



An Evaluation Framework for State Energy Offices' Energy Efficiency and Clean Energy Workforce Programs

Rohini Srivastava,¹ Roxana Ayala,¹ Robin Tuttle,² and Allison Moe²

1 American Council for an Energy Efficient Economy

2 National Renewable Energy Laboratory

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List of Acronyms

ACEEE	American Council for an Energy-Efficient Economy
ACES	Architecture Construction Engineering Students
CPUC	California Public Utility Commission
DOE	U.S. Department of Energy
ECC	Emerald Cities Collaborative
NREL	National Renewable Energy Laboratory
PAGE	Performance and Accountability for Grants in Energy
SEO	State Energy Office
SoCalREN	Southern California Regional Energy Network

Executive Summary

Unprecedented federal investments and decarbonization goals set forth by legislatures and governors have created increased demand for an energy efficiency and clean energy workforce. Meeting this demand will require a pool of skilled professionals—yet many employers in the energy efficiency and clean energy sector experience challenges with recruiting or hiring skilled professionals. In a recent study, the U.S. Department of Energy (DOE) found that 49.9% of the surveyed energy efficiency employers reported “high” difficulty finding qualified professionals (DOE 2023). Fortunately, investments in the energy efficiency and clean energy sector bring forth promising opportunities to promote the growth of skilled professionals, all while centering diversity and inclusion practices.

Many stakeholders play a role in expanding the energy efficiency workforce by recruiting, educating, and training individuals via workforce initiatives. State energy offices (SEOs) are one such stakeholder poised to help meet the demand for a growing energy efficiency and clean energy workforce. SEOs possess the leadership and expertise to fund or design workforce programming and advance a workforce that is diverse and representative of the communities they serve. In the process, an intentional effort to conduct program evaluations is pivotal to ensure the success of workforce programs that increase the availability of skilled workers. This is particularly important to deliver extensive Bipartisan Infrastructure Law- and Inflation Reduction Act-funded energy efficiency and clean energy projects. The use of a workforce evaluation framework can help SEOs understand how programmatic outcomes and performance compare to goals and objectives, which can help maximize program effectiveness and direct resources and funds to improve them. Furthermore, a workforce evaluation framework can help SEOs incorporate equity considerations into routine decision-making, program design, and distribution of funds.

In this paper, we propose a workforce evaluation framework that SEOs can use to track and measure the progress, performance, and effectiveness of the energy efficiency and clean energy workforce programs that they fund and/or implement. We start by summarizing how SEOs currently report workforce program outcomes; review existing energy efficiency and clean energy workforce program components, evaluation metrics, and evaluation methods; and based on the findings, propose an evaluation framework that SEOs can use to measure their programs’ progress and refine them for maximize impact. The evaluation framework includes guiding questions that offer insight into the ways the program is performing, determine if a program’s goals, objectives, and activities were effective or ineffective, and help identify ways to adjust the program to better align outcomes with goals. The appendix includes a suggested definition for energy equity; a list of evaluation metrics to assess program goals, objectives and activities; and tools and resources to augment or develop program components.

This paper is intended to offer a comprehensive and research-based examination of evaluation as it relates to SEOs’ workforce efforts. Future efforts are planned to develop a follow-on resource, tailored for easy application by SEOs.

Aligning Workforce Development Program Goals and Metrics in Evaluation Methods

To develop the evaluation framework, we first conducted a literature review to understand (1) how SEO and other energy workforce program administrators conduct program evaluations, and (2) what metrics are used across the industry to communicate progress of a program and report on equitable outcomes. The evaluation methods we outline in this paper represent the most common methods to evaluate programs based on their intended program goal(s). Metrics are an essential part of an evaluation framework, and our literature review and analysis unveiled a variety of possible metrics for evaluating a workforce program. The analysis of methods and metrics informed the development of the workforce program evaluation framework. We also consulted with state, regional, and local workforce program administrators and experts to uncover additional evaluation methods and associated metrics that could be used for an effective evaluation. While we did not find many comprehensive evaluation frameworks currently in use by energy efficiency and clean energy or SEO workforce program administrators, the evaluation methods provided a starting point for developing the proposed framework.

Proposed Workforce Evaluation Framework

Prior to using the evaluation framework outlined in this paper, SEOs should have a clear understanding of the workforce development program components they are implementing or funding. We acknowledge that SEOs are at different stages in the planning and development of workforce efforts. Therefore, we include a summary of the common program components, including: (1) goals and opportunities, (2) objectives, (3) stakeholder engagement and outreach, (4) activities, (5) metrics and tracking, and (6) reporting. A clear understanding of each program component can inform the selection of metrics and influence the evaluation process.

Our proposed evaluation framework builds on findings from research and is structured to assess the six components of a workforce program noted above. This evaluation framework includes characteristics of a logic model, guiding questions, and a list of metrics that can capture data at the program level, participant level, and regarding equitable outcomes. The framework then offers SEOs a step-by-step approach to evaluate their program periodically and pinpoint program components that may need adjusting. The following is a breakdown of the framework's steps, followed by Figure ES-1, which shows this information visually:

1. *Evaluating opportunities and goals:* Evaluate the identified “big-picture” outcome(s) a program intends to achieve during its life cycle
2. *Evaluating objectives:* Evaluate the program’s objectives and associated metrics, which should provide direction on how to achieve the program goals
3. *Evaluating stakeholder engagement and outreach:* Evaluate engagement practices with relevant stakeholders, which should help inform the types of program activities, workforce services, and delivery of programs
4. *Evaluating activities:* Evaluate the set of tasks selected to help meet the program’s objectives
5. *Tracking metrics and data collection:* Assess data collection used to track and measure a program’s performance, progress, and impact

6. *Reporting*: Disclose and disseminate findings to ensure accountability and transparency among the public and stakeholders.



