

**DE-FOA-0002885: PREPARING WORKERS AND BUSINESSES TO DELIVER ENERGY EFFICIENCY AND BUILDING ELECTRIFICATION MEASURES REQUEST FOR INFORMATION**

Energy Efficiency Alliance, Energy Efficiency Alliance of New Jersey, and Keystone Energy Efficiency Alliance

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The Energy Efficiency Alliance (EEA), Energy Efficiency Alliance of New Jersey (EEA-NJ), and Keystone Energy Efficiency Alliance (KEEA) appreciate the opportunity respond to DOE's Request for Information on BIL section 40503 (the Energy Auditor Training Grant Program, or EAT); BIL section 40513 (the Career Skills Training program, or CST); and IRA section 50123 (the State-Based Home Energy Efficiency Contractor Training program, or Contractor Training Program).

**Category A: Respondent Type**

**A1. What type of entity is the organization (e.g., non-profit, state government, company, local government, etc.)?**

KEEA and EEA-NJ are non-profit trade associations (501(c)6) representing energy efficiency businesses in Pennsylvania and New Jersey, respectively. We have 70 business members across the two states. EEA is the 501(c)3 arm of the organization that uses outreach and education to advance energy efficiency in our states.

**A2. In what city(ies) and state(s) do you live or operate?**

Our business members (and staff) live and operate in cities across Pennsylvania and New Jersey

**Category B: Workforce and Business Characteristics**

**B1. What job categories in the energy efficiency and residential buildings-focused electrification industries/technologies are the most in demand (e.g., the types of jobs hired most frequently or employers' highest-priority vacancies)? What is driving this demand?**

The high demand job categories that have been identified by our members and collaborators include:

HVAC technicians, especially, but not only, those trained in heat pump technology; electricians and electrical engineers; air-sealing technicians; crew leads; and energy auditors/building analysts.

For HVAC technicians, training is in-depth and typically involves time at a vocational or trade school. There is a shortage of space in these training programs in our states. Also, the on-ramp for licensing is long.

Air-sealing technicians are needed as well, but this is not viewed as a particularly attractive job and requires significant on-the-job training to be highly proficient.

For energy auditors, there is a lack of training pathways. Our members hold up the programs at the Clean Energy Center at Pennsylvania College of Technology<sup>1</sup> and Energy Coordinating Agency<sup>2</sup> as examples of pathways into this work but say there are very not enough training options in the states.

There is also a shortage of building code officials in the region. That existing workforce consists largely of older, white males, many of whom are nearing retirement. The job needs to be publicized as a viable career to a more diverse population. For all of these jobs, there is a need to attract new, young people into the building trades field.

**i. What job categories are the hardest to find qualified candidates for (i.e., the types of jobs most difficult to fill)?**

HVAC technicians, especially but not only those trained in heat pump technology; electricians and electrical engineers; air-sealing technicians; weatherization crew leads; and energy auditors/building analysts.

In Pennsylvania, the state contracted with BW Research Partnership in 2021 to conduct the Pennsylvania Clean Energy Workforce Development Needs Assessment & Gap Analysis<sup>3</sup> (“PA Gap Analysis”). That report showed a demand for skilled workers such as construction and installation workers such as HVAC mechanics, electricians, and solar photovoltaic installers. Employers also noted a lack of skilled electricians.

**ii. What are the key characteristics of these hard-to-fill jobs? For example, is it difficult to retain workers in these jobs (i.e., is there high turnover)?**

Worker retention and job placement appear to be directly tied to the worker shortage, which was a problematic issue for weatherization and skilled tradespeople – specifically electricians and HVAC technicians – prior to the exacerbated worker shortage post-COVID. This worker shortage has created a job market where businesses are in competition with all of the other clean energy jobs as well as the other industries where these skills are in high demand for a limited pool of workers.

Moreover, the visibility of clean energy industry careers and training needs to be improved in both Pennsylvania and New Jersey. These career paths are not on the radar of job seekers and even individuals in these professions may not necessarily identify or recognize their work as a clean energy job.

