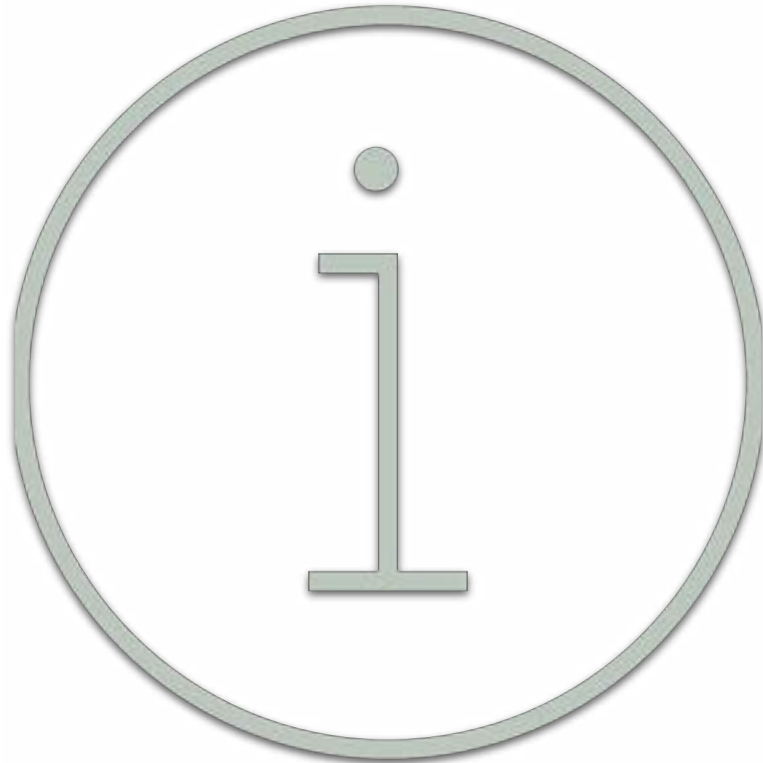
BUILDING
PERFORMANCE
ASSOCIATION

Workforce Development through Registered Apprenticeships

Energy Efficiency

August 21, 2024

Welcome



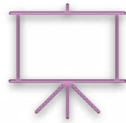
Listen only mode – do not speak or show your camera if you do not want to be recorded



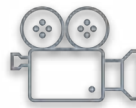
A 10-minute Q&A Session for Questions will be provided at the end



Use the CHAT or Q&A feature to add any questions



Slides will be provided to participants via email and will be published on BPA's website



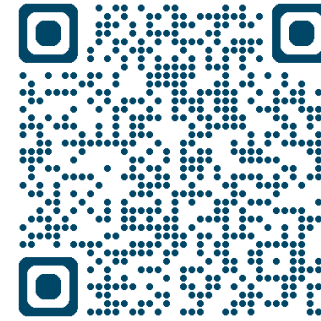
Recording will be provided within 24 hours & published on BPA's website



A survey to tell us how we did will also be distributed



BUILDING PERFORMANCE ASSOCIATION



- Keeps the industry informed on best practices, new technologies, and policy
- Advocates on behalf of its members
- Brings the industry together through regional and national conferences
- Serves as the home performance industry's connection to networking, professional development, and job opportunities



20,000+ NETWORK

The Building Performance Association (BPA) is a nonprofit 501(c)6 industry association that serves as the hub for businesses, nonprofits, and government agencies working to make America's homes more comfortable, healthy, and energy efficient.

Areas of Focus:

Inflation Reduction Act
Bipartisan Infrastructure Law

Weatherization

Workforce
Development

Registered
Apprenticeship

Diversity, Equity,
Inclusion & Accessibility

PROJECT GOALS:

Develop strategic recommendations for state(s), informed by stakeholder input on workforce development planning and implementation.

- **Conduct stakeholder engagement activities to identify workforce development challenges & solutions.**
- **Provide State Energy Officials with insight on how to remove training barriers.**
- **Identify opportunities for building capacity for businesses working in residential energy efficiency.**
- **Implement Diversity, Equity, Inclusion, and Accessibility into practices, policies, and procedures.**



Thanks to support from Pacific Northwest National Lab (PNNL) and the U.S. Department of Energy Building Technologies Office (DOE BTO), BPA will host a series of webinars dedicated to State Energy Offices and staff.

These webinars will provide insights and experiences learned on how to design and implement effective, inclusive and sustainable state-wide energy workforce development programs.



TODAY'S WEBINAR



Objective:

To provide an overview of the energy efficiency workforce, guidance for designing registered apprenticeship programs, the benefits associated with apprenticeships and highlight strategies and support for businesses.



What is a Registered Apprenticeship?



