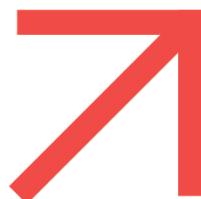


CITY of **BOSTON**

2026

# CLIMATE READY WORKFORCE ACTION PLAN

**Appendix C.**  
**Best Practices for Green**  
**Workforce Development**



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## **PART A.**

# **Programs From Other Cities and States**

**Appendix C.**

Boston residents are served by a wide range of education and training programs in green occupations. However, gaps remain in access for certain populations and in specific occupations. The examples below highlight models from other cities that are designed to reach populations facing higher barriers to training and employment

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## 1. ROOTS TO RE-ENTRY (R2R)

Philadelphia, PA

There is only one program in the Boston area that begins training with people who are still in prison. While the number of prisoners released statewide annually is small at about 1,700, inability to find steady employment is correlated with recidivism. Roots to Re-Entry (R2R) focuses on landscaping occupations. Outdoor jobs have fewer barriers for re-entering citizens. If a similar program were developed in the Boston area, training could be connected to other occupations in sustainable land and water management such as arborist, urban forester, or forestry technician. A key element of Philadelphia's support for Roots to Reentry is creating year-round employment opportunities for those working seasonally.

Experiential Learning	Paid Training	Stackable Credentials	Employer Partnerships	Employability Skills	Comprehensive Services
✓	✓	✓	✓	✓	NA

**61-80**

Cohort size

**>85%**

Graduation rate

**90%**

Job placement rate

### About the Program

Started in 2010, Roots to Re-Entry (R2R) is one of nonprofit Pennsylvania Horticultural Society's (PHS) initiatives to address sustainability and economic development in underserved neighborhoods.<sup>1</sup> R2R combines job training with horticultural therapy for non-violent offenders

<sup>1</sup> PHS conducts outreach for their training programs (like R2R) through their Same Day Work and Pay (SDWP) opportunity, where participants try out horticulture jobs they might be interested in learning more about while earning \$100. It has a different funding source than R2R. Individuals can participate in both programs, but not at the same time.

between the ages of 18-35 with a basic level of literacy and a strong interest in a profession in the landscaping industry. They target participants who are low-income, have little or no work experience, and have limited employment opportunities upon reentry. Inmates receive job skills training in urban agriculture and landscaping, as well as other social support, to help them transition back into their community, secure long-term employment, and achieve economic stability. Since 2010, the recidivism rate for R2R graduates is 30%, as compared to the average rate of 65% for the entire population of Philadelphia ex-offenders.

The program was paused during the pandemic and is restarting in Spring 2025. The new 18-week model runs twice a year, starting with 12 weeks of paid training in prison and 6 weeks with employer partners for inmates approved for work release (\$450/week in stipends, \$500 work gear package). The first 12 weeks of the training starts at the prison's greenhouse using PHS' curriculum. This includes intensive, hands-on training in horticulture, landscape maintenance, greenhouse operations, organic land care, hardscaping, nursery management, carpentry and woodworking, masonry skills, irrigation and other green industry skill sets. They also earn OSHA-10 certification.

During work placements, participants continue to receive intensive hands-on training with a focus on landscape management, which prepares them for entry-level work in local landscaping and contracting companies. During the 6 week placement, PHS continues to pay stipends to incentivize employers to keep participants as employees.

A major part of the training program is soft skill development. In addition to weekly professional development coaches, participants work with case managers and trauma therapists for navigating workplace stresses (e.g. conflict management, managing full-time employment) through coaching, motivational interviewing, and more.

### **Highlight**

PHS also offers training around trauma-informed care, de-escalation, [mental health first aid](#), and some crisis management for their staff and non-PHS employees who want to be involved in PHS training.

Upon graduation, participants are directly linked to a network of employers and CSN continues to provide case management for 1 year, including job placement, housing, continuing education, healthcare, and childcare.

While the program is working to improve tracking of graduates' job retention rate, landscaping jobs also tend to be seasonal. Simultaneously, Mayor Cherelle Parker, who ran with the promise to make Philly "safer, cleaner, and greener," has extended city land care contracts from 9 to 12 months. This allows graduates to work in moving, construction, trash removal, and other maintenance jobs off-season.

Compared to training programs for groups who are not justice-involved, finding, creating, and incentivizing employer partnerships is a greater challenge, yet essential for successful job

placements. PHS receives many contracts from private companies and the city for public works – most are subcontracted to MWBEs. For example, maintenance-only contracts require employers to commit to hiring a certain number of R2R graduates. PHS provides a higher contract rate or more land parcels to these employers, in addition to paying participants' stipends during work placements. The non-profit's network of supportive employers also spans a large geographic area so work experiences are close to participant's homes.

Their 75% job placement rate can be attributed to an improved screening process that filtered for participants who had genuine interest in training and employment, instead of those chasing the stipend. Moreover, PHS works with participants and graduates to find alternative jobs within their large employer network to better match their interests or accommodate for their age, disability, or health issues – a crucial "off ramp" that does not result in failure or additional barriers, especially for those who have showed initiative in long-term economic improvement and family stabilization upon reentry. For instance, incorporating a free, 3-week commercial driver' license (CDL) training for older candidates helps ensure their employability.

The R2R program has 12 sources of funding, from endowments and grants to city funding. They receive a significant amount of funding from the City of Philadelphia for training operations. Other sources of funding cover various costs, including 8 weeks of transit passes, case management, professional development, and a \$500 work year package (PPE, work attire, etc).

### **Same Day Work and Pay**

PHS also has a Same Day Work and Pay opportunity, where participants try out horticulture jobs they might be interested in learning more about while earning \$100.

### **Program Partners**



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## 2. WATER WORKFORCE FOR RESILIENT COMMUNITIES PROGRAM

Gwinnett County, GA

The Boston Water and Sewer Commission has had to increase its focus on stormwater management, employing both hard and nature-based solutions.

Experiential Learning	Paid Training	Stackable Credentials	Employer Partnerships	Employability Skills	Comprehensive Services
✓	No	✓	✓	✓	✓

**~10**  
Cohort size      **85-95%**  
Graduation rate      **NA**  
Job placement rate

### About the program

Launched in 2019, The Water Tower Institute is the workforce training program that runs [The Water Tower](#) (TWT), “a hub for solutions in research, technology, training and engagement for water utilities ensuring access to safe, affordable and resilient water services.”<sup>2</sup> With approximately 1,200 positions opening up in the next 5 years, the Institute’s [Water Workforce for Resilient Communities Program](#) addresses the aging workforce in Northern Georgia’s water industry by creating sustainable career pipelines. TWT mainly recruits high school seniors through career fairs and hosting Student Summit on their campus. They also use a Meta campaign managed by HR Strategies and local non profits to recruit young adults.<sup>3</sup>

The program was initially funded by an ARPA grant to build jobs during the pandemic. Training comes at no-cost for Gwinnett County residents. The program offers students a [utility career personality quiz](#) or [interest survey](#) to find water jobs that match their interests, as well as an interactive [Water Utility Career Map](#). Students then schedule a visit to TWT campus and to the F. Wayne Hill Water Resources Center. Once enrollment is finalized, students can select one of the following course pathways:

#### **Georgia Class III Wastewater Operators (8 months in Fall and Spring semesters, 4 months in Summer semesters)**

- TWT is a registered Work-based learning (WBL) program with the state’s public schools. Students come to the TWT campus once or twice a week for in-person classes and

<sup>2</sup> “Mission and History,” n.d.

<sup>3</sup> The Water Tower 2023; Staff Reports 2023

hands-on training. On those days, they attend a 2-hour training after school at TWT. The summer semester is offered to students who have graduated high school or were catching up on high school credits during the Fall/Spring semester and individuals who are looking to change careers.