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<sup>1</sup> <https://www.pct.edu/business/clean-energy>

<sup>2</sup> <https://www.ecasavesenergy.org/>

<sup>3</sup> [https://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/2021CleanEnergyGapAnalysis/PA\\_2021\\_Clean\\_Energy\\_Gap\\_Analysis\\_Report.pdf](https://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/2021CleanEnergyGapAnalysis/PA_2021_Clean_Energy_Gap_Analysis_Report.pdf)

**iii. What hourly wages and/or annual salaries (or ranges) are associated with these occupations?**

Skilled HVAC technicians and electricians can command a higher salary. Career websites report the following medians:

NJ HVAC technicians: \$75,270/year (\$36.19/hour)<sup>4</sup>

PA HVAC technicians: \$60,715/year (\$29.19/hr)<sup>5</sup>

NJ Electricians: \$59,098/year<sup>6</sup>

The National Association for State Community Services Programs (NASCSPP) conducted a Wage Survey of Weatherization Assistance Programs in 27 states in 2021. The results are available on their website and include several different positions within the programs.<sup>7</sup>

**iv. What are the entry qualifications—educational background, related experience, training, skills, and/or certifications—necessary to fill these positions?**

Although entry points may be varied, most of these positions require a high school or trade-oriented undergraduate program, where individuals achieve baseline math, compositional, and theoretical skills.

Required credentials align with the position. Employers seek HVAC technicians with training and EPA 608 Refrigerant Handling Licenses; energy auditors with BPI Building Analyst certification or HERS Rater certification; electricians with licenses. For weatherization workers, including subsidized Building Science Principles into existing pre-apprenticeship programs will provide the necessary pool of entry level workers with a clear path towards career advancement.

Many employers have also cited the importance of soft skills, such as customer interaction, as a desired qualifications.

**v. Are there promotion opportunities within these jobs? Are these jobs part of broader career pathways?**

Clean energy and energy efficiency work creates career pathways. Many of these high demand skilled work positions provide opportunities for workers to build upon prior training and field experience. For example, senior level positions such as Energy Specialist, Energy Auditors, and Quality Control Inspectors require a higher bar of competency that may be reached by starting out in a junior level position, or simply combining an individual's existing knowledge base and proving their competency on an exam.

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<sup>4</sup> <https://www.zipppia.com/hvac-technician-jobs/salary/new-jersey/>

<sup>5</sup> <https://www.zipppia.com/hvac-technician-jobs/salary/pennsylvania/>

<sup>6</sup> <https://www.salary.com/research/salary/benchmark/electrician-i-salary/nj#:~:text=The%20average%20Electrician%201%20salary%20in%20New%20Jersey,of%20years%20you%20have%20spent%20in%20your%20profession.>

<sup>7</sup> <https://nascsp.org/wap-wage-survey/>

The Green Buildings Career Map<sup>8</sup> provides a great visual assessment of the possible career paths in various disciplines.

**B2. In what locations do you project the greatest demand for workers? What trends and factors are driving that demand? Please provide any available data and sources.**

We see particular worker shortages in rural areas. There is also a high need in all geographies that have older housing stock.

**B3. What supports do workers need to overcome barriers to employment in these high-demand jobs (e.g., a criminal record, transportation, child and elder care, etc.)? Where possible, include data and examples of where supportive services have positively impacted recruitment, hiring, retention, and upskilling of underserved populations.**

The barriers to employment our members have identified include:

- Transportation
- Driver's license needs
- Conviction of non-violent crimes
- Child care/ elder care
- Education requirements - High school diploma/GED
- Education about drug tasting (marijuana)
- BPI written test wording
- Stipends for trainees
- Wage subsidy for employers

Drivers' licenses are often a condition of employment, however as many of these jobs require a crew of workers, workers could team up and carpool. Therefore, employers should be encouraged to determine if drivers' licenses and personal vehicles are necessary for all employees. In addition, training for jobs that do require licenses should include the option for driver's education to obtain a license.

Changes to regulations or company policies to be more inclusive of individuals with a record of non-violent criminal offenses who are unlikely to reoffend could help to fill a workforce need while providing well-paying jobs to vulnerable populations.

Many community groups provide wraparound services to address other barriers including child care, elder care, and foundational education requirements, in addition to skills-based training. Funding these community groups will have a compounding benefit of providing opportunity to hire workers/trainees for the wraparound services as well as achieving the objective of providing services for incoming workers.