Apprenticeable Occupations



Workforce Needs



Benefits & Fundamentals



Workforce Support for Businesses

SPEAKERS



Brook Vernon
Building Performance Association
Workforce Development Programs Manager



Xavier Walter
Building Performance Association
Director of State Outreach



April Ambrose
Arkansas Advanced Energy Foundation
Director of Workforce Development

Apprenticeship Components



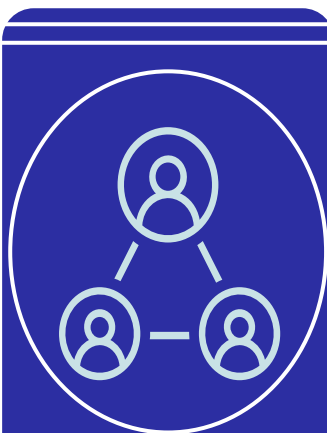
Industry Led

- Industry-vetted
- Aligned with industry standards
- Trains for highly-skilled, high-demand occupations



Paid Job

- Get hired first!
- Wage increases as skills and productivity increase
- One per year
- Earn wages while in class
- 25% trial period



On-The-Job Learning

- Structured on-the-job training
- Instruction from experienced mentor
- 2000 hours/year



Supplemental Education

- Classroom-style education
- Based on employer's unique training needs
- 144 hours/year



Diversity

- Reflect local community
- Non-discriminatory, anti-harassment recruitment practices
- Ensure access, equity, and inclusion



Quality and Safety

- Worker protections while getting training
- Good training and supervision to ensure safety



Credential

- Receive portable, nationally-recognized credential within the industry
- DOL RAP certificate and/or industry credential



Apprenticeable Occupations in EE

- Weatherization Technician
- Home Performance Laborer
- Energy Auditor
- HVAC Technician
- Plumber
- Electrician

*(Retrofit Installer Technician is the equivalent of Weatherization Technician, Home Performance Laborer, or Insulation Technician).

*(Energy Auditor and Quality Control Inspector are part of Building Performance Association's Energy Specialist Registered Apprenticeship).



Retrofit Installer Technician

\$30k-\$41k

Apply building science principles and construction skills to help people save money, and improve safety and air quality by installing energy-saving upgrades in their homes. [Learn more about this role.](#)



GREEN WORKFORCE
CONNECT

Screenshots from Green Workforce Connect. Data is from the [National Association for State Community Services Programs \(NASCSPP\)](#), based on a 40-hour work week. These wages are national averages and may vary by state and/or employer. Wage ranges represent the 25th to 75th percentile of workers.



Energy Auditor

\$39k-\$52k

Conduct energy audits to evaluate the health, safety, comfort, and energy use in a home or multi-family building and make recommendations for energy-saving improvements. [Learn more about this role.](#)

Energy Efficiency Apprenticeship Design



Energy Specialist Job Description:

Establish oneself with the knowledge, skills, and abilities to conduct energy audits of homes and buildings, building systems, or process systems – making them safer, healthier, and more efficient.

Alternative Job Titles:

Home Performance Consultant; Building Science and Energy Specialist; Building Scientist; Energy Advisor; Energy and Building Systems Specialist; Energy Auditor; Energy Consultant; Energy Rater; Home Energy Inspector; Home Performance Consultant; Energy Auditor and Analyst



Partnerships & Participants

Educators

An institution such as a 4-year college, community college, occupation school, and career & technical school. Provides the RTI based on industry standards.

VETS offices

assist employers who would like to find federal, state, local, and other resources to make it easier to find, hire, train, and retain veterans.

American Job Centers are resource centers for job seekers to learn more about career and training opportunities.

Intermediaries

provides capacity, expertise, and network to help businesses create, launch, and expand apprenticeship programs.

Sponsors can be a single business or a consortium of businesses. Alternatively, the sponsor can be a workforce intermediary, such as an industry association, colleges or organizations.

National, regional, and state apprenticeship offices and agencies provide technical assistance & support to program sponsors, etc.

Workforce Dev. Boards direct federal, state, and local funding to workforce development programs. They help career seekers find career & economic advancement.

SEOs have a **ROLE!**

- Sponsor or Intermediary

ANYONE in the United States!

- Veterans
- Women
- Dislocated Workers
- Seniors
- Minorities
- Disabled
- Underserved populations
- Recently Incarcerated
- High-School Students (Pre-Apprentice)

Employers set entry requirements

- High School diploma
- License
- Basic skills, etc.



Important Definitions

Weatherization – is the practice of protecting a building and its interior from the elements, particularly from sunlight, precipitation, and wind, and of modifying a building to reduce energy consumption and optimize energy efficiency.

Energy Efficiency – is the use of less energy to perform the same task or produce the same result. Energy efficient homes & buildings use less energy to heat, cool, and run appliances and electronics.