**Lab Analyst (4-6 months, Summer semester)**

- This training is currently not available for high school students.

Training takes place in partnership with a sponsor utility at The Water Tower's innovation campus at Gwinnett County, Georgia, which houses labs for R&D and demonstrating new technologies for the water utility system. Each week, there is a minimum of 12 hours of coursework in class and online from TWT, as well as 8 hours of on-the-job training each week from a sponsor utility. TWT provides guidance to the sponsor utility on the hands-on skills that the students focus on for the week. By the time they graduate high school and turn 18, students have the required 40 hours of coursework and 3 months of hands-on experience. They are then eligible to take the state's Class III water and wastewater operator certification exam.

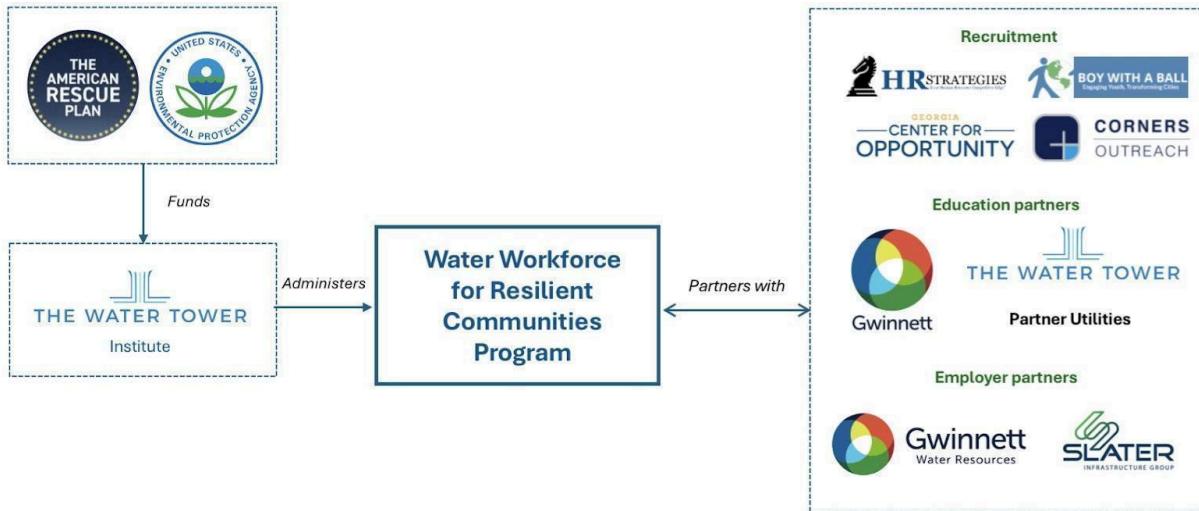
TWT offers grant-based scholarships to students to cover costs of Personal Protective Equipment (PPE: hard hats, safety vests, safety glasses, steel-toed boots), course textbooks, instructor fees, and one licensing exam.

Additionally, TWT assists students with resumes, interview practice, and job search during the program. Mostly for the non-high school students, TWT provides transportation (Uber) and childcare. After graduation, students receive job placement support for water wastewater, and stormwater jobs around North Georgia. The first is through applying directly to the county's Department of Water Resources (DWR) for placement in one of the county's 5 utility plants (2 water production plants, 3 wastewater plants). TWT also has a partnership with Slater Infrastructure to place graduates in private sector utilities across Georgia.

Entry-level skilled trades in the water industry have one of the highest starting salaries in Georgia with overtime. Employees also have clear career advancement opportunities, including college courses paid by the utility company.

Recently, TWT received a \$1.9 million [EPA Innovative Water Workforce Development Grant](#) to expand their program nationally. They are also improving their train-the-trainer program to reach individuals in their own communities who are justice involved, minorities, or looking for a career change. TWT also offers a separate Professional Development training in-house for water industry professionals to meet the state requirement of 12 CE points per year.

**Program partners**



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### 3. DC WATER

Washington, D.C

#### About the program

In 2005, as part of a Federal Consent Decree, Washington D.C. launched the \$3.2 billion [Clean Rivers Project](#) to reduce combined sewer overflows to the District's waterways. The project's goal is to reduce 96% of Combined Sewer Overflows (CSOs) that discharges into the Anacostia and Potomac Rivers, Rock Creek, and other tributaries during storms.<sup>4</sup>

In 2015, DC's Water and Sewer Authority (DC Water) updated the 2005 [Long Term Control Plan \(LTCP\)](#) associated with the Consent Decree and adopted a hybrid green and gray infrastructure plan to reduce the scope and cost of gray infrastructure (large tunnels), deliver earlier pollutant reductions, and achieve other social and economic benefits.<sup>5</sup> They estimate 190 more jobs created over three decades and a reduction in the financial burden on rate payers from \$1,675/year to \$1,200/year.<sup>6</sup>

#### Highlights

The LTCP utilized a capacity metric (i.e., amount of stormwater runoff managed) associated with the green infrastructure projects rather than a defined financial commitment to ensure the expected stormwater reduction improvements.<sup>7</sup>

Simultaneously, an [MOA](#) between DC Water and the District of Columbia established the DC Green Infrastructure (GI) training, a local jobs creation program to improve DC resident employment opportunities on DC Clean Rivers GI projects. All GI work, including contracts and procurements related to professional services, construction, inspection or maintenance, over \$250,000 are required to abide with the MOA. Under the terms of the MOA they set a goal for 51% of new jobs created by procurement or contracts and 35% of total apprenticeship hours to be filled by DC residents. This initiative complemented an existing program at DC Water called [DC Water Works \(DCWW\)](#), a larger training and local employment program on all DC Water contracts.<sup>8</sup>

To achieve this, they created a GI certification, a GI training program, an outreach strategy, hiring preferences for trained and certified residents, MWBEs, and local business (Certified

<sup>4</sup> DC Water and Sewer Authority 2015

<sup>5</sup> DC Water and Sewer Authority 2015

<sup>6</sup> DC Water and Sewer Authority 2015

<sup>7</sup> <https://www.epa.gov/arc-x/dc-utilizes-green-infrastructure-manage-stormwater>

<sup>8</sup> DC Water and Sewer Authority 2015

Business Enterprises or CBE) participation among others. At the beginning of each fiscal year, DC Water surveys contractors to learn about their labor needs, host information sessions, and connects them with strategic partners who are responsible for rehabilitation and soft skills training. This ensures that contractors know what to expect from the participants and that the training curriculum meets labor needs.

Under the GI certification initiative component of the MOA and with a startup capital of just under \$1 million, DC Water worked with the Water Environment Federation (WEF) and 13 other cities nationally to develop and launch the [National Green Infrastructure Certification Program \(NGICP\)](#) in 2016.<sup>9</sup>

The skills training program has two parts:

### ***Job Readiness Training***

- Higher education partners, nonprofits, and government agencies design and run this program. The District's Department of Employment Services pays for training (\$17.50/hour) for 6 months to a year of training, which has been helpful to "guarantee" a full year of employment to participants.

### ***Skills Training***

- GI Training (see DC Green Infrastructure Training, page 12)
- Registered Apprenticeship program
  - Participants are recruited by DC Water, become employees, and receive licensing related to their field (HVAC, plumbing, mechanic, etc). As of 2024, there have been 32 apprentices across 2 cohorts. DCWW is planning a third cohort in 2025.

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<sup>9</sup> The NGICP was launched nationally in 2018 and acquired by Envirocert; Lisle and Harrison 2016; <https://envirocert.org/ngicp/>

## 4. DC GREEN INFRASTRUCTURE TRAINING

Washington, D.C.

This program is likely to be of interest in the future as green infrastructure work accelerates.