Lastly, stipends and subsidies for trainees can offset the initial costs of entering the field and provide more opportunities for workers to transition. Financial support for small businesses who hire from training programs can help them onboard new employees and grow their workforce with trained and knowledgeable individuals.

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<sup>8</sup> <https://greenbuildingscareermap.org/>

**B4. What types of contracting firms should DOE target for workforce development and business owner training (e.g., general contractors, home performance contractors, HVAC or electrical contractors, etc.)? What skills and knowledge are most pressing for these contracting firms to have? How do the needs of contracting firms vary based on the size of each business?**

For the Contractor Training Program, HVAC, electrical, and plumbing contractors need to be targeted, as their workforce specifically requires education on the current state of heat pump and heat pump water heater technologies. Not all of these contractors understand that the performance of these technologies is getting better and better in cold-climates and that this equipment is increasingly being installed in more northern (i.e. colder) climates than Pennsylvania and New Jersey. We consistently hear reports that some incumbent contractors hesitate to recommend or even present the option for a more efficient, higher-performing equipment.

**Category C: Workforce Development and Business Owner Training Strategies**

**C1. What education and training (i.e., workforce development) strategies are most effective, and why, for incumbent workers and contracting firms in the energy efficiency and residential buildings-focused electrification industries (e.g., online learning, classroom and lab instruction, on-the-job training, hybrid models)? Are there effective training models that target incumbent workers and contracting firms? Who is best positioned to administer these programs?**

See response to C2.

**C2. What education and training (i.e., workforce development) strategies are most effective, and why, for new workers in the energy efficiency and residential buildings-focused electrification industries (e.g., online learning, classroom and lab instruction, on-the-job training, hybrid models)? Are there effective training models that target new workers?**

New workers need the support of an ongoing training program with check-in points and goalposts for learning. Employers find that new hires need some classroom/online and lab training to start, but then they need to go out in the field with more experienced employees and develop knowledge and hands-on skills before more training is really useful.

Employers find it difficult to pull employees out of the field to go to training. However, modular training at certain points in a new employees' tenure is very valuable. Industry representatives say that knowing their new employees will get continued training would be a draw for hiring.

Online learning is useful for certain portions of training because it reduces the barrier to education. It can provide the knowledge needed to pass written credential exams at the convenience of the user. One good example is the forthcoming, online Total Energy Pathways (TEP) Certificate<sup>9</sup> from NEEP. The TEP Certificate is a project funded by the U.S. Department

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<sup>9</sup> <https://neep.org/tep/tep-workforce-online-resource-center>

of Energy to train contractors on how to deliver whole home retrofit projects that will result in a Building Performance Institute certificate for whole home energy retrofits.

Combining online learning with hands-on and on-the-job training is vital, because both new and upskilling workers need to learn the unique aspects of their job and local building stock. On-the-job training helps workers become familiar with the nuances of buildings in their local market and identify challenges that might be missed without in-person experience. AnnDyl Policy Group recently conducted a survey of contractors regarding the HOMES and HEEHRA rebate programs. Out of approximately 470 respondents, 49% of business owners preferred on-the-job training with wage subsidies to compensate for time dedicated from senior technicians.

For both new and incumbent workers, teaching soft skills is also important. One of our member companies, MT Weatherization, has a robust onboarding process that allows new employees to meet with and understand the entire company and the non-technical aspects of their jobs, as well as life skills like understanding 401(k) options and health insurance. The company is planning to further expand onboarding by bringing in a representative from their bank to educate new workers on banking skills and using direct deposit. Properly addressing these workforce readiness skills helps with worker satisfaction and retention.

In addition, incubation resources are needed for workers who wish to start small businesses. Most home weatherization and electrification is done by small business contractors. In certain markets, there is a great need for contractors, technicians, electricians, etc, because those businesses don't exist. Especially in those markets, business training is equally important to technical training. Small business owners-to-be need to know how to do their books, update their websites, balance rebates and cash flow, and much more. As the energy efficiency market grows with incoming federal support, supporting entrepreneurs will also help diversify the workforce.

