



Opportunities for State and Territory Energy Offices to Prioritize Job Quality and Broaden Access in the Clean Energy Workforce

Note: This resource contains preliminary research compiled by the National Association of State Energy Officials (NASEO) in Fall 2022 as part of the NASEO-Markle State Clean Energy Workforce Initiative. This initiative is aimed towards clarifying opportunities and strategies for state agencies to foster good quality jobs and inclusive workforces in the clean energy sector. The Markle Foundation also contributed to the research on expenditure estimates for workforce programs and supports in the second half of this report. If you have questions or comments about the content of this resource, please contact Grace Lowe, Program Manager at NASEO, at glowe@naseo.org.

Executive Summary

State and Territory Energy Offices are in a critical position to affect the trajectory of new jobs in the booming clean energy sector, particularly given substantial new funding flowing from the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA).

In their role as spending and convening authorities, State Energy Offices¹ can influence the quality of clean energy jobs and broaden access to clean energy careers for underrepresented demographic groups, especially when jobs stem directly from state spending.² At a high level, policy and program levers available to State Energy Offices may include strengthening supports for high-quality workforce training programs to promote access and retention; requiring or incentivizing job quality and inclusion in direct spending to influence practices among funding recipients; informing broader state workforce and clean energy activities; and investing in clean energy entrepreneurship and STEM education.

To illustrate the scale of available funding and specific funding streams that can be used to advance clean energy workforce goals, this resource details IIJA and IRA provisions that provide opportunities for states to support workforce development and job quality in the clean energy sector.

As this resource explores in more detail below, IIJA contains a variety of clean energy investments that State Energy Offices have an opportunity to shape to promote workforce goals over the next five years. \$200 million of IIJA funds are specifically dedicated to clean energy workforce development, including funding directed to State Energy Offices through the Energy Auditor Training Program. IIJA also contains funds that are not specifically for workforce development but contain flexibility for such investments—an additional \$3.5 billion for the Weatherization Assistance Program and an additional \$500 million for the flexible formula-based State Energy Program, among other funds. Finally, IIJA creates several competitive grants that promote key workforce elements related to training, job quality, and equity, including the Regional Clean Hydrogen Hubs and the Solar and Wind Grid Services and Reliability Demonstration grants, for which state governments are named as eligible entities.

¹ This resource uses the term "State Energy Office" to refer to any U.S. state or territory energy office.

² National Association of State Energy Officials, "Diversity in the U.S. Energy Workforce," 2021.

This resource also discusses provisions in IRA that contain a suite of spending and other measures that will likely spur large-scale shifts in clean energy employment. State Energy Offices will be receiving \$200 million specifically for workforce development through State-Based Home Energy Efficiency Contractor Training Grants. They will also be responsible for distributing about \$8.8 billion in spending for the Home Energy Performance-Based Whole-House Rebates (HOMES) program and the High-Efficiency Electric Home Rebate Program, which will create significant demand for clean energy jobs. Lastly, a central part of IRA is the bonus rate credits offered to clean energy projects that meet prevailing wage and apprenticeship requirements. These credits will increase demand for apprentices and skilled workers in the clean energy sector in every state but will not automatically improve demographic representation in related apprenticeships. This creates an opportunity for states to build on the increased demand for clean energy apprenticeships by strengthening inclusive pathways to apprenticeship.

To provide a sense of the relative size of workforce development investments that could be explored by State Energy Offices (or other state agencies) in their spending, this resource also offers example per-participant costs for various workforce development programming, with a focus on types of services and programs that are among the most effective and with expenditure estimates mostly found in publicly available data.

As a rough estimate, states could spend an estimated \$3,000 to \$12,000 per participant on registered apprenticeship programs with wraparound supports, and an estimated \$5,000 to \$25,000 per year per young child on childcare support for existing programs, for example. Costs will vary significantly by geography and context, but the cost ranges and examples included here provide a rough sense of the scale of these kinds of expenditures.

The Role of State Energy Offices

IIJA and IRA direct unprecedented levels of funding for clean energy research, demonstration, and deployment and, as a result, are expected to create hundreds of thousands of new jobs in the sector.³ Through State and Territory Energy Offices, which will oversee and serve as a point of public-private coordination for a significant portion of these investments, states can improve clean energy job quality and access in their state in the following ways:

1. **Developing or supporting workforce training programs:** Many State Energy Offices offer or provide financial support for workforce training and readiness programs in a variety of clean energy technologies and occupations. Examples include the [North Carolina Department of Environmental Quality's Energy Efficiency Apprenticeship Program](#), the [Maryland Energy Administration's Offshore Wind Workforce Training Program](#), and the [California Energy Commission's Zero Emissions Vehicle Training Enhancement Program](#) with community colleges.
2. **Integrating job quality and access requirements or preferences into state clean energy spending:** State Energy Offices and other state agencies, such as Departments of General Services, can ensure that clean energy projects supported

³ Saha, Devashree, et al., "How a Clean Energy Economy Can Create Millions of Jobs in the US." *World Resources Institute*, September 2022.

by the state include job quality standards such as family-supporting wages, health care and retirement benefits, and strategies to maximize the involvement of local workers and women- and diverse-owned businesses.