Experiential Learning	Paid Training	Stackable Credentials	Employer Partnerships	Employability Skills	Comprehensive Services
✓	✓	✓	✓	✓	N/A

**30**  
Cohort size                    **50-75%**  
Graduation rate                    **20%**  
Job placement rate

### About the program

Launched in 2016, the Green Infrastructure (GI) training program is one of the training programs under DC Water Works (DCWW). The forty-hour program runs twice a year and targets residents with a high school diploma or GED and those who are seeking to further a current career path.<sup>10</sup> DC Water partnered with the University of the District of Columbia's (UDC) [Center for Urban Resilience, Innovation and Infrastructure \(CURII\)](#) to provide no-cost training to underemployed and unemployed DC residents in GI. They recruit participants through the UDC network and their partner training organizations, which vary from year to year.

Participants receive a stipend (about \$17/hr), transit passes, supplies, technology/equipment access, and meals. The program includes training for the NGICP, OSHA-10, and Chesapeake Bay certifications. Landscaping and OSHA-10 certifications help participants improve their employability as a significant portion of work in GI projects typically goes beyond GI-specific work.

The program also includes modules on working in and around utilities, soft skills, and trains participants on how to take a test as some have been out of school for a while. Curriculum training is primarily delivered by University of DC (UDC), while contractors and other District and regional agencies are engaged in delivering the skills training and interview practice. Developing these relationships prior to graduation has been key to ensuring that program graduates are the first candidates for those contractors and other employers.

After graduation, the compliance team tracks participants over time and reaches out as job opportunities come up. With their NGICP certification, participants can interview for jobs with

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<sup>10</sup> "Center for Urban Resilience, Innovation and Infrastructure," n.d.

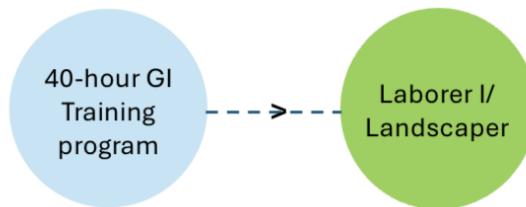
DC Water's GI contractors, who are also required to hire local graduates of the program by the MOA.<sup>11</sup>

Many graduates are employed in entry-level labor jobs in maintenance and construction of GI, receiving upwards of \$20/hr. There is a 20% job placement rate from the GI training program as some graduates choose different career paths. DCWW helps them connect with their broader workforce development stakeholders, including solar employers and DC Water's apprenticeship program. However, this is currently an informal and individually-driven process.

The GI program receives at least \$250,000 annually for the five-year period stated in the MOA from DC Water. During the pandemic, much of the in-person training shifted to online modules, which reduced the cost of administering the program, but the overall dollar commitment remains. Therefore, this has allowed them to expand training to and place more participants despite the scaling back of GI from the 2015 update of the LTCP in 2020.

In 2020, the amount of GI in the updated LTCP was scaled back to include more gray infrastructure. DC Water found that a hybrid green-gray system still proves to be necessary.

### Career Pathway



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<sup>11</sup> Morris 2017; DiNicola 2021

## 5. DC WATER WORKS

Washington, D.C

Experiential Learning	Paid Training	Stackable Credentials	Employer Partnerships	Employability Skills	Comprehensive Services
✓	✓	✓	✓	✓	✓

**NA** Cohort size      **83%** Graduation rate      **83%** Job placement rate

DC Water Works (DCWW) is a training and local hiring initiative created by DC Water, which “provides the framework for the design and implementation of programs and activities that will enhance participation of local residents.”<sup>12</sup> DCWW’s training programs target the hardest-to-place individuals, such as low-income, BIPOC, and reentering individuals from Ward 8 neighborhoods. 60% of the apprenticeship participants have had previous drug offenses.

DCWW customizes areas of training depending on DC Water’s annual construction forecast and survey of contractors’ project needs. Since its inception in 2015, DCWW has graduated and placed around 700 individuals in DC Water and DC Water contracts — an 83% success rate. DCWW creates 100-125 new jobs annually, 71% of which are filled by local residents. Most contractors and employers use DCWW as a first recruitment source. Participants also gain OSHA-10 certification and CDL to improve their employability.

From the start of the program until employment, the DC Department of Corrections provides mentorship, case management, mental health support, financial assistance, transportation assistance (Uber), and after-hours childcare at no cost.

DC Water has a financial commitment to create real jobs, not just more training. They also have strategic partners who have successfully placed people in jobs. DC Water evaluates their training partners annually. They are required to have a metric on job placement to continue their contract with DC Water.

<sup>12</sup>

[https://www.dewater.com/sites/default/files/procurement/DC%20Water%20Works%20Plan%20%20PDF\\_0.pdf](https://www.dewater.com/sites/default/files/procurement/DC%20Water%20Works%20Plan%20%20PDF_0.pdf)

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## 6. PUSH BUFFALO

Buffalo, NY

Experiential Learning	Paid Training	Stackable Credentials	Employer Partnerships	Employability Skills	Comprehensive Services
✓	✓	✓	✓	✓	✓

### About the Program

Initiated in 2008, People United for Sustainable Housing (PUSH) Buffalo is a community-based organization that is involved in creating affordable housing and achieving social, economic, and environmental justice in Buffalo.<sup>13</sup>

### How it happened

PUSH Blue was formed in 2013 to promote, install, and maintain green infrastructure across PUSH's Green Development Zone on Buffalo's West Side as part of an overall effort in the city to reduce sewer overflows. PUSH Blue mainly works on maintaining PUSH's projects, but they also contract with state agencies, public schools, and private companies. They hire National Green Infrastructure Certification Program (NGICP) certified workers, with PUSH Blue offering NGICP training programs since the summer of 2018.<sup>14</sup>

Under an EPA consent decree, the Buffalo Sewer Authority (BSA) is required to significantly reduce combined sewer overflow (CSO) waste, which has heavily contaminated the Buffalo River and surrounding watershed. PUSH Blue became a community partner of the BSA's \$400 million Long-Term Control Plan (\$90 million for green infrastructure) in 2015. The partnership created 53 jobs (64% of which were residents and almost half were people of color), while addressing the public health issue of the city's combined sewer overflow.<sup>15</sup> Additionally, PUSH partners with the BSA on the Community Water Partnership Program that created 140

<sup>13</sup> "Annual Report 2019" 2019

<sup>14</sup> Ibid.; Kim 2021

<sup>15</sup> Ibid.

bioretention installations on 19 acres of vacant city lots and expanded job training and permanent placement opportunities for trainees.<sup>16</sup>

Source: PUSH Buffalo, nd.



*PUSH Blue crew working on green infrastructure in Buffalo's west side*

In 2021, PUSH Buffalo received a \$200,000 EPA Brownfields Job Training Grant for a workforce training program that targets low-income, under- and unemployed workers in Buffalo's historically underserved communities. Buffalo is one of the sites of EPA brownfield assessment and cleanup activities.<sup>17</sup>

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<sup>16</sup> Parker 2019

<sup>17</sup> Senn 2021

## 7. THE SUSTAINABILITY HUB

Chicago, IL

Experiential Learning	Paid Training	Stackable Credentials	Employer Partnerships	Employability Skills	Comprehensive Services
✓	✓	✓	✓	✓	N/A

**20**  
Cohort size<sup>18</sup>

**65%**  
Graduation rate<sup>19</sup>

**82%**  
Job placement rate\*

\* First cohort in 2023

\*\*Jobs and continuing education

### About the program

Created in 2022, The Sustainability Hub is a business incubator and training center in Chicago's West Side through a partnership between 548 Foundation, a community solar owner-operator Summit Ridge Energy, and ECademy.<sup>20</sup> The 11-week program includes a core curriculum in entry-level construction and solar PV installation, particularly for veterans, returning citizens, and high school-educated residents from underserved communities.<sup>21</sup> Graduates can choose to continue to the Power Pathways program for additional training and certifications with their higher education partners.<sup>22</sup> Aligning with Chicago's emissions reduction goal, the program aims to expand training and improve clean energy career opportunities for over 10,000 local residents in the next 10 years. SRE committed \$600,000 in seed funding for the first two years.<sup>23</sup>

Since the training program started in January 2023, it has used the [ECademy model](#). ECademy was developed to digitize Baltimore-based training program Power52's curriculum and certification process, enabling program replication without the challenge of NABCEP and OSHA recertification.<sup>24</sup> The paid training program (\$6,750 stipend, 450 hours) targets at-risk adults, returning citizens, and underserved individuals and is customized by "host organizations" to

<sup>18</sup> SRE a 2023; van Ogtrop 2023

<sup>19</sup> SRE b 2023

<sup>20</sup> Wallace 2024.