**C3. Is there a need for programs to train the trainer? If so, what strategies are most effective for programs that train the trainer? Who is best positioned to administer these programs?**

Yes, there is a need to recruit and train new trainers. There is a gap in the workforce between seasoned veterans at or nearing retirement age and a younger incoming workforce. Mid-career professionals need to be recruited and supported as trainers. There is also a need to diversify the trainers to encourage more diverse and inclusive job candidate recruiting.

**C4. What education and training (i.e., workforce development and business owner support) are most effective, and why, for contracting firms? Why and when do contracting firms participate in training, amidst other competing priorities? What business owner training strategies for contracting firms exist?**

Modular training that allows employees to periodically enhance their skills after a specified length of time working is the most valuable form of workforce development. Businesses are more willing to invest in new hires who they know will be supported with additional training.

Providing training at localized hubs also makes it more accessible to both employees and employers.

**C6. What obstacles prevent access to training for workers and contracting firms? What type of incentives or return on investment would workers and employers need to invest in the training?**

When contracting firms invest in new hires, they typically have to pair the new worker with a more experienced worker for a significant period of time. This increases their payroll without increasing their productivity, until the new worker is able to work independently. Grants to business owners for training new employees would offset the cost and time required to build the skills of new employees. The Clean Energy Center at PennTech<sup>10</sup> has a program with Pennsylvania WAP administrators that pays for a portion of wages while the new employee is in training.

For workers, there are many barriers to training. One important obstacle is perception and visibility of the training. Many potential workers don't know that residential energy trades offer a viable career path. Community-based outreach is necessary to tap into potential workforce.

In addition, the PA Gap Analysis identified barriers to training including: affordability of existing training, a lack of transportation to existing training locations, training and education providers being too far from their home, a lack of time, and language barriers. (This survey was conducted of the existing clean energy workforce regarding career advancement and promotion pathways, not of a prospective, entry-level workforce.) Workers need training that fits their schedule, is geographically accessible, and offers tuition and/or wraparound services support in order to invest their time and money.

All of the barriers to employment described in question B3 should be considered barriers to training, as well. It is critical to identify and, if possible, rectify barriers to employment before commencing training so that the new worker can be successfully placed. (For example, if a trainee in an urban area does not have a driver's license, they may be able to use public transportation to attend training. However, if they may need a driver's license for job placement, driving education must be provided and a license secured before or during training, or an alternate career pathway should be explored.)

**C7. How could DOE funding be used to support continued education, job placement, and supportive services (e.g., transportation, child and elder care) for the energy efficiency and residential buildings-focused electrification workforce? How can DOE ensure that workers have pathways for growth and well-paying careers within these industries?**

DOE should include these wraparound services as eligible costs for the training programs, with clearly defined requirements for eligibility and reporting purposes.

DOE should prioritize training for certifications that have broad applications and can be used across state lines. DOE should support existing, high-quality training programs that provide

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<sup>10</sup> <https://www.pct.edu/business/clean-energy/pa-weatherization>

accredited training. These providers can, with support, develop and deliver curriculum that can be standardized and used widely to help trainees develop a transferable base of knowledge, and that includes verifiable industry oversight.

### **C9. How can DOE-funded workforce programs best help connect trainees with employment opportunities?**

Workforce development programs should partner with a pool of companies that have similar needs. It is not realistic for each individual company to know exactly what their workforce needs will be at the end of a multi-month training program. Allowing businesses some flexibility in their needs will entice more employers to engage with the programs and ultimately increase job placement success.

DOE programs should partner with local community organizations to find trainees interested in available positions.

Workforce programs should proactively involve industry groups to guide the direction of training programs. (See E3 for more recommendations involving industry participation.) Programs should engage utilities and administrators of existing energy efficiency programs to ensure that EAT/CST/Contractor Training Program complement existing rate-payer and state funded programs. Utilities and program administrators can provide insight into jobs in high demand and help predict timelines for job growth within the programs that they oversee.

### **C10. How could the EAT, CST, and Contractor Training Program most effectively work together?**

The three programs could all be supported by developing a core curriculum for career & technical education high schools and technical colleges to teach the core concepts that apply to all relevant careers, and then branch into more specific roles. A core curriculum would allow the program to scale at schools across a state, region, or even nationwide, increasing access to the program. If a national core curriculum was standardized and all students learned basic building science and other core concepts, workers would have more mobility.