3. **Informing improvements and updates to state workforce systems and clean energy activities:** Thanks to their roles convening stakeholders; overseeing energy market assessments and analyses; and developing energy and climate policies, programs, and plans, State Energy Offices have unique insight into the clean energy transition in their states and communities. In this capacity, they can be important partners to state workforce agencies to ensure that state-supported workforce systems and partnerships meet the urgent need for skilled and diverse workers to advance clean energy and climate solutions.
4. **Investing in clean energy entrepreneurship and STEM education:** While the build-out of clean energy infrastructure and achievement of climate goals will require more “boots on the ground” (those doing the work – builders, technicians, electricians, welders, and so on), it will also require expansions and changes across the corporate and business hierarchy. To this end, a diverse array of State Energy Offices have invested funds in technology and business innovation programs, including the Texas State Energy Conservation Office’s clean tech incubation partnership with the University of Texas at Austin and Texas A&M Engineering Experiment Station; the Mississippi Energy Office’s V-Quad project to support the launch of new businesses in energy and agriculture in partnership with HBCUs across the state; and the California Energy Commission’s Electric Program Investment Charge. Programs like these, along with the many State Energy Offices supporting K-12 education and career awareness programs, hold the potential to expand and evolve the business, policy, and other leaders making decisions and investments in the energy sector.

Funding Opportunities: Infrastructure Investment and Jobs Act (IIJA)

IIJA invests nearly \$75 billion in the clean energy sector, including about \$21 billion for delivering clean power, \$6.5 billion for energy efficiency and weatherization, and \$8.6 billion for clean energy manufacturing and workforce development.⁴ While the U.S. Department of Energy (DOE) and other federal agencies continue to release details regarding the implementation of IIJA and specific guidelines for eligible uses of the funds, current guidance indicates that states will have significant opportunities to direct funding toward energy-related workforce development efforts. The legislation includes some provisions that allocate specific funding for or focus exclusively on workforce development, as well as sections that allow project owners to set aside a portion of program funds to support workforce development. Additionally, DOE has announced that some competitive funding opportunities will require or prioritize proposals that promote workforce activities related to training, job quality, and equity.

⁴ The White House, “Building a Better America: A Guidebook to the Bipartisan Infrastructure Law for State, Local, Tribal, and Territorial Governments, and Other Partners,” May 2022.

IIJA: Dedicated Workforce Development Funding Opportunities

IIJA provides direct funding for clean energy workforce development through the Energy Auditor Training (Section 40503) and Future of Industry Program and Industrial Research and Assessment Centers (Section 40521) programs, as well as the Advancing Equity through Workforce Partnerships opportunity (Section 41007(c)(1)).

The Energy Auditor Training Program (Section 40503) provides \$40 million in direct funding to states to cover “any cost associated with” energy audit training or certification during financial year 2022 to 2026. Up to 10% of grant funds can be used to pay wages to trainees during their training period. Individual states cannot receive more than \$2 million, and the final grant amount will be based on the state’s application, needs, and population size. As part of the application, states must include a plan for training curriculum and the certifications provided, as well as the cost per trainee and proposed strategy for connecting trainees to job opportunities. DOE estimates an application opening date in the first quarter of 2023.⁵

The Future of Industry Program and Industrial Research and Assessment Centers (Section 40521) provides \$150 million in funding for institutions of higher education, trade schools, community colleges, and union training programs to create or expand Industrial Research and Assessment Centers (IRACs). These centers help assess the needs of small- and medium-sized manufacturer plant sites and identify ways to improve the sites’ energy efficiency and environmental performance, while promoting new technologies and coordinating research and development and technical assistance. A portion of the new IIJA funding for the IRAC program will provide 50% federal cost share for internships and apprenticeships that help implement the goals of the IRACs. While State Energy Offices will not receive Section 40521 funds directly, they can help encourage grant applications, facilitate partnerships, and support internship and apprenticeship programs receiving federal funds. DOE anticipates that applications will open in the fourth quarter of 2022.⁶