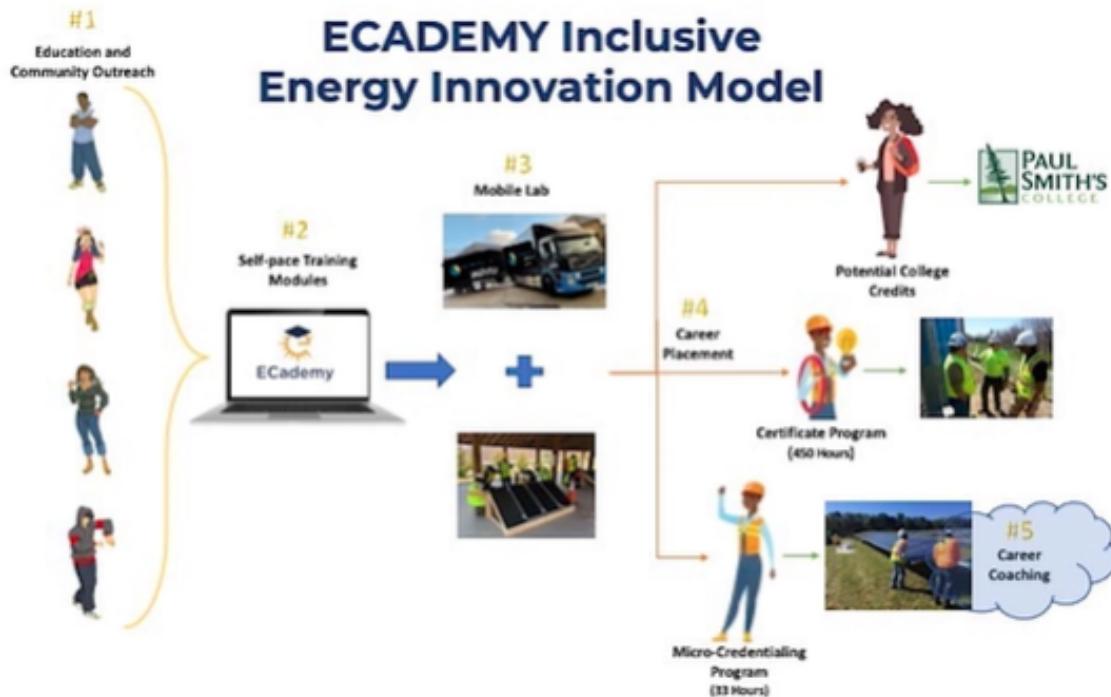
<sup>21</sup> SRE b

<sup>22</sup> van Ogtrop 2023; Power52, n.d.; "Host Organizations," n.d.

<sup>23</sup> Roeder 2023

<sup>24</sup> Wallace 2023; Since 2015, the Power52 has 210 graduates and an 81% job placement rate, 70% of whom have careers in renewable energy.

cater to the specific needs and demographics of the participants.



Following the Power52 model, participants career coaching to help support their career planning and professional development, as well as life skills training, such as conflict resolution and financial literacy, and case management for 1 year post-completion. Participants can also receive several certifications, including OSHA 10 or 30, North American Board of Certified Energy Practitioners (NABCEP), National Center for Construction Education and Research (NCCER), and Global Wind Organization (GWO).<sup>25</sup>

Graduates can continue on paid on-the-job training at more than 100 SRE's community rooftop solar projects in inner-city Chicago and 548 Enterprise's projects. ECademy then works with their consultants to help participants get placement in their preferred sectors.<sup>26</sup> The program is currently in the accreditation process, but some courses can be transferred towards 1-3 college credits.<sup>27</sup>

ECademy offers scholarships, loans, and financial aid that allows participants to have training at no upfront cost, such as the income share model allows participants to repay the training cost in five years after employment through a percentage of their salary.<sup>28</sup> The program also has a barrier reduction fund, covering housing, childcare, food, parole, and legal fees, and partners

<sup>25</sup> "FAQs," n.d.

<sup>26</sup> Wallace 2022

<sup>27</sup> "FAQs," n.d.

<sup>28</sup> "ECademy Online School," n.d.; "FAQs," n.d.; Wallace 2022

with local organizations who help participants gain access to vehicles through leasing programs.<sup>29</sup>

**Contacts:**

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<sup>29</sup> Wallace 2023

## 8. CALIFORNIA'S ERICA GRANT PROGRAM

The California's Department of Industrial Relations (DIR)' Equal Representation in Construction Apprenticeship (ERiCA) Grant Program, established in 2022, offers a model on how public investments can increase the participation of women, non-binary and underserved populations in construction careers. Through the ERiCA program, the state of California is disbursing \$25 million for program year 2023-2025, dividing into two funding streams<sup>30</sup>:

### ***Supportive Resources for Childcare***

- Grants provide up to \$5,000 stipends to pre-apprentices and up to \$10,000 stipends for apprentices
- All recipients must be enrolled in state-registered pre-apprenticeship or apprenticeship programs

### ***Outreach and Community Building***

- Grants support inclusive awareness building and marketing campaigns, recruiting and training mentors, creation of affinity groups for workers for underrepresented workers and others with barriers to employment, and other networking and engagement activities aimed at increasing the number women, non-binary, and other underrepresented workers in the building trades

The higher child care stipend amount for apprentices is intended to fill the gap in supportive services within the first and second years of apprenticeship – also known as the “benefits cliff” – when many workers lose eligibility for supportive services because of the wage increase from transitioning from a pre-apprentice to apprentice.

Entities eligible to apply for ERiCA grants include nonprofits, unions, workforce boards, and local education agencies. ERiCA child care funds can be used for:

- Child care stipend directly to apprentices or pre-apprentices
- All costs associated with an onsite day care such as facilities, staffing, child care supply, food, utilities, toys, books
- Child care coordinator
- In-home child care costs

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<sup>30</sup> State of California Department of Industrial Relations. “Equal Representation in Construction Apprenticeship (ERiCA) Grant.” <https://www.dir.ca.gov/DAS/Grants/ERICA.html>

# **PART B.**

# **Project Labor Agreements**

**Appendix C.**

## 1. WHAT IS A PROJECT LABOR AGREEMENT (PLA)?

Project labor agreements (PLAs) are collective bargaining agreements frequently used on large construction projects in both the public and private sectors to ensure stability, work quality, and labor peace.<sup>31</sup> Negotiated by owners of development projects, contractors, and labor unions, these legally binding contracts set employment terms, hiring protocols, dispute resolution processes, and health and safety standards on projects.<sup>32</sup> Drawing on the extensive sector-based training infrastructure that exists in construction in the form of registered apprenticeship programs, PLAs have also served as important mechanisms to recruit and train new skilled workers into building trades workforce.