Home Performance – is a term used to describe how all aspects of a house works together as one comprehensive system.

- Building science-based approach to evaluating the actual performance of a home.
- Measured by the resulting energy savings, comfort level, and air quality.

SIMILARITIES IN SERVICES



Services Provided by
Weatherization Contractors vs.
Home Performance Contractors



WEATHERIZATION CONTRACTOR SERVICES	HOME PERFORMANCE CONTRACTOR SERVICES
ENERGY AUDIT	ENERGY AUDIT
HEALTH & SAFETY UPGRADES	HEALTH & SAFETY UPGRADES
AIR SEALING/DUCT SEALING	AIR SEALING/DUCT SEALING
EQUIPMENT REPLACEMENT	EQUIPMENT REPLACEMENT
INSULATION	INSULATION
VENTILATION	VENTILATION
WEATHER STRIPPING	WEATHER STRIPPING
HVAC UPGRADES	HVAC UPGRADES
BASELOAD FOR APPLIANCES	BASELOAD FOR APPLIANCES
ELECTRICAL SYSTEM	ELECTRICAL SYSTEM
WINDOW REPLACEMENT	WINDOW REPLACEMENT
QUALITY CONTROL INSPECTION	QUALITY ASSURANCE CHECK
FEDERAL/STATE FUNDING	SOLAR HOT WATER
UTILITY PROGRAMS	PHOTOVOLTAIC
	PRIVATE MARKET
	UTILITY PROGRAMS

COMPARISON BASED ON A REVIEW OF PROGRAM REQUIREMENTS, COMPANY INFORMATION AND INTERVIEWS WITH HOME PERFORMANCE CONTRACTORS.

Why is this important to highlight?

- Similarities allow for transferable skills in both markets
 - Increased awareness of EE
 - Defines the sector & occupations
- Understanding the two perform the same job – creates a larger pool of individuals for workforce initiatives
 - Mentors
 - Business Expansion
- Helps standardize the sector
 - Promotes understanding for consumers on ‘who’ does ‘what’ in energy efficiency

Energy Efficiency

- 1,300 Home Performance Contractors in the ENERGY STAR program.
- 384,688 energy efficiency establishments in the US are small businesses.
- Lacks diversity or women – and needs to be prioritized.
- Weatherization supports 8,500 workers in energy efficiency.



Workforce Needs



1M+
**FULL-TIME JOBS
WOULD BE CREATED**
IF WE RETROFIT ALL
HOMES BUILT BEFORE 2000

HOUSING STOCK
TO MEET CLIMATE GOALS
- A SKILLED WORKFORCE IS NEEDED NOW!



130 MILLION
estimated homes in
the United States -
with only 20% built
after 2000.

Source: Data by Department of Energy SCEP WAP Fact Sheet (2023); ACEEE Household Energy Burden Report (2020) and US EIA (2023).

WEATHERIZATION FACTS

- Weatherization – is a subset of home performance/energy efficiency for low-income households.
- SUPPORTS **8,500 jobs** per year and weatherizes approximately **35,000 homes**.
- Estimated to take **360 YEARS** to weatherize all eligible households through WAP.
- Yet, weatherization programs across the country typically **LACK** an adequate number of employees based on the demand of the service area.





Benefits: RAs in Program Design



Reduces employee turnover – 90% Employee Retention

Employment & training strategy – skilled workforce & improved productivity

Customizable training designed by employers to fit needs

Access to federal or state funding and state tax credits

Pipeline to a diverse pool of candidates

Funding Opportunities & Incentives

Sponsors & RTI Providers

Subsidies and at times grants or admin fees through association membership fees

Employers

Workforce Innovation & Opportunity Act (WIOA), Work Opportunity Tax Credit (WOTC)