Although not directly appropriated by IIJA, the **Advancing Equity Through Workforce Partnerships** opportunity will use funding available through Section 41007(c)(1) to award \$10 million to “support multi-stakeholder high-road workforce development partnerships that help accelerate the deployment of solar energy while advancing the Administration’s priorities around worker empowerment, quality jobs with a free and fair choice for workers to join a union, and Energy and Environmental Justice (EJ) and Diversity, Equity, Inclusion, and Accessibility (DEIA) in the clean energy workforce.”⁷ States are eligible to apply for this opportunity with a team, either as a prime or sub-recipient. Full applications are due December 16, 2022.⁸

IIJA: Flexible Funding Opportunities

Although not dedicated exclusively to workforce development, several sections within IIJA either set aside a portion of funds for workforce initiatives or allow workforce spending as an eligible use of funds. For example, Section 40109 directs an additional \$500 million to the

⁵ U.S. Department of Energy, “[Energy Auditor Training Grant Program](#),” October 2022.

⁶ U.S. Department of Energy, “[Building, Training, and Assessment Centers](#),” 2022.

⁷ U.S. Department of Energy, “[DE-FOA-0002769 Teaming Partner List](#),” 2022.

⁸ U.S. Department of Energy, “[Funding Notice: Advancing Equity Through Workforce Partnerships](#),” July 2022.

U.S. State Energy Program (SEP), a longstanding program that provides flexible, formula-based funds to State Energy Offices each year. This funding can be used for a number of energy-related activities at the state level, including training and education, such as “training workshops, practice manuals, and testing for each area of energy efficiency technology.”⁹ Additionally, because SEP is covered under the Justice40 Initiative, DOE strongly recommends that at least 40% of the funding benefits, which include access to clean energy jobs and training, reach disadvantaged communities.¹⁰ The application instructions also note that DOE will provide “analysis, resources, and peer exchange opportunities to advance investments in the clean energy workforce.”¹¹ IJJA SEP applications were due by December 5, 2022, with funding expected to be released in the first quarter of 2023.¹²

The **Weatherization Assistance Program** (Section 40551) also received an influx of new funding (\$3.5 billion) through IJJA, which will be distributed to State Weatherization Administrators¹³ through formula-based grants. Along with new incentives for home energy efficiency and electrification retrofits, this additional weatherization funding will increase demand for contractors, auditors, and electricians. IJJA flow-down requirements, including the Davis-Bacon prevailing wage requirement, will apply to the additional WAP funding, as will several DOE priorities, including “workforce development and diversity [and] inclusion and equity.”¹⁴ Applicants must also submit a Training and Technical Assistance (T&TA) plan, and each state will receive a T&TA allocation “to support workforce development activities” (\$5.5 million total distributed across all states).^{15,16} Eligible uses of the T&TA allocation include: “participation, travel, logistics of training and technical assistance activities and events.”¹⁷ DOE released the first round of new WAP funding in the first quarter of 2022, with additional funding expected in the third quarter of 2023.¹⁸

In addition to WAP and SEP, IJJA funds two new programs that incorporate workforce development components into planning and reporting guidance. **Section 40101(d)** provides grants to states and territories to enhance grid resilience, allocating \$459 million annually across eligible entities for five years. According to the Administrative and Legal Requirements Document (ALRD), recipients must include several workforce-related objectives and metrics in the Program Narrative, with a special emphasis on inclusion of underrepresented workers, community partnerships, and job quality metrics.¹⁹ Applications for States and Territories are due by March 31, 2023.²⁰ In addition to the new resilience funding, **Section 40541** provides \$500 million in grants for energy retrofits at public school facilities through the Renew America’s Schools Grant and Energy CLASS prize. Local education agencies, in coordination with schools, state and local governments, and other community partners, are eligible to apply. IJJA designates up to five percent of awards for “operation and maintenance training” and up to three percent for “develop a continuing

⁹ U.S. Department of Energy, “[SEP Notice 22-03](#),” August 2022.

¹⁰ *Ibid.*

¹¹ *Ibid.*

¹² U.S. Department of Energy, “[Modifications to State Energy Program Notice 22-03](#),” November 2022.

¹³ State Weatherization Administrators are sometimes, but not always, housed within State Energy Offices.

¹⁴ U.S. Department of Energy, “[Weatherization Program Notice BIL 22-1](#),” March 2022.

¹⁵ *Ibid.*

¹⁶ U.S. Department of Energy, “[Weatherization Program Notice BIL 22-2](#),” March 2022.

¹⁷ U.S. Department of Energy, “[Weatherization Assistance Program or Low-Income Persons: Application Instructions](#),” March 2022.

¹⁸ U.S. Department of Energy, “[Clean Energy Infrastructure: Weatherization Assistance Program](#),” 2022.

¹⁹ U.S. Department of Energy, [Administrative and Legal Requirements Document DE-FOA-0002736: Amendment 3](#).