Public agencies' commitments to use PLAs on capital projects grow the market demand that union apprenticeship programs need to expand their class sizes and build pathways to good green jobs. PLAs offer local jurisdictions and other partners in the local trades ecosystem the ability to tailor agreements to their unique local and regional context, often serving as a tool to align efforts and scale impact.

Over the last 20 years, PLAs and Community Workforce Agreements (CWAs) have been used increasingly to promote diverse and local hires on public construction projects.<sup>33</sup> Labor and community advocates, trades women's groups, policy experts, and academic researchers have all contributed to a growing body of literature outlining the provisions and practices that strengthen PLAs as tools for workforce equity and apprenticeship utilization in the building trades. The City could also use PLAs on a departmental or project-by-project basis.

Key provisions to include in Project Labor Agreements to support good career pathways are discussed below.

## 2. TARGETED HIRES

PLAs should include workforce goals that require all signatories to commit to ensuring that traditionally excluded and underrepresented workers perform a minimum level of work hours on the project. Targeted hire goals identify key populations, including women, people of color, local residents, disadvantaged workers, and apprentices. While PLAs sometimes set specific trade-by-trade goals tailored to local need, it is important to apply targeted hire goals across

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<sup>31</sup> Ormiston, Russell, and Kevin Duncan. "Project Labor Agreements: A Research Review." Institute for Construction Employment Research. October 2022.

<http://iceres.org/wp-content/uploads/2022/10/ICERES-PLA-Research-Review.pdf>

<sup>32</sup> Economic Policy Institute. "Unions Help Reduce Disparities and Strengthen our Democracy." April 23, 2021, <https://www.epi.org/publication/unions-help-reduce-disparities-and-strengthen-our-democracy/>.

<sup>33</sup> Figueroa, Maria, Jeff Grabelsky, and Ryan Lamare. *Community Workforce Provisions in Project Labor Agreements: A Tool for Building Middle Class Careers*. Cornell University School of Industrial and Labor Relations. October 2011.

trades and across all contractors on a project to ensure diverse workers are not siloed in the lowest-paid trades.<sup>34</sup>

PLAs provide clarity on the specific steps contractors and unions are expected to take in order to achieve targeted hire goals. The Policy Group on Tradeswomens' Issues [Finishing the Job report](#) provides policies and best practices that may be referenced or integrated into PLAs. Clear steps support all parties in understanding expectations and provide assurance to contractors that, as long as they provide documented evidence that they have taken the steps outlined, they will not be subject to financial penalties for shortages in a region's workforce supply.

PLAs provide agencies with unique opportunities to negotiate revisions to standard union hiring hall referral rules, and may explicitly allow contractors to request targeted workers from union hiring halls regardless of where they sit on a union's seniority list, and require that unions comply.

### **3. APPRENTICESHIP UTILIZATION**

In addition to workforce demographics, PLAs promote the consistent development of a qualified workforce through provisions that require a minimum number of project hours be completed by registered apprentices.<sup>35</sup> Apprenticeship utilization rates create demand for new and existing workers to become skilled and advance in the field.<sup>36</sup>

Increasing the number of apprentices on Boston projects will help the City increase the number of Boston residents on the job. Although we do not have statistics on the number of Boston residents by apprenticeship year or journey person status, apprenticeship directors reported a common phenomenon among apprentices. Apprentices who enter as Boston residents and begin earning better wages often seek to buy a house, but either cannot afford Boston prices or are seeking a more suburban setting. Therefore, the proportion of Boston residents in any given union membership is likely to be higher in early career years. A robust apprentice utilization target will therefore help the City meet its resident hiring goals.

Although apprentice utilization rates vary across projects and jurisdiction, a study conducted by Cornell's School of Industrial and Labor Relations found that most rates will be determined by state or federal laws governing ratios between apprentices and journey-level workers on

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<sup>34</sup> San Francisco Foundation. *Improving the Effectiveness of Project Labor Agreements*. December 2020. <https://sff.org/wp-content/uploads/2021/02/Project-Labor-Agreements-CBA-Final-Report.pdf>.

<sup>35</sup> Glass, Aurelia, and Karla Walter. "How Project Labor Agreements and Community Workforce Agreements Are Good for the Biden Administration's Investment Agenda." Center for American Progress, January 21, 2023. <https://www.americanprogress.org/article/how-project-labor-agreements-and-community-workforce-agreements-are-good-for-the-biden-administrations-investment-agenda/>.

<sup>36</sup> Figueroa, Maria, Jeffrey Grabelsky, and Ryan Lamare. "Community Workforce Provisions in Project Labor Agreements." Cornell University Library, October 2011. <https://ecommons.cornell.edu/server/api/core/bitstreams/la101122-d936-4450-8e98-5174f2678616/content>.

construction projects. This study found that most PLAs have apprentice utilization provisions and outlined rates for 185 PLAs surveyed in Figure X below.<sup>37</sup>

**Table 1: PLAs with Apprentice Utilization Requirements**

Apprentice utilization requirements	# of PLAs (out of 185)
15 to 20% of total hours	8
20 to 40% of workforce	18
20 to 33.3% of workforce by craft	16
Ratios set by state, federal laws, and CBAs	55
Other	3
<b>Total PLAs with Apprentice Utilization Provisions</b>	<b>100</b>

Source: Figueroa, Maria, Jeffrey Grabelsky, and Ryan Lamare. "Community Workforce Provisions in Project Labor Agreements." Cornell University Library, 12, Table 12, October 2011.

#### **4. SUPPORTING PRE-APPRENTICESHIP PROGRAMS**

Reputable pre-apprenticeship programs are key to building union career pathways for people belonging to groups historically underrepresented in building trades unions. PLAs can support these pathways by including direct entry provisions in a PLA that give graduates of reputable pre-apprenticeship programs preferred access to open apprenticeships.<sup>38</sup>

For example, the Boston Building Trades entered into a PLA agreement on a large development in Suffolk Downs that required twenty percent of apprentices to come from the Building Pathways Program, which has high enrollment rates of women and workers of color.

#### **5. MONITORING, ACCOUNTABILITY, AND ENFORCEMENT**

Effective monitoring and enforcement of PLA targeted hire goals and apprenticeship utilization is essential to their success. The Policy Group on Tradeswomens' Issues [Finishing the Job](#) includes compliance monitoring tools and best practices for all parties. Essential to monitoring is the establishment of a committee (frequently called an Access and Opportunity Committee, or AOC), to monitor compliance and reinforce best practices for workforce diversity.

<sup>37</sup> Ibid.

<sup>38</sup> U.S. Department of Transportation. *Investing in America: Best Practices to Expand Access to Jobs and Economic Opportunity Through Transportation Infrastructure Investments*. U.S. Department of Transportation, 2024. <https://www.transportation.gov/sites/dot.gov/files/2024-02/Best%20Practices%20to%20Expand%20Access%20Jobs%20and%20Economic%20Opportunity%20final.pdf>.

## **6. COORDINATING SUPPORT FOR THE RETENTION OF DIVERSE WORKERS**

Research shows that targeted hire goals and apprentice utilization requirements alone are insufficient at a more diverse construction workforce.<sup>39</sup> With the increasing prevalence of targeted hire policies in public sector construction, tradeswomen's groups have been leaders in calling for parallel public investment into efforts that support the retention and advancement of women and other underrepresented workers once they are recruited into the field. In a national survey of thousands of tradeswomen by the Institute for Women's Policy Research in 2021, respondents cited harassment and a lack of respect as the number one reason they left or have considered leaving the industry.<sup>40</sup> The persistence of harassment, bullying, and hazing on construction worksites remains a leading factor that drives women, people of color, and LGBTQ workers out of careers in the building trades.