### **C12. What are examples of effective existing workforce development programs that meet the purposes set forth for the EAT, CST, and Contractor Training Program?**

The Clean Energy Center at Pennsylvania College of Technology<sup>11</sup> provides “technical expertise and competency-based training courses to home energy professionals in the building performance field, including the Weatherization Assistance Program (WAP) and regional utility residential energy conservation programs.” Training is free for all newly-hired employees of WAP agencies. The program also pays a portion of a new hire’s wages while they are learning on-the-job.

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<sup>11</sup> <https://www.pct.edu/business/clean-energy/pa-weatherization>



The Knight Green Jobs Training Center<sup>12</sup>, managed by the Energy Coordinating Agency<sup>13</sup> (ECA) in Philadelphia, prepares “unemployed/underemployed young people, returning citizens, veterans, and older workers looking to re-tool their skills to enter the growing clean energy workforce.” The facility includes a hands-on training lab and provides grant based courses for individuals with a high school diploma/GED who are unemployed/underemployed, low income, or returning citizens. Its professional training leads to stackable, portable, national credentials.

**C13. How can DOE investments support sector strategies in the energy efficiency sector? (A sector strategy is a partnership of multiple employers within a critical industry that brings together education, economic development, workforce systems, and community organizations to identify and collaboratively meet the workforce needs of that industry within a regional labor market.)**

DOE can provide funding to convene employers on a regular basis to facilitate conversations around critical industry developments.

Small and mid-size businesses need recruiting support and access to training programs. DOE can provide connections so that they can readily plug into apprenticeship programs and other applicant pools.

#### **Category D: Accessing Federal Funding**

**D5. Should DOE deliver the Contractor Training Program funds to states using a formulaic or competitive approach? Why?**

Funding should be provided through SEP formula funding. This allows access to all energy offices and lessens the burden on those with fewer staff and less resources, who may need programs most. If states decline to participate, funding should be redistributed to participating states. Conversely, competitive funding is likely to be won by states with the most robust existing programs, perpetuating gaps between high performers and lower performers.

#### **Category E: Equity and Partnerships**

**E1. How can DOE design the EAT, CST, and Contractor Training Program to include and best serve individuals from disadvantaged communities and underserved populations in workforce development and economic inclusion programs? How can DOE design these programs to reach rural community members and businesses?**

Visibility is critical, and the “Messenger is Key” regarding engagement with individuals from disadvantaged communities and underserved populations. This is true in both urban and rural communities. Identifying where and how individuals learn about employment opportunities and using multiple communications channels is vital. Social media can be part of these communications but is not a silver bullet. Trusted community organizations and leaders must be involved in outreach.

Members of disadvantaged communities and underserved populations are more likely to face the

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<sup>12</sup> <https://www.ecasavesenergy.org/training-center>

<sup>13</sup> <https://www.ecasavesenergy.org/>

barriers to employment discussed in section B3. Providing support to overcome these barriers, especially in partnership with trusted local organizations, will allow inclusion of these individuals. Many of these same community groups are also addressing the wraparound services discussed above in response to question B3 and are great resources to promote and engage with individuals in the community.

Early engagement in middle and high school is also important. Early awareness of the industry will entice more entrants who may not have previously considered it as a career path. Energy efficiency provides a viable career path both for students who do not attend college, as well as those who do. Programs should provide opportunities for high school students who don't intend to attend college to obtain career certificates along with their high school diplomas. Such dual programs help students get a strong foundational education and start building strong careers as they enter adulthood.

**E2. What are examples of successful existing nonprofit partnerships between nonprofits, industry, and labor organizations? What is needed to develop more partnerships, particularly to reach disadvantaged communities and underserved populations and provide access to career-track training?**

The Energy Coordinating Agency (ECA)<sup>14</sup> is a non-profit that works to develop skilled workers in disadvantaged communities and underserved populations with the goal of serving these same communities.

Rebuilding Together Pittsburgh (RTP)<sup>15</sup> is a non-profit that works with a network of vetted contractors and volunteers to provide home improvements, repairs, and partner referrals to create safe and healthy homes in disadvantaged communities.