²⁰ National Energy Technology Laboratory, “[Section 40101\(D\) Formula Grants To States & Indian Tribes](#),” September 2022.

education curriculum relating to energy improvement.”²¹ In its Application Instructions, DOE requires applicants to provide a Community Benefits Plan stating how the project will invest in workers and support engagement with labor groups and communities, among other equity goals.²² Concept papers for the first round of the Renew America’s Schools Grant are due by January 26, 2023, and full applications are due April 21, 2023.²³

IJJA: Competitive Funding Opportunities that Promote Workforce Development

Given the increasing demand for infrastructure workers and DOE’s focus on creating equitable access to good quality jobs, several of the competitive IJJA grants require or prioritize proposals that promote key workforce elements related to training, job quality, and equity. For example, in the Funding Opportunity Announcement (FOA) for the **Regional Clean Hydrogen Hubs** program, which awards \$8 billion to six to ten recipients, DOE requires a Community Benefits Plan that includes “a statement describing any plans to negotiate a Community Benefits Agreement, Good Neighbor Agreement, Project Labor Agreement, Community Workforce Agreement, and/or other collective bargaining agreements.”²⁴ The Community Benefits Plan must also include a “comprehensive plan for the creation and retention of high-paying quality jobs and development of a skilled workforce,” a Diversity Equity Inclusion and Accessibility plan, and a Justice40 section.²⁵ To help applicants develop a Community Benefits Plan, the DOE Office of Clean Energy Demonstrations published a guide, which is available on the hub website.²⁶ Concept papers for the Regional Clean Hydrogen Hub opportunity were due by November 7, 2022, and full applications are due by April 7, 2023.²⁷

Although the application dates for these competitive grants have passed, the **Solar and Wind Grid Services and Reliability Demonstration** grant (Section 41007) and the **Battery Materials Processing and Battery Manufacturing** grants (Section 40207) included similar workforce-related requirements and criteria. The Solar and Wind Grid Services and Reliability Demonstration grant provides \$26 million to projects that advance solar and wind technology research, development, and deployment.²⁸ Eligible activities include workforce development, and applicants were required to include a Community Benefits Plan containing the following elements: community and labor engagement; quality jobs; diversity, equity, inclusion, and accessibility; and Justice40. Similarly, the FOA for the Battery Materials Processing and Battery Manufacturing grants (\$3.1 billion) required applicants to submit an equity plan that addresses training and job quality.²⁹

Funding Opportunities: Inflation Reduction Act (IRA)

IRA will invest approximately \$369 billion to address climate change and energy security. Although many of the details and implementation guidance have yet to be

²¹ [Infrastructure Investment and Jobs Act](#), November 2021.

²² U.S. Department of Energy, [“Funding Opportunity Announcement for Energy Improvements at Public K-12 School Facilities – Renew America’s Schools.”](#) November 2022.

²³ U.S. Department of Energy, [“Grants for Energy Improvements at Public School Facilities.”](#) 2022.

²⁴ U.S. Department of Energy, [“Regional Clean Hydrogen Hubs Funding Opportunity Announcement.”](#) September 2022.

²⁵ *Ibid.*

²⁶ U.S. Department of Energy, [“Community Benefits Plan Guidance.”](#) October 2022.

²⁷ U.S. Department of Energy, [“Regional Clean Hydrogen Hubs.”](#) 2022.

²⁸ U.S. Department of Energy, [Funding Opportunity Announcement: Solar and Wind Grid Services and Reliability Demonstration.](#) August 2022.

²⁹ U.S. Department of Energy, [Battery Materials Processing Grants](#), 2022.

released, an initial analysis reveals significant grant opportunities for State Energy Offices and relevant partners that could be used for workforce development efforts. IRA also increases and expands tax credits for most clean energy technologies, many of which include added incentives for certain workforce development and equity criteria.

IRA: Workforce-related Grant Opportunities

Several key provisions of IRA will flow directly through State Energy Offices and can help support workforce development efforts, particularly in the home retrofit space. Notably, IRA appropriates about \$8.8 billion to State and Territory Energy Offices for the **Home Energy Performance-Based Whole-House Rebates (HOMES) program** (Section 50121) and the **High-Efficiency Electric Home Rebate Program** (Section 50122). This influx of funding will prompt a new wave of energy-saving retrofits, which will create significant demand for jobs in the sector across every state. Additionally, IRA allocates \$200 million for **State-Based Home Energy Efficiency Contractor Training Grants** (Section 50123). State Energy Offices will administer these funds, which can be used for training, education, and certification costs for contractors tasked with implementing the above programs, as well state partnership programs with non-profit organizations.³⁰