## **7. ADDRESSING WORKPLACE CLIMATE**

The U.S. Departments of Transportation, Commerce, and Labor have all been explicit in naming culture change in the construction industry as necessary to achieving an expanded and more diverse U.S. building trades workforce. Guidance and best practices released by these agencies all describe the responsibility of public agencies to uphold and ensure respectful workplaces on publicly funded construction projects that are free from harassment, bullying, hazing, and discrimination. Agencies should include language in both PLAs and prime contracts requiring strong anti-harassment policies and harassment prevention programs and bystander intervention trainings to be implemented on project sites.<sup>41</sup> Model programs that have been developed and implemented in the building trades include Green Dot, administered by Alteristic, and RISEUp, developed by tradeswomen's groups.

## **8. FUNDING WORKFORCE SUPPORTS**

In addition to setting worksite labor standards, PLAs themselves can guide municipal investments into workforce supports. For example, PLAs may include provisions committing public agency signatories to establish and make payments into workforce development funds

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<sup>39</sup> San Francisco Foundation. *Improving the Effectiveness of Project Labor Agreements*. December 2020. <https://sff.org/wp-content/uploads/2021/02/Project-Labor-Agreements-CBA-Final-Report.pdf>.

<sup>40</sup> Ariane Hegewisch and Eve Mefford. *A Future Worth Building: What Tradeswomen Say about the Change They Need in the Construction Industry*. Institute for Women's Policy Research. November 2021. [https://iwpr.org/wp-content/uploads/2022/02/A-Future-Worth-Building\\_What-Tradeswomen-Say\\_FINAL.pdf](https://iwpr.org/wp-content/uploads/2022/02/A-Future-Worth-Building_What-Tradeswomen-Say_FINAL.pdf).

<sup>41</sup> Shaw, Elyse. *Tools for Building an Equitable Infrastructure Workforce: Gender Equity Strategies as a Model*. U.S. Department of Labor Women's Bureau. September 2023.

according to either labor hours on a project or a percentage of an overall project budget. These funds can be used to support pre-apprenticeship programs that serve underrepresented workers, such as those providing direct entry into PLA apprenticeship slots, and for wraparound services that support workers of color, women, and those who face barriers to employment in both accessing and succeeding in jobs on public construction projects.

For example, the PLA for the state-of-the-art downtown Boston Winthrop Center funded a child care pilot project to connect single mothers with nonstandard-hour child care options to support their entry into strong trades careers.<sup>42</sup>

## 9. MODELS FOR MUNICIPAL PLAS

There are multiple paths for Boston to ensure all City capital projects are covered by a PLA

The strongest option is for the City to negotiate a Project Labor Agreement with labor partners that would cover all city projects. Contractors would be bound to the agreement when selected to perform the work.

- **Los Angeles County, CA (population 10 million):** Entered into a Community Workforce Agreement in 2023 that covers all county projects over \$5 million and includes local hire provisions. The agreement is estimated to cover about \$1 billion in construction every year.<sup>43</sup>
- **New York City, NY (population 8.35 million):** Entered into multiple Project Labor Agreements covering different projects including new construction, renovations, and design-build projects.<sup>44</sup>
- **Los Angeles city, CA (population 3.8 million):** New Project Labor Agreement in 2020 covers all public works projects and includes local hire provisions, including 30 percent of work hours performed by workers from priority zip codes.<sup>45</sup>

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<sup>42</sup> MP Boston and Building Trades Unions sign Project Labor Agreement for Winthrop Center. New England Real Estate Journal. November 15, 2019.

<https://nerej.com/mp-boston-and-building-trades-unions-sign-project-labor-agreement-for-winthrop-center/?fbclid=IwAR15kLon-C>

<sup>43</sup> Fulton, Robert. IBEW 11 Makes Its Voice Heard as County Signs Historic Community Workforce Agreement. March 2023.

<https://ibew11.org/2023/03/ibew-11-makes-its-voice-heard-as-county-signs-historic-community-workforce-agreement/>

Fulton, Robert. IBEW 11 Makes Its Voice Heard as County Signs Historic Community Workforce Agreement. March 2023.

<https://ibew11.org/2023/03/ibew-11-makes-its-voice-heard-as-county-signs-historic-community-workforce-agreement/>

<sup>44</sup> New York City Mayor's Office of Contract Services. Project Labor Agreements. New York City. <https://www.nyc.gov/site/mocs/regulations/project-labor-agreements.page>

<sup>45</sup> Department of Public Works Bureau of Contract Administration, Departmental Project Labor Agreements. City of Los Angeles 2015-2020.

[https://bca.lacity.gov/dpw\\_pla\\_documents](https://bca.lacity.gov/dpw_pla_documents)

- **San Jose, CA (population 984,000):** Entered into a new Project Labor Agreement in 2022 for all projects over \$1,050,000.<sup>46</sup>
- **Seattle, WA (population 725,000):** Entered into a Community Workforce Agreement in 2015 covering all public works projects over \$5 million. Expanded in 2017 to include public/private partnership projects with city investment over \$5 million.<sup>47</sup>
- **Albuquerque, NM (population 562,000):** Requires Project Labor Agreements on all projects over \$10 million.<sup>48</sup>

## 10. CASE STUDY: CHICAGO BID INCENTIVES

The City of Chicago offers contractors a variety of bid incentives to increase the participation of historically underrepresented groups in the construction workforce, including women, people of color, and formerly incarcerated individuals. The incentives promote workforce diversity and social equity by awarding credits for firms that commit to and succeed in hiring underrepresented workers into apprenticeships and journey-level roles. Some of the city's bid incentives are earned through commitments contractors make at the time of bid submission, or "Future Incentives", while others are earned when commitments have been successfully fulfilled, or "Earned Credits."<sup>49</sup>

On construction contracts valued at \$100,000 or more, the city offers the following incentives for commitments made to apprentice and diverse hire on awarded projects:

### Apprentice Utilization Bid Incentive

The Apprentice Utilization Bid Incentive is both a Future Incentive and an Earned Credit Incentive. Contractors can earn this incentive by hiring apprentices who have graduated either from Chicago Public Schools or a pre-apprenticeship program run by the City Colleges of Chicago and are enrolled in a state-registered apprenticeship program. Upon contract closeout, if a contractor has met its apprentice utilization goals, the city issues an Earned Credit Certificate that can be applied to future bids. These credits remain valid for three years and apply to contracts of equal or greater value.

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<sup>46</sup> Citywide Project Labor Agreement for the City of San Jose. June 2022.

<https://www.sanjoseca.gov/home/showpublisheddocument/99446/638225189474770000>

<sup>47</sup> Purchasing and Contracting. Community Workforce Agreement. City of Seattle. April 2015.

[https://www.seattle.gov/documents/Departments/FAS/PurchasingAndContracting/Labor/Seattle\\_CWA\\_final.pdf](https://www.seattle.gov/documents/Departments/FAS/PurchasingAndContracting/Labor/Seattle_CWA_final.pdf)

<sup>48</sup> Cruz, Isaac. City of Albuquerque keeps law requiring labor agreements on city projects. KRQE News. April 2022.

<https://www.krqe.com/news/politics-government/city-of-albuquerque-keeps-law-requiring-labor-agreements-on-city-projects/>

<sup>49</sup> City of Chicago Department of Procurement Services. "Resource Guide: Incentives and Programs." [https://www.chicago.gov/content/dam/city/depts/dps/Outreach/ResourceGuide\\_IncentivesandPrograms%20\\_Aug2023\\_FINAL.pdf](https://www.chicago.gov/content/dam/city/depts/dps/Outreach/ResourceGuide_IncentivesandPrograms%20_Aug2023_FINAL.pdf)

- **Incentive Calculation:** If contractors commit to apprentice utilization for 5–10% of the total labor hours, they receive a credit of 0.5% of the contract’s base bid. By committing to 11–15% apprentice utilization, contractors earn a 1% credit.