State Funding

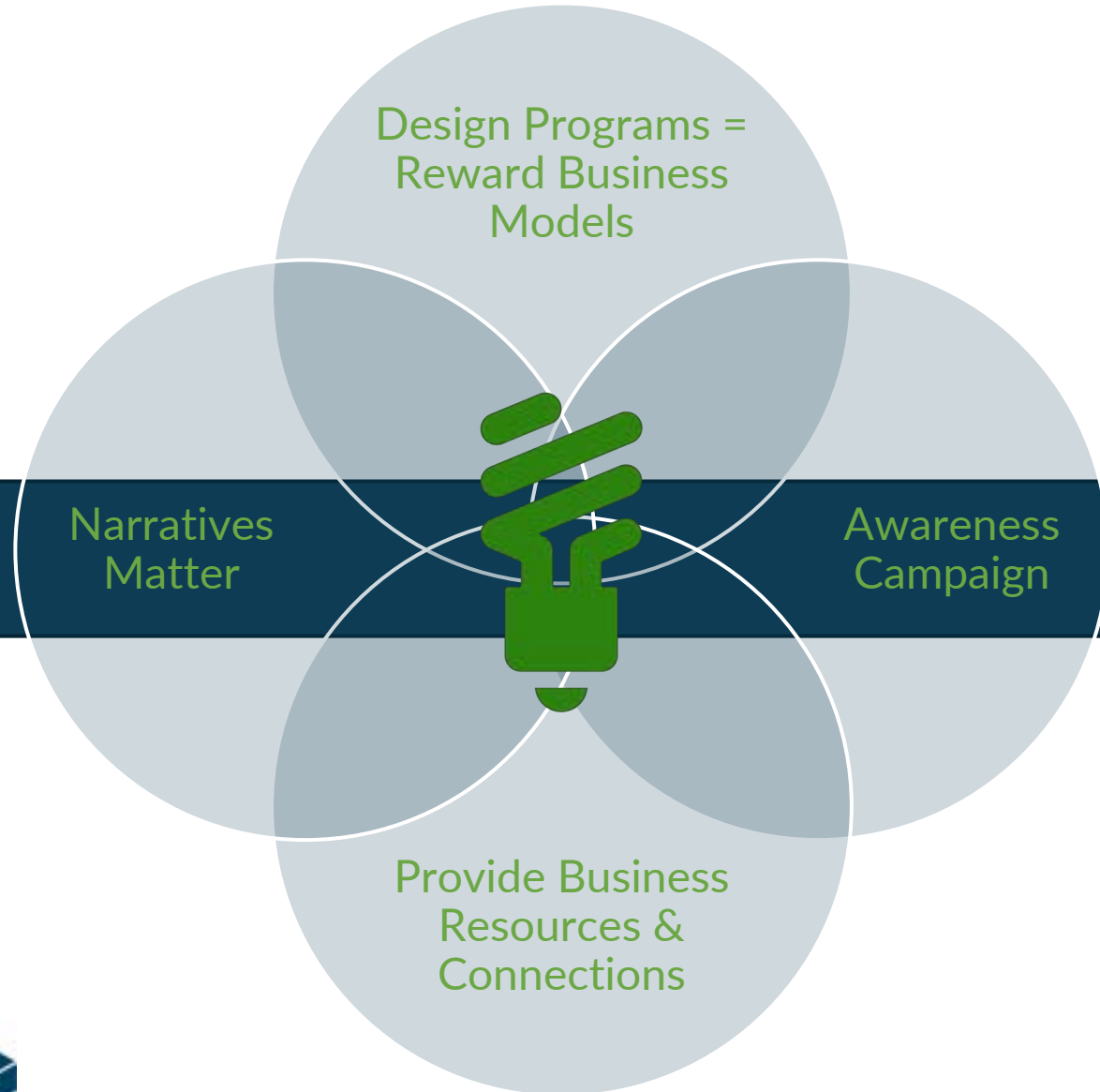
Varies by State; includes tuition support and tax credits

Federal Funding

New opportunities through American Rescue Plan: Apprenticeship Building America, Expansion grants, and funding contracts



Supporting Employers in Workforce



FUTURE GOALS:

- ADOPT HIGH-EFFICIENCY AND INDOOR AIR QUALITY STANDARDS
- INCLUDE ENERGY BENCHMARKING
- ESTABLISH REPORTING REQUIREMENTS
- ALIGN UTILITY INCENTIVES WITH INVESTMENTS IN EFFICIENCY
- INVEST IN INTERVAL DATA ANALYTICS OF ENERGY USE



Founded in 2012, AAEA/AAEF have worked tirelessly over the last decade to be a voice dedicated to growing Arkansas's economy through the expanded utilization of advanced energy technologies.

Advocacy. Education. Membership. Workforce.

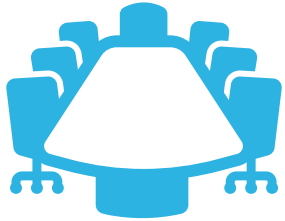
arkansas
advanced
energy
association



arkansas
advanced
energy
foundation



ArkansasAdvancedEnergy.com



Exposure

K12
Speakers
Career Fair
Tour
Media

Schooling/Education

Higher education
Trade School
Soft Skills

Early Job Experiences

Internships
Apprenticeships
Fellowship

Career

Mentorship
Professional Development
Entrepreneurship
Re-Skilling

AR ADVANCED ENERGY APPRENTICESHIP

Intermediary support is needed to connect all the players involved in creating and funding apprenticeships and related support services.