Although not allocated directly to State Energy Offices, the following grants provide opportunities for State Energy Offices to work with their state and local partners to disseminate greenhouse gas reduction funds in a way that advances workforce development and economic justice. For example, the list of activities eligible under the \$2.8 billion **Environmental and Climate Justice Block Grants** program (Section 60201) includes investments in workforce development. While states are not listed as an eligible recipient, State Energy Offices can collaborate with local governments, higher education, non-profit, and tribal partners. Section 60103 provides EPA with a \$27 billion **Greenhouse Gas Reduction Fund** for competitive grants that can be used for loans, grants, or other financial or technical assistance, including \$7 billion “to enable low-income and disadvantaged communities to deploy or benefit from zero-emission technologies.” States are listed as an eligible recipient. While unclear how EPA will define “benefit,” this could possibly include economic benefits related to workforce development programs within these communities. Additionally, in its Request for Information, EPA sought input on how the program can encourage job quality and ensure labor standards are met.³¹ Similarly, the **Climate Pollution Reduction Grants** program (Section 60114) gives EPA funds to award \$250 million in planning grants and \$4.75 billion in implementation grants for activities that reduce greenhouse gas air pollution. Because states are listed as an eligible recipient, State Energy Offices could work with state environmental agencies and other partners to apply for these grants and potentially use implementation dollars for workforce development purposes.³²

IRA: Workforce Provisions within Tax Credits

In addition to the grants outlined above, the tax provisions in IRA contain strong incentives for clean energy projects to pay higher wages and hire registered apprentices. While project

³⁰ [Inflation Reduction Act](#), August 2022.

³¹ Environmental Protection Agency, “[Request for Information – Greenhouse Gas Reduction Fund](#),” October 2022.

³² *Ibid.*

owners and developers will largely take advantage of the credits, the incorporation of workforce components could help normalize prevailing wage and apprenticeship utilization, which could make state-level policies easier to implement and create a baseline for future improvements in clean energy job quality and career access. Specifically, the Act provides a **bonus rate credit** for projects that meet prevailing wage and apprenticeship requirements.³³ The prevailing wage requirement applies to contractors and subcontractors of projects greater than 1MW and includes a non-compliance penalty of \$5,000 per worker paid below the prevailing wage rate. It also requires non-compliant recipients to pay those workers the wage difference owed, plus interest. The apprenticeship criteria for the bonus credit requires contractors and subcontractors to ensure a specified portion of labor hours is performed by qualified apprentices (5% for construction beginning in 2022, 10% in 2023, and 15% from 2024 on). Bonus tax credit recipients who do not comply will pay a \$500 fee per labor hour that did not meet the apprenticeship utilization requirement. However, if the recipient makes a “good faith effort” to hire apprentices but cannot do so due to a lack of qualified apprentices, the project is exempt from the requirement.³⁴

It is worth noting that these credits will increase demand for registered apprentices in clean energy but do not guarantee or increase underrepresented demographic groups’ access to apprenticeship programs and opportunities. For this reason, states could consider augmenting supports for apprentices to complete training programs successfully, fostering direct or preferential entry for skilled workers of underrepresented demographic groups to obtain apprenticeship slots, or other ways to improve diversity and opportunity in clean energy apprenticeship.

Some of the tax provisions also include a 10% increase or 10 percentage point increase for projects located in **energy communities**³⁵ or projects that meet **domestic content requirements**.³⁶ By encouraging clean energy projects in energy communities and projects that use materials and components manufactured in the United States, these credit adders could expand access to clean energy jobs in economically distressed areas and increase overall demand for domestic clean energy jobs. Many of the credits also provide **direct pay and transferability options**, which allow non-taxable entities such as state governments to leverage the financial benefits of the credits more easily. *Table 1* below summarizes each tax provision and the requirements or bonus amounts related to workforce development.

³³ Inflation Reduction Act, Section 13101 f (6), August 2022.

³⁴ *Ibid.*

³⁵ The term “energy community” is defined in the statute as: “(i) a brownfield site (as defined in subparagraphs (A), (B), and (D)(ii)(III) of section 101(39) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601(39))), “(ii) a metropolitan statistical area or non-metropolitan statistical area which “(I) has (or, at any time during the period beginning after December 31, 2009, had) 0.17 percent or greater direct employment or 25 percent or greater local tax revenues related to the extraction, processing, transport, or storage of coal, oil, or natural gas (as determined by the Secretary), and “(II) has an unemployment rate at or above the national average unemployment rate for the previous year (as determined by the Secretary), or “(iii) a census tract— “(I) in which— “(aa) after December 31, 1999, a coal mine has closed, or “(bb) after December 31, 2009, a coal-fired electric generating unit has been retired, or “(II) which is directly adjoining to any census tract described in sub clause (I).”