### **Equal Employment Opportunity Bid Incentive**

The Equal Employment Opportunity (EEO) Bid Incentive is a Future Incentive that allows bidders to reduce the overall amount of their calculated bid if they make commitments to hire people of color and women as journey workers, apprentices, and laborers for a minimum percentage of project hours. The city awards a 150% credit for every work hour performed by people of color or women from socio-economically disadvantaged areas (SEDAs), creating additional incentives for engaging underrepresented communities.

### **Returning Resident Apprentice Utilization Incentive**

The Returning Resident Apprentice (RRA) Utilization Incentive is both a Future Incentive and an Earned Credit Incentive intended to create employment opportunities for formerly incarcerated individuals on city construction projects. This incentive encourages contractors to hire apprentices who have been convicted of imprisonable offenses, are returning residents of Chicago, and are enrolled in a state-registered apprenticeship program. Similar to the Apprenticeship Utilization Bid Incentive, contractors who have met their RRA utilization goals will receive Earned Credit Certificates that can be applied to future bids. These credits remain valid for three years and apply to contracts of equal or greater value.

- **Incentive Calculation:** If contractors commit to employing returning residents for 5–10% of the total labor hours, they receive a credit of 0.5% of the contract’s base bid. By committing to hiring 11–15% returning residents, contractors earn a 1% credit.

## **11. FEDERAL TAX CREDITS AND DEDUCTION FOR PLA PROJECTS**

The Inflation Reduction Act (IRA), passed at the federal level during the Biden Administration, contained a number of tax credits to help fund clean energy projects while creating good jobs. These included tax credits available to public entities like the City of Boston. Many of these tax credits include a **5x multiplier over the base value** by meeting prevailing wage and apprenticeship utilization targets. Using a qualifying Project Labor Agreements (PLA) ensures compliance with these requirements and facilitates access to credits.<sup>50</sup>

The IRA also increased the 179D Energy Efficient Commercial Building Tax Deduction from a limit of \$1.88 per square foot to \$5 per square foot when high-road labor standards and energy

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<sup>50</sup> U.S. Department of Labor. The Inflation Reduction Act and Qualifying Project Labor Agreements. <https://www.dol.gov/general/inflation-reduction-act-tax-credit/project-labor-agreements>

reduction targets are met. While tax exempt entities cannot take this deduction, it can be taken by private sector contractors doing work for the City, bringing down the overall cost of the project.<sup>51</sup>

The City of Boston should also communicate information about these credits and the good jobs multipliers to BERDO building owners and nonprofit institutions.

**Table 2. Tax credits and deductions with multiplier for meeting labor standards**

	Type	Uses	Non Tax Exempt	Tax Exempt	Labor standards to obtain 5x credit/maximize benefit
Renew America's Nonprofits	Competitive Grant	Energy efficiency upgrades to a portfolio of buildings that are owned and operated by 501(c)3 organizations	No	Yes	
179D Energy Efficient Commercial Building Tax Deduction	Tax Deduction	Qualifying systems that reduce energy usage by at least 25%, including improvements to interior lighting, heating, cooling, ventilation, hot water, and the building envelope, including dynamic glass	Yes	No, but can benefit from reduced project cost	PLA or Prevailing Wage and Apprenticeship Utilization
Clean Energy Production Tax Credit	Tax credit	Tax credit claimed on each unit of output from a range of clean energy activities, including solar and geothermal.	Yes	Yes (and governmental entities)	PLA or Prevailing Wage and Apprenticeship Utilization
Clean Energy Investment Tax Credit	Tax credit	Tax credit that is a percentage of the cost of a clean energy investment.	Yes	Yes (and governmental entities)	PLA or Prevailing Wage and

<sup>51</sup> Energy efficient commercial buildings deduction. Internal Revenue Service. November 2024.

<https://www.irs.gov/credits-deductions/energy-efficient-commercial-buildings-deduction>; Stokes, Harley.

Roadmap to Navigating Federal Funding for Public Buildings, page 17. Blue Green Alliance.

[https://www.bluegreenalliance.org/wp-content/uploads/2023/07/BGA-MUSH-Report\\_FINAL.pdf](https://www.bluegreenalliance.org/wp-content/uploads/2023/07/BGA-MUSH-Report_FINAL.pdf)

					Apprenticeship Utilization
Alternative Fuel Refueling Property Credit (Section 30C)	Tax Credit	Installation of electric vehicle charging stations or facility to store or dispense clean-burning fuel, low-income community census tract.	Yes	Yes (and government entities)	PLA or Prevailing Wage and Apprenticeship Utilization
New Energy Efficient Home Credit (Section 45L)	Tax Credit	New or substantially reconstructed and rehabilitated single-family or multifamily homes using Green technologies: ENERGY STAR or Zero Energy Ready Home Program energy efficiency standards	Yes	No	Prevailing Wage

Various federal credits are “stackable,” meaning they can be used together for maximum effect. See figure 1 for stackable credits.

**Table 3. Stackable Clean Energy Tax Credits**

Stackable	Qualifying Project	Description
30%	For smaller projects (under 1 MW) -and- For larger projects with labor standards	Qualifying projects with a maximum net output of 1 MW or less are eligible for the 30% base credit. Larger projects over 1 MW must pay prevailing wage and utilize a percentage of registered apprentices to receive the full 30% credit. Larger projects that do not meet these standards can receive a 6% base credit.  <b>Percentage apprentice hours required:</b> <sup>26</sup> Labor hours spent on facility construction, alteration, or repair work: at least 10% (rising to 12.5% for facilities where construction begins in 2023 and 15% in 2024 and later years).
+10%	Energy community <sup>27</sup>	Communities that have seen significant job loss either in the fossil fuel economy due to the closure of a coal mine or coal-fired power plant, or are host to a brownfield site. <sup>28</sup>
+10%	Low-income community or Tribal land <sup>29,30</sup>  (ITC: solar or wind projects only)	A community is low-income if the poverty rate for such tract is at least 20%, or, in the case of a tract not located within a metropolitan area, the median family income for such tract does not exceed 80% of statewide median family income, or in the case of a tract located within a metropolitan area, the median family income does not exceed 80% of the greater of statewide median family income or are located on federally recognized Tribal land. <sup>31</sup>  <b>Note:</b> Only available for solar and wind projects, below a maximum output of 5 MW.
+10%	Domestic content	When a percentage of the "total component cost" of manufactured products are made in the United States, qualifying projects receive this bonus credit.  <b>Note:</b> If an entity does not meet these domestic content standards, then the total amount of the tax credits eligible for direct pay decreases.  <b>Percentage domestic content requirements:</b> OffShore wind: 20% in 2023, 27.5% in 2024, 35% in 2025, 45% in 2026, 55% by 2028. All other clean energy: 40% in 2023, 45% in 2024, 50% by 2025, 55% by 2027. <sup>32</sup>

Stackable Clean Energy Tax Credits. Source: Blue Green Alliance, Roadmap to Navigating Federal Funding for Public Buildings, [https://www.bluegreenalliance.org/wp-content/uploads/2023/07/BGA-MUSH-Report\\_FINAL.pdf](https://www.bluegreenalliance.org/wp-content/uploads/2023/07/BGA-MUSH-Report_FINAL.pdf)

We recommend the City of Boston monitor the continued existence of tax credits, communicate updates to BERDO building owners and nonprofit institutions, and plan to utilize them on qualifying projects.