EMPLOYERS

- Train and retain new/existing skilled workforce
- Talent recruitment services
- Training reimbursement
- Project management support
- State income tax credit
- Meet IRA tax credits: 179D/Solar



TALENT

- Career coaching & Resume support
- Job placement
- On the job training (“Earn-As-You-Learn”)
- Get job quality, pay raises, equity
- Earn industry credentials
- Begin a career progression



WWW.ARKANSASADVANCEDENERGY.COM/WORKFORCE



- On-the-job training
- Earn-As-You-Learn
- Guaranteed wage increases
- Personal Brand/ Credentials
- Mentorship
- Less barriers to entry
- Use i529/Veteran's
- Career Path
- Resume building
- Worker Voice



- Structured Training Program/Process
- Customized training cost reimbursement
- State Tax Credit: \$2k/person to \$10k
- Skilled Labor Retention (94%) and Productivity (+75%)
- Community impact
- Meet IRA provisions
- Quality Jobs



- Collaborative funding
- National industry alignment
- Career exposure
- Develop career paths & credentials
- Meet licensing requirements
- Meet IRA/federal funding labor provisions

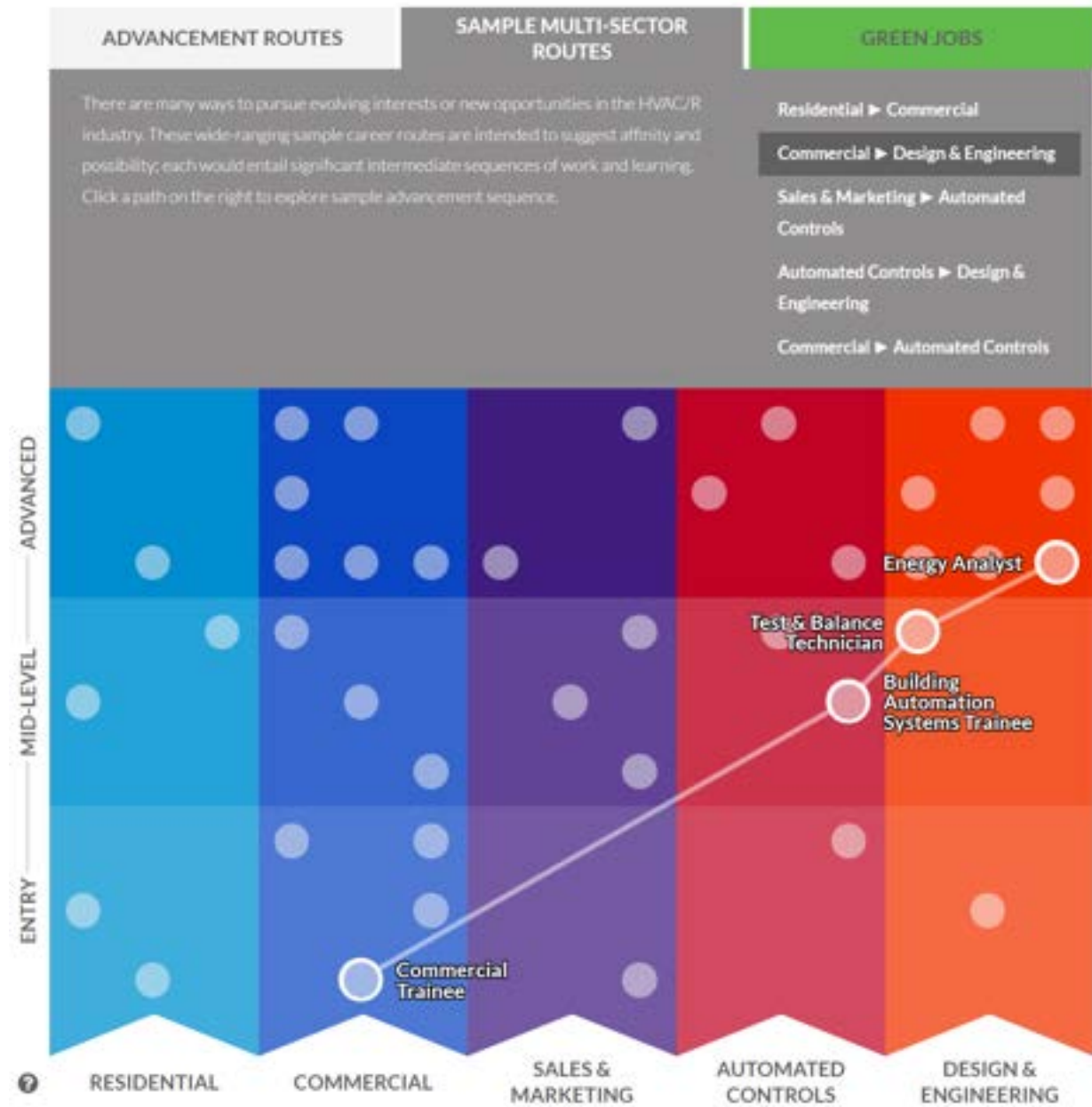
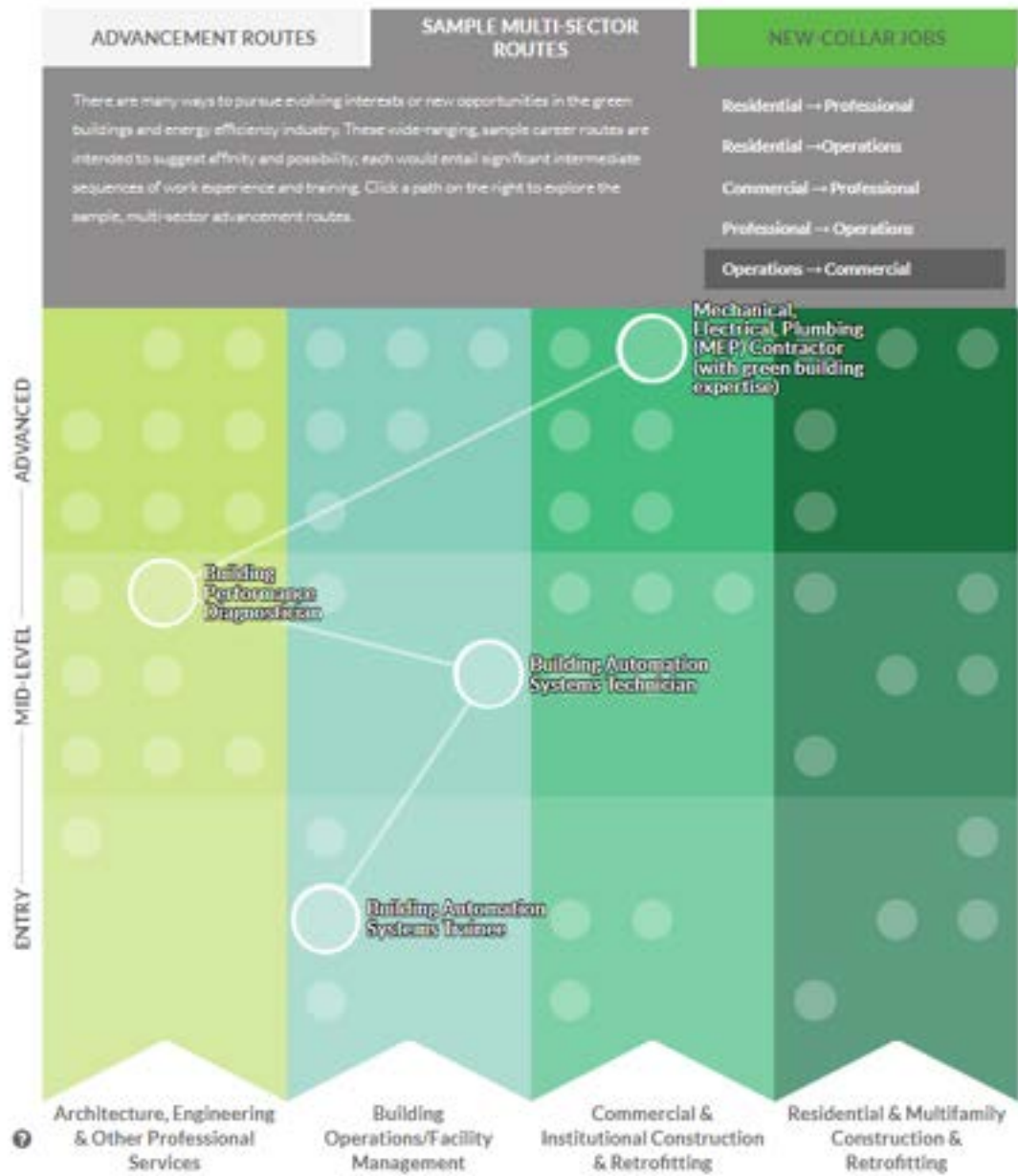


- Can't overtrain as meets employer needs
- Equitable paths to careers
- Increases state skilled workforce
- Economic development
- Health and Climate Impact

APPRENTICESHIP BENEFITS

- **Apprenticeability**
 - No solar apprenticeships per DOL:
 - Must include solar training in existing US DOL Apprenticeable Occupations for RAPS
 - Electrician
 - Construction Craft Laborer
- **Training Options**
 - Credentials and Licensure Alignment
 - Electrician: 4-year req. apprenticeship
 - Career Progression
 - Integrate and fund solar trainings