³⁶ To meet the domestic content requirement, qualified facilities must certify “that any steel, iron, or manufactured product which is a component of such facility...was produced in the United States.” A manufactured product can be considered domestic content if a certain percentage of its components are “mined, produced, or manufactured in the United States” (typically 40% or 20% for offshore wind).

Table 1. Summary of Workforce-related Incentives in IRA Tax Provisions

Section Number	Tax Provision Name	Base Rate Credit	Bonus Rate Credit*	Credit adders**	Direct Pay and Credit Transfer allowed?
13101	Extension and modification of credit for electricity produced from certain renewable resources	\$5/MWh	\$25/MWh	10% increase	Yes
13102	Extension and modification of energy credit	6%	30%	10 percentage point increase	Yes
13104	Extension and modification of credit for carbon oxide sequestration	\$12/17/26/36 per ton***	\$85/60/130/180 per ton***	N/A	Yes
13105	Zero-emission nuclear power production credit	\$3/MWh	\$15/MWh	N/A	No
13304	Extension, increase, and modification of new energy efficient home credit (45L)	\$500/unit	\$2500/unit	N/A	No
13501	Extension of the advanced energy manufacturing credit	6%	30%	At least \$4B out of \$10B reserved for energy communities	No
13701	Clean Electricity Production Credit (after 12/31/24)	\$3/MWh	\$25/MWh	10% increase	Yes
13702	Clean Electricity Investment Credit (after 12/31/24)	6%	30%	10 percentage point increase	Yes

*If prevailing wage and apprenticeship requirements met

**If domestic content requirements are met or if located in an energy community

***Base and bonus credit amounts vary by type of CCUS (listed from lowest to highest rate), including EOR, sequestration, direct air capture use, direct air capture sequestration

Estimated Workforce Development Program and Support Services Costs

Given the scale of funding available for clean energy in IRA and IIJA and the opportunity to create good-quality jobs, State Energy Offices have a unique role to play in leveraging federal investments to bolster training programs and incorporate workforce development into spending on clean energy projects and programs. To help state energy leaders have a sense of the cost to augment workforce development programs and support services, this section raises some example expenditures and ranges from various sources.

Below are estimated ranges for different types of workforce programs and services that State Energy Offices can consider supporting, given the funding flexibilities detailed above. Expenditures for workforce development program and support services vary significantly by geography, services provided, and program degree of impact, among other factors. **These estimates are not intended to suggest ideal grant sizes or present the full range of worthwhile, effective interventions.** Rather, these ranges are intended to illustrate rough sizes associated with augmenting or scaling existing workforce-related programs and services, or to support services that may otherwise not be available to jobseekers or workforce training participants. It is meant to place these expenditures in the context of broader clean energy spending. Table 2 contains the specific examples and sources that informed the ranges below.

Estimated cost of investing in training programs:

- **Pre-apprenticeship (includes some wraparound supports):** \$4,000 to \$10,000 per participant
- **Registered apprenticeship (includes some wraparound supports):** \$3,000 to \$12,000 per participant
- **Sectoral training programs:** \$10,000 to \$12,000 per participant

Estimated cost of boosting wraparound support services aimed towards improving completion for existing training participants:

- **Childcare subsidy:** \$5,000 to \$25,000 annually per young child
- **Other wraparound supports:** Varies widely depending on services offered and share of participants accessing services. Oregon’s Highway Construction Workforce Development Program, run as a partnership between the Oregon Department of Transportation and Oregon Bureau of Labor and Industries, is a notable example of a state allocating federal funds that flow through an infrastructure agency towards supportive workforce program services geared towards improving inclusion and diversity in highway construction. This program has seen evidence of success in improving retention and completion of apprenticeships among women and people of color in highway construction trades.³⁷ The program’s expenditures include about \$850 per enrolled participant on supportive services such as transportation, childcare, and tools over a ten-year period (additional details available in *Table 2* below). Programs offering comprehensive wraparound supports (financial and non-financial) to community college students generally spend between \$5,000 and \$14,000 per participant.³⁸

Table 2. Example Costs for Workforce Training Programs and Wraparound Services

Expenditure examples: Training program investments ³⁹			
Program type	Cost	Program, year	Notes/context
Pre-apprenticeship	\$4,000 to \$8,000 per participant	New Jersey Department of Labor and Workforce Development, Pre-apprenticeship in Career Education Grant, 2022 ⁴⁰	Funding can be used for supportive services
Pre-apprenticeship	\$10,000 per participant	Illinois Department of Commerce and Economic Opportunity, Illinois Works Pre-apprenticeship Program, 2022 ⁴¹	Funding can be used for supportive services ⁴²

³⁷ Kelly, Maura and Wilkinson, Lindsey, “[2020 Evaluation of the Highway Construction Workforce Development Program.](#)” *Portland State University Department of Sociology*, October 2020.