In addition to relevant federal government entities, resources for understanding and monitoring tax credits include:

#### Mass.gov

Direct Pay Information

<https://www.mass.gov/info-details/direct-pay-information>

**Clean Energy Tax Navigator**

Lawyers for Good Government

<https://cleanenergystaxnavigator.org/>

**Inflation Reduction Act Tracker**

Columbia Law School's Sabin Center for Climate Change Law and Environmental Defense Fund

<https://iratracker.org/>

**HUD Exchange**

Funding Navigator Tool

<https://www.hudexchange.info/about/>

## **PART C.**

# **U.S. Department of Education Planning Guide for Aligning Career and Technical Education (CTE) and Apprenticeship Programs**

**Appendix C.**

**View PDF Here:**

[https://drive.google.com/file/d/1rxt-jn9D2GYCzWC90XyseR7esk49zxVm/view?usp=drive\\_link](https://drive.google.com/file/d/1rxt-jn9D2GYCzWC90XyseR7esk49zxVm/view?usp=drive_link)

## **PART D.**

# **Federal Tax Credits and Deductions for Clean Energy Investments and Building Retrofits**

**Appendix C.**

# Deductions for Clean Energy Investments and Building Retrofits

The Inflation Reduction Act (IRA), passed at the federal level during the Biden Administration, contained a number of tax credits to help fund clean energy projects while creating good jobs. These included tax credits available to public entities like the City of Boston. Many of these tax credits include a **5x multiplier over the base value** by meeting prevailing wage and apprenticeship utilization targets. Using a qualifying Project Labor Agreements (PLA) ensures compliance with these requirements and facilitates access to credits.<sup>52</sup>

The IRA also increased the 179D Energy Efficient Commercial Building Tax Deduction from a limit of \$1.88 per square foot to \$5 per square foot when high-road labor standards and energy reduction targets are met. While tax exempt entities cannot take this deduction, it can be taken by private sector contractors doing work for the City, bringing down the overall cost of the project.<sup>53</sup>

The City of Boston should also communicate information about these credits and the good jobs multipliers to BERDO building owners and nonprofit institutions.

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<sup>52</sup> U.S. Department of Labor. The Inflation Reduction Act and Qualifying Project Labor Agreements. <https://www.dol.gov/general/inflation-reduction-act-tax-credit/project-labor-agreements>

<sup>53</sup> Energy efficient commercial buildings deduction. Internal Revenue Service. November 2024. <https://www.irs.gov/credits-deductions/energy-efficient-commercial-buildings-deduction;>

Stokes, Harley. Roadmap to Navigating Federal Funding for Public Buildings, page 17. Blue Green Alliance. [https://www.bluegreenalliance.org/wp-content/uploads/2023/07/BGA-MUSH-Report\\_FINAL.pdf](https://www.bluegreenalliance.org/wp-content/uploads/2023/07/BGA-MUSH-Report_FINAL.pdf)

**Table 1. Tax credits and deductions with multiplier for meeting labor standards**

	Type	Uses	Non Tax Exempt	Tax Exempt	Labor standards to obtain 5x credit/maximize benefit
Renew America's Nonprofits	Competitive Grant	Energy efficiency upgrades to a portfolio of buildings that are owned and operated by 501(c)3 organizations	No	Yes	
179D Energy Efficient Commercial Building Tax Deduction	Tax Deduction	Qualifying systems that reduce energy usage by at least 25%, including improvements to interior lighting, heating, cooling, ventilation, hot water, and the building envelope, including dynamic glass	Yes	No, but can benefit from reduced project cost	PLA or Prevailing Wage and Apprenticeship Utilization
Clean Energy Production Tax Credit	Tax credit	Tax credit claimed on each unit of output from a range of clean energy activities, including solar and geothermal.	Yes	Yes (and governmental entities)	PLA or Prevailing Wage and Apprenticeship Utilization
Clean Energy Investment Tax Credit	Tax credit	Tax credit that is a percentage of the cost of a clean energy investment.	Yes	Yes (and governmental entities)	PLA or Prevailing Wage and Apprenticeship Utilization
Alternative Fuel Refueling Property Credit (Section 30C)	Tax Credit	Installation of electric vehicle charging stations or facility to store or dispense clean-burning fuel, low-income community census tract.	Yes	Yes (and governmental entities)	PLA or Prevailing Wage and Apprenticeship Utilization

New Energy Efficient Home Credit (Section 45L)	Tax Credit	New or substantially reconstructed and rehabilitated single-family or multifamily homes using Green technologies: ENERGY STAR or Zero Energy Ready Home Program energy efficiency standards	Yes	No	Prevailing Wage
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**Figure 1. Clean Energy Tax Incentives: Elective Pay Eligible Tax Credits**

Tax Provision	Description
Energy Generation & Carbon Capture	<b>Production Tax Credit for Electricity from Renewables</b> (§ 45, pre-2025)  <b>Clean Electricity Production Tax Credit</b> (§ 45Y, 2025 onwards)  <b>Investment Tax Credit for Energy Property</b> (§ 48, pre-2025)  <b>Clean Electricity Investment Tax Credit</b> (§ 48E, 2025 onwards)  <b>Low-Income Communities Bonus Credit</b> (§ 48(e), 48E(h)) <b>Application required</b>  <b>Credit for Carbon Oxide Sequestration</b> (§ 45Q)  <b>Zero-Emission Nuclear Power Production Credit</b> (§ 45U)
	<b>For production of electricity from eligible renewable sources</b> , including wind, biomass, geothermal, solar, small irrigation, landfill and trash, hydropower, marine and hydrokinetic energy. <b>Credit Amount (for 2022):</b> 0.55 cents/kilowatt (kW); 1/2 rate for electricity produced from open loop biomass, landfill gas, and trash; 2.75 cents/kW if Prevailing Wage and Apprenticeship (PWA) rules are met <sup>1,2,3,7</sup>
	<b>Technology-neutral tax credit for production of clean electricity.</b> Replaces § 45 for facilities that begin construction and are placed in service after 2024. <b>Credit Amount:</b> Starts in 2025, consistent with credit amounts under section 45 <sup>1,2,3,6,7</sup>
	<b>For investment in renewable energy projects</b> including fuel cell, solar, geothermal, small wind, energy storage, biogas, microgrid controllers, and combined heat and power properties <b>Credit Amount:</b> 6% of qualified investment (basis); 30% if PWA requirements met <sup>1,4,5,6,8</sup>
	<b>Technology-neutral tax credit for investment in facilities that generate clean electricity</b> and qualified energy storage technologies. Replaces § 48 for facilities that begin construction and are placed in service after 2024 <b>Credit Amount:</b> 6% of qualified investment (basis); 30% if PWA requirements met <sup>1,4,5,6</sup>
	<b>Additional investment tax credit for small-scale solar and wind</b> (§ 48(e)) or <b>clean electricity</b> (§48E(h)) facilities (<5MW net output) on Indian land, federally subsidized housing, in low-income communities, and benefit low-income households. Allocated through an application process. <b>Credit Amount:</b> 10 or 20 percentage point increase on base investment tax credit <sup>7</sup>
	<b>Credit for carbon dioxide sequestration</b> coupled with permitted end uses in the United States. <b>Credit Amount:</b> \$12-36 per metric ton of qualified carbon oxide captured and sequestered, used as a tertiary injectant, or used, depending on the specified end use; \$60-\$180 per metric ton if PWA requirements met. <sup>1,7</sup>
	<b>For electricity from nuclear power facilities.</b> Facilities in operation prior to August 16, 2022. <b>Credit Amount (for 2023):</b> 0.3 cents/kWh (reduced rate for larger facilities); 1.5 cent/kWh if PW req's met <sup>1,7</sup>

Source: Internal Revenue Service, <https://www.irs.gov/pub/irs-pdf/p5817g.pdf>.

Various federal credits are “stackable,” meaning they can be used together for maximum effect. See Part B, Table 2 for stackable credits.