SKILLS-BASED INDUSTRY

- Green Buildings

- USGBC
 - LEED GA
 - LEED AP
 - LEED Fellow
 - LEED Green Rater
 - GCP
- WELL
 - WELL AP
- EDGE Experts
- Green Globes
- SITES
 - SITES AP
- Sustainability
 - ISSP
 - SEA
 - SEP
 - City Climate Planner
- Waste
 - TRUE Advisor

- Energy Efficiency Residential

- BPI
 - Building Science Principles
 - Healthy Home Evaluator
 - Building Analyst
- ResNet
 - HERS Rater
- Energy Star H-QUITO
- DET Verifier
- ACCA
 - Manual J
 - Manual S
 - Manual D
 - Standard 5

- Energy Efficiency Commercial

- AEE
 - EEP
 - CEA
 - CEM
 - CMVP
- ACCA
 - Manual N
 - Standard 5
- ASHRAE
 - BEAP
 - BEMP
 - CHD
 - HFDP
 - BHDP

- Building Verification

- Commissioning
 - CxA
 - MCAA
 - BCxP
- TABB - NEBB
- Solar
 - NABCEP
 - Associate
 - PVIP
 - PVDS
 - PVIS
 - PVCMS
 - PVTS
 - PVSI
 - SHSI
 - SHI

TAX CREDIT	IRC SECTION	PREVAILING WAGE REQUIREMENT	APPRENTICESHIP REQUIREMENT
Renewable Energy Production Credit	45	Y	Y
Renewable Energy Investment Credit	48	Y	Y
Clean Electricity Production Credit	45Y	Y	Y
Clean Electricity Investment Credit	48E	Y	Y
Qualifying Advanced Energy Project Credit	48C	Y	Y
Carbon Oxide Sequestration Credit	45Q	Y	Y
Clean Hydrogen Production Credit	45V	Y	Y
Clean Fuel Production Credit	45Z	Y	Y
Alternative Fuel Vehicle Refueling Property Credit	30C	Y	Y
Energy Efficient Commercial Buildings Deduction	179D	Y	Y
Zero-Emission Nuclear Power Production Credit	45U	Y	N
New Energy Efficient Home Credit	45L	Y	N
Advanced Manufacturing Production Credit	45X	N	N

IRA: PREVAILING WAGE AND APPRENTICESHIPS

Value Stack Components

ITC Components	<1MW ITC Value	1-5MW ITC Value	1-5MW ITC Value: No labor provisions	Details
Low-Income Community Bonus	10%	10-20%	-	10% bonus if located in a low-income community, on Indian land, or multi-family housing. 20% bonus if providing at least 50% of financial benefit to low-income (i.e. community solar)
Energy Community Bonus	10%	10%	2%	Brownfield sites, former coal and current oil and gas communities
Domestic Content Bonus	10%	10%	2%	Using steel, iron, or products made in the U.S.
Prevailing Wages/ Apprenticeship	exempt	24%	-	Pay prevailing wages and use registered apprenticeship programs for 30% of construction/repair labor
Base Rate	30%	6%	6%	Base rate

STACKING VALUE OF INVESTMENT TAX CREDIT

- State
 - Apprenticeship Tax Credits
 - Dept. of Commerce/Labor/Apprenticeship Training Funds
 - i529 Benefits
- DHS
 - Workforce program design
 - Apprentice support services
- DOL
 - ACE Network
 - WIOA
- DOE
 - Contractor Training
 - Career Skills Training
- VA
 - GI Bill Education Benefits



APPRENTICESHIP FUNDING: EXISTING

➤ Training

- Delivery method updates
- Supplement to get qualified instructors
- Applicable Equipment
- Books/Online Trainings
- Safety Equipment

➤ Employer

- Employer forums
- Specific manufacturer trainings
- Mentor training

➤ Apprentices

- Support Service Funding/Layers
- Soft skills
- Industry exposure/early training programs

➤ Intermediaries

- Facilitation of program development
- Capital stacking
- Integration with licensure and specific programs
- Recruitment
 - Disadvantaged/Marginalized/Justice 40



“What if we don’t change at all ...
and something magical just happens?”

1. Engage state apprenticeship office (OA or SSA?)
 - a) Find potential existing intermediary sponsors/industry experts
2. Identify relevant employers and/or host employer forums
3. Identify existing funding and seek to fill gaps/incentivize
4. Identify existing training programs and seek to fill gaps
 - a) Ensure relevant credentials and licensure alignment
5. Develop job board and apprentice recruitment strategy
 - a) Identify apprentice support services and seek to fill gaps
 - b) Engage community organizations to source disadvantaged populations
 - c) Provide industry exposure through existing education systems
6. Develop ongoing data tracking and marketing campaign



Importance in Education & Outreach



- **INCREASES COMMUNITY BUY-IN**
 - Builds momentum for future projects/programs
 - Community revitalization of residential homes
- **ECONOMIC OPPORTUNITIES**
 - Provides employment
 - Create new energy efficiency businesses
 - Contractors that specialize in home remodeling, HVAC, or other services could expand their services to offer energy upgrades.