³⁸ These programs generally include tuition assistance as part of a suite of support services, though many participants are likely also eligible for tuition assistance through Pell grants.

³⁹ Information in this table was gathered directly from program staff where noted, and otherwise gathered from publicly available sources. Though this resource aims to gather the most recent year of program information wherever possible, dollar amounts are sourced from different years and not adjusted for inflation.

⁴⁰ New Jersey Department of Labor and Workforce Development, “[Pre-Apprenticeship in Career Education \(PACE\) Program \(Round 2 Funding\) Notice of Grant Opportunity.](#)” May 2022.

⁴¹ Illinois Department of Economic Opportunity, “[Illinois Works Pre-apprenticeship Program Notice of Funding Opportunity.](#)” August 2022.

⁴² Illinois Department of Economic Opportunity, “[Illinois Works Pre-apprenticeship Program 2022 Grantee Manual.](#)” February 2022.

Registered apprenticeship	Up to \$8,000 per new participant enrolled	U.S. DOL: State Apprenticeship Expansion, Equity and Innovation (SAEEI) Grant, 2021 ⁴³	When other funding sources are not available, grantees can use up to 10% of funds for supportive services
Registered apprenticeship	Up to \$12,000 per participant	New Jersey Department of Labor and Workforce Development: Growing Apprenticeship in Nontraditional Sectors Grant, 2022 ⁴⁴	18-month “initial funding for programs that will not rely on state funding in perpetuity” Funding can be used for supportive services
Registered apprenticeship	\$3,000 per participant	Oklahoma Registered Apprenticeship Incentive Funds Program, 2022 ⁴⁵	Funding can be used for supportive services
Registered apprenticeship	About \$5,000 per participant	Oregon Department of Transportation-Bureau of Labor and Industries Workforce Development Program, 2011-2022 ⁴⁶	Funding can be used for supportive services, including pre-apprenticeship courses
Either pre-apprenticeship or registered apprenticeship	\$9,000 per participant	Pennsylvania Pre-apprenticeship and Apprenticeship Grant Program, 2022 ⁴⁷	\$3,000 per participant per year, for a maximum of three years
Either pre-apprenticeship or registered apprenticeship	\$4,076 per participant	Oregon Bureau of Labor and Industries Future Ready Oregon Grants, 2022 ⁴⁸	Averaged over 10 programs, 8 pre-apprenticeships and 2 registered apprenticeships Funding can be used for supportive services
Sectoral training program (community college-based)	\$10,501 per participant	Project Quest (referenced by Center on Budget and Policy Priorities), 2018 ⁴⁹	
Sectoral training program	\$10,370 per participant	Per Scholas (referenced by Center on Budget and Policy Priorities), 2018 ⁵⁰	
Sectoral training program	\$11,599 per participant (portion of program costs <i>not</i> covered by employers)	YearUp (referenced by Abt Associates), 2018 ⁵¹	Total cost per participant was \$28,290; 59% of per-participant costs were financed by employers, with remaining costs sourced through philanthropy, private sector donors, and public dollars
Expenditure examples: Additional supportive services to improve completion for training participants			
<i>Support type</i>	<i>Cost</i>	<i>Source, year</i>	<i>Notes/context</i>
Wraparounds supports for community college students	\$5,500 - \$14,209 per student	Accelerated Study in Associate Programs, 2018/2022	2022 estimates: ⁵² - In New York: Additional \$10,320 per student over three years, above usual allocations

⁴³ U.S. Department of Labor, “[State Apprenticeship Expansion, Equity and Innovation \(SAEEI\) Grants Notice of Funding Opportunity](#),” March 2021.

⁴⁴ New Jersey Department of Labor and Workforce Development, “[Growing Apprenticeship in Nontraditional Sectors \(GAINS\) Notice of Grant Opportunity](#),” September 2022.

⁴⁵ Oklahoma Office of Workforce Development, “[Registered Apprenticeship Incentive Funds Announcement](#),” 2022.

⁴⁶ From direct communication with the ODOT-BOLI program, October 2022.

⁴⁷ Pennsylvania Department of Community and Economic Development, “[Pre-Apprentice and Apprenticeship Grant Program](#),” 2022.

⁴⁸ Oregon Bureau of Labor and Industries, “[Future Ready Oregon Round 1 Grant Awards](#),” 2022.

⁴⁹ Pavetti, Ladonna, “[Opportunity-Boosting Job Preparedness Takes Significant Investments, Evidence Shows](#),” Center on Budget and Policy Priorities, April 2018.

⁵⁰ *Ibid.*

⁵¹ Fein, David and Jill Hamadyk, “[Bridging the Opportunity Divide for Low-Income Youth: Implementation and Early Impacts of the Year Up Program: Pathways for Advancing Careers and Education \(PACE\)](#),” Abt Associates, May 2018.