**E3. What degree of industry representation is needed to ensure that the partnership is developing a strategy that is broadly responsive to industry need within a given region or locality?**

On a regional level, there is a great need to convene industry. Getting the actual employers and the actual employees in the same place would help guide programs to fill greatest needs. This could be done in conjunction with existing national conferences, Regional Energy Efficiency Organizations (REEOs) conferences, and trade association conferences, like EEA's Policy Conference.

DOE could also provide funding to an organization to convene industry groups on a regular basis in tandem with the state energy offices and facilitate coordination across agencies in the state.

**E6. How can DOE use funds to expand business ownership in energy efficiency and electrification fields for people of color, women, individuals with disabilities, veterans, and other disadvantaged communities and underserved populations?**

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<sup>14</sup> <https://www.ecasavesenergy.org/>

<sup>15</sup> <https://rtpittsburgh.org/>

Please see Response to F4.

**E7. Are there currently organizations (for profit, nonprofit, trade, labor organizations, etc.) or networks comprised of or supporting disadvantaged communities and underserved populations that should be engaged in this effort of economic inclusion?**

Organizations that we work with or know of that are comprised of and/or help disadvantaged communities access energy efficiency and building electrification or focus on just transition for workers in the fossil fuel industry include:

Nationally: Energy Efficiency for All (EEFA)<sup>16</sup>; Green and Healthy Homes Initiative (GHHI)<sup>17</sup>; National Housing Trust (NHT)<sup>18</sup>

New Jersey: Isles<sup>19</sup>; South Ward Environmental Justice Alliance<sup>20</sup>

Pennsylvania: Housing Alliance of PA<sup>21</sup>; Philly Thrive<sup>22</sup>; CASA<sup>23</sup>; Pennsylvania EEFA<sup>24</sup>; ReImagine Appalachia<sup>25</sup>; Center for Coalfield Justice<sup>26</sup>

**Category F: Access to High Quality Jobs**

**F3. What existing workforce education and training efforts (e.g., specific registered apprenticeship programs, labor management training programs, community college or technical school programs, pre-apprenticeship programs, etc.) are preparing displaced, underrepresented, and historically disadvantaged workers for energy efficiency and residential buildings-focused electrification jobs? How can those efforts be best supported or augmented to ensure the success of the EAT, CST, and Contractor Training Program? What training pathways are needed, or already exist, to address these needs?**

Please see response to C12.

**F4. How can DOE encourage diverse and inclusive entrepreneurship in the energy efficiency and residential buildings-focused electrification industries?**

Include entrepreneurial skills in the core curriculum of training programs. Most residential energy efficiency work is performed by small businesses. Small business owners-to-be need an array of skills that are far different from their technical training as contractors, electricians, energy auditors, etc.

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<sup>16</sup> <https://www.energyefficiencyforall.org/>

<sup>17</sup> <https://www.greenandhealthyhomes.org/>

<sup>18</sup> <https://www.nationalhousingtrust.org/>

<sup>19</sup> <https://isles.org/>

<sup>20</sup> <https://www.southwardea.com/>

<sup>21</sup> <https://housingalliancepa.org/>

<sup>22</sup> <https://www.phillythrive.org/>

<sup>23</sup> <https://wearecasa.org/pennsylvania/>

<sup>24</sup> <https://www.energyefficiencyforall.org/states/pennsylvania/>

<sup>25</sup> <https://reimagineappalachia.org/>

<sup>26</sup> <https://centerforcoalfieldjustice.org/>

Funding should also support continuing education in business administration and entrepreneurship. Developing industry-relevant certificate programs with partner institutions, and offering subsidized tuition, could help empower a diverse and inclusive group of individuals to create new energy auditing, efficiency, and electrification businesses.

Mentorship also plays a vital role in helping small businesses succeed. DOE should support a mentorship program that lifts up diverse and inclusive entrepreneurship. Several of our members say that they would be happy to mentor new entrepreneurs, but as small business owners or managers themselves, their time is limited. Potential mentors would benefit from clear tasks and agendas on how they can help, so they don't have to develop a curriculum themselves.