Did you know?

A light energy efficiency retrofit for a typical existing home can deliver “a whopping **18%** return annually, nearly double that of long-term stocks,” the American Council for an Energy-Efficient Economy (ACEEE) reports.

Education & Outreach Strategies



- **EXPANDS ACCESS & AWARENESS**
 - **Define the need in energy efficiency**
 - Priority should be given to disadvantaged communities
 - Homes are more likely in need of services
 - **Provides exposure to careers in the field**
 - Potential opportunity that individuals are unaware of
 - **Increases pool of potential employers**
 - Focus on disadvantaged communities creates a WIN-WIN

ENERGY EFFICIENCY ALLOWS LOW-INCOME HOUSEHOLDS TO INCREASE WEALTH

PERCENTAGE OF INCOME SPENT ON ENERGY COSTS

30%

BY LOW-INCOME HOUSEHOLDS

LIKEWISE, ENERGY EFFICIENCY CAN DECREASE HEALTH ISSUES RELATED TO INDOOR AIR QUALITY

BPA & Technical Assistance



BPA's Role

- Gearing up to become a Nation Program Standards Sponsor for Energy Specialist.
- Registered Sponsor in the state of Virginia; working to expand into other states – WV will be approved this month!
- Partner with IREC and others in the ACE (Apprenticeships in Clean Energy) Network.
- Industry advocate and member association.
- Help in recruiting apprentices.
- Designing Weatherization Technician/Home Performance Laborer standards for VA.

TECHNICAL ASSISTANCE PROVIDED

- Program Design based on Employer (Industry-Driven)
 - What certifications are involved?
 - How many hours are needed?
 - What does training look like?
 - Who can be an apprentice?
 - What Related Technical Instruction (RTI) will be used?
- Partner and community connector
 - Navigating state requirements and paperwork
 - Local workforce boards
 - Funding opportunities
 - Community wrap-around services

RAP & Energy Efficiency Resources



- [Building Registered Apprenticeship Programs A Quick-Start Toolkit](#)
- [Apprenticeship - Building Performance Association \(building-performance.org\)](#)
- [BPA-Energy-Specialist-Apprenticeship-2024.pdf \(building-performance.org\)](#)
- [Apprenticeship Occupations | Apprenticeship.gov](#)
- [State Tax Credits and Tuition Support | Apprenticeship.gov](#)
- [Apprenticeship System | Apprenticeship.gov](#)
- [Building Performance Institute, Inc. | Building Science Principles \(bpi.org\)](#)
- [Home - Green Workforce Connect](#)
- [Home | Green Buildings Career Map](#)
- [Installer Badges Toolkit | Standard Work Specifications \(nrel.gov\)](#)
- [Faces of EE - Building Performance Association \(building-performance.org\)](#)
- [Weatherization Assistance Program Fact Sheet \(energy.gov\)](#)
- [<https://www.dol.gov/general/inflation-reduction-act-tax-credit>](#)
- [<https://www.dol.gov/agencies/whd/IRA>](#)
- [<https://www.apprenticeship.gov/inflation-reduction-act-apprenticeship-resources>](#)
- [<https://www.seia.org/inflation-reduction-act-summary-energy-related-provisions>](#)
- [Case Study: How Philadelphia is Preparing its Workforce to Deliver Home Energy Upgrades | ACEEE](#)
- [Retrofitting America's Homes: Designing Home Energy Programs that Leverage Federal Climate Investments with Other Funding | ACEEE](#)



**BUILDING
PERFORMANCE**
ASSOCIATION

RESOURCES



arkansas
advanced
energy
foundation

WORKFORCE DEVELOPMENT



SEO Support



Education



RAP Support



State Updates



Workforce Dev.



NHPC



Membership

Robin Yochum – Director of Partnerships & Programs

ryochum@building-performance.org

Xavier Walter – Director of Outreach

xwalter@building-performance.org

Brook Vernon - Workforce Development Programs Manager

bvernon@building-performance.org



Feedback &
Interest Form



AAEF Contact
Information

April Ambrose, LEED Fellow

Director of Workforce Development

Arkansas Advanced Energy Foundation

501.733.9996

workforce@arkansasadvancedenergy.com

ArkansasAdvancedEnergy.com/Workforce



BUILDING PERFORMANCE

ASSOCIATION

Questions?