⁵² Urwitz, Jay, “[Where More Money Would Matter Most](#),” Inside Higher Education, March 2022.

			<ul style="list-style-type: none"> - In Ohio: Additional \$5,500 per student over three years, above usual allocations 2018 estimates (Center on Budget and Policy Priorities).⁵³ - \$14,209 per community college student
Wraparounds supports for community college students	\$13,750 per student	The Valley Initiative for Development and Enhancement (referenced by Center on Budget and Policy Priorities), 2018 ⁵⁴	
Supportive services for apprenticeship participants	Total: ~\$850 per participant averaged over all enrolled	Oregon Department of Transportation-Bureau of Labor and Industries Workforce Development Program, 2011-2022 ⁵⁵	
<i>Transportation</i>	<i>~\$850 per participant accessing this type of service</i>		<i>23% of participants accessed transportation services</i>
<i>Childcare</i>	<i>~\$4,550 per participant accessing services</i>		<i>8% of participants accessed childcare services</i>
<i>Job readiness (work tools, work clothes, PPE)</i>	<i>~\$300 per participant accessing this type of service</i>		<i>67% of participants accessed job readiness services</i>
<i>Hardship assistance</i>	<i>~\$850 per participant accessing this type of service</i>		<i>Availability began in 2016</i> <i>9% of participants accessed hardship assistance services</i>
Wraparound supports for pre-apprenticeship participants	Funding per participant ranges very widely – depending on the size of the program, the maximum funding per participant is anywhere from \$435 to \$44,000)	Washington State Department of Labor and Industries grant for pre-apprenticeship wraparound support services, 2022 ⁵⁶	Covers a wide variety of supportive services ⁵⁷
Childcare	Ranges from \$5,436 in Mississippi to \$24,243 in Washington, D.C. (annual)	Economic Policy Institute, 2020 ⁵⁸	Estimates cost of care for infants, generally the most expensive type of childcare
Childcare	Average annual cost ranges from \$10,668 - \$15,888 for center-	Center for American Progress, 2021 ⁵⁹	Estimates cost of care for infants and toddlers

⁵³ Pavetti, Ladonna, “Opportunity-Boosting Job Preparedness Takes Significant Investments, Evidence Shows.” Center on Budget and Policy Priorities, April 2018.

⁵⁴ *Ibid.*

⁵⁵ From direct communication with the ODOT-BOLI program, October 2022.

⁵⁶ Washington State Department of Labor and Industries, “Apprenticeship State Grant Application.” 2022.

⁵⁷ Includes “community services; transportation to job site; child care and dependent care; housing, needs-related payments; educational testing; reasonable accommodations for individuals with disabilities; legal aid services; health care; health or dental care; uniforms or other appropriate work attire and work related tools, including such items as eyeglasses and protective eye gear; books, fees, school supplies, tuition and other necessary items...; payments and feeds for employment and training-related applications, tests, and certifications”

⁵⁸ Economic Policy Institute, “Child care costs in the United States.” October 2020.

⁵⁹ Workman, Simon, “The True Cost of High-Quality Child Care Across the United States.” Center for American Progress, June 2021.

	based care, \$13,692 for family care		
Childcare	Average annual cost for center-based care is \$10,451, family care is \$8,331	Child Care Aware of America survey, 2018 ⁶⁰	
Childcare		U.S. DOL, National Database of Childcare Prices ⁶¹	Database containing county-level costs by type of care, age of child

Conclusion

State and Territory Energy Offices often play a critical role in shaping and supporting clean energy workforce development efforts in their state, by convening stakeholders, providing funding, and informing planning decisions. Recent climate and infrastructure legislation at the federal level provide State Energy Offices with a unique opportunity to improve the quality of clean energy jobs and promote broader access to careers in the sector, particularly for communities and demographic groups historically excluded from or harmed by the energy industry. This resource compiles the relevant sections of IIJA and IRA that allow for or encourage states to incorporate workforce development components into grant planning and program implementation. It also provides cost estimates for workforce development programs and support services to help states better understand the rough costs to augment services that improve training program completion and ultimately broaden access to good quality jobs in clean energy.

Note: The analysis of IIJA and IRA funding opportunities reflects NASEO’s interpretation of guidance available as of November 2022 and the text of the statutes. Please refer to official federal guidance prior to planning or applying for this funding. If you have questions or comments about the content of this resource, please contact Grace Lowe, Program Manager at NASEO, at glowe@naseo.org.

⁶⁰ Tekin, Erdal, “An Overview of the Child Care Market in the United States,” National Bureau of Economic Research (NBER), 2021.
⁶¹ U.S. Department of Labor Women’s Bureau, “National Database of Childcare Prices.”