Figure ES-1. Overview of proposed SEO workforce program evaluation framework

As SEOs look to design, fund, implement, or revamp energy efficiency and clean energy workforce programs, they should consider using this proposed evaluation framework. The framework is designed to be iterative, and offers guidance to SEOs on how to perform a comprehensive evaluation of their workforce program. SEOs can filter through our suggested metrics to identify the most effective ways to track and collect data about their program. SEOs can use findings from the data they collect to assess the program’s progress in meeting its goals or objectives, and to determine the extent of its benefit to marginalized communities. Using this proposed framework can enable SEOs to tailor or fund workforce programs relevant to the evolving needs of the energy efficiency and clean energy sector, and advance a workforce that is inclusive and diverse—thereby maximizing the success of their programs.

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Glossary

For this paper, the authors have agreed on the following definitions for the key terms below:

- **Clean energy** is energy produced from natural sources (e.g., solar, water, wind, geothermal, bioenergy), which typically produce minimal environmental pollution.
- **Energy efficiency** “is the use of less energy to produce or perform the same task” (EERE n.d.).
- **Equity** is defined using a sustainability framework with four dimensions, outlined in the Urban Sustainability Directors Network’s report, *Equity in Sustainability* (Park 2014). The four dimensions are procedural, structural, distributional, and transgenerational equity. For more details on the definition of energy equity, see [Appendix A](#).
- **Equity-focused metric** is an indicator used to track and measure activities developed to advance equity-related goals or outcomes.
- **Evaluation framework** is a tool for evaluating programs, policies, or services through a step-by-step approach and accompanying metrics. A framework helps and establishes approaches to (1) measure and track program performance and outcomes compared to program goals, (2) collect data on a program’s impact among targeted populations, and (3) establish an action plan for making programmatic changes if goals are not achieved.
- **Marginalized communities** is defined as those communities most impacted by decision-making processes and whose life outcomes are disproportionately affected by social structures. These groups may include low-income residents, youth, the elderly, recently arrived immigrants, those with limited English proficiency, people of color, returning citizens, people with disabilities, and the unhoused. In this paper we may refer to marginalized communities as disadvantaged or disinvested communities in some context.
- **Metric** is a numeric indicator used to collect, track, and measure programmatic outcomes.
- **Program evaluation** is used to describe the act of tracking and measuring the performance, outcome, and success of a program, service, or activity against established goals and/or objectives.
- **Workforce development** is an approach to prepare individuals with the knowledge, skills, and support to successfully meet the current and/or needs of an industry and its employers. This can be accomplished through several opportunities including public awareness, training and education (including on-the-job training, and apprenticeships), job readiness and wraparound services, upskilling or reskilling existing workers, and promoting worker retention and career growth. Throughout this paper, we use the term workforce development to describe programs, initiatives, or training related to energy efficiency and clean energy.

1 Background

Increased federal funding for energy efficiency and clean energy projects over the next several years will improve the deployment of efficient technologies and accelerate the energy transition.¹ Meeting the demand for energy efficiency services and projects nationwide will require a pipeline of skilled professionals; without it the United States may not take full advantage of federal investments. It is estimated that new federal climate and infrastructure investments could produce nearly 676,000 jobs over the next decade (TNC 2023). Some of this federal funding will flow through state energy offices (SEOs), in addition to annual State Energy Program funding, with a portion of those funds earmarked for use in increasing the number of skilled professionals in the energy efficiency sector.

SEOs have a unique opportunity to meet and fill the demand for energy efficiency and clean energy professionals by designing new workforce programs or by funding existing workforce programs or their expansion.² Through these new funding sources, SEOs are being asked to think strategically about prioritizing equity to build a diverse and inclusive workforce. Given their leadership in dispersing funding and promoting energy efficiency and clean energy policies and programs, SEOs are well positioned to create and support workforce initiatives, education programs, and training opportunities for professionals or job seekers. In this paper, we propose an evaluation framework that SEOs can use to track and measure the progress, impact, and performance of their energy efficiency workforce development programs. Additionally, the framework offers guidance on how to emphasize or update programming to incorporate equity considerations. An evaluation framework can enable SEOs to more consistently:

- Review key program components (e.g., objectives, activities) to compare program outcomes to programmatic goals
- Ensure program components or desired program changes produce equitable outcomes and do not create barriers to program participation
- Collect socio-demographic data, when possible, to facilitate equitable outreach to targeted audiences and diversify the workforce
- Capture workforce data (e.g., certificates earned by program participants, number of trainings completed) to determine the effectiveness of a program's activities.

Comparing programmatic outcomes to program goals can help maximize the effectiveness of the program and enable SEOs to more effectively respond to the accelerated rollout of energy efficiency and clean energy deployment in the coming years. As SEOs work to incorporate equity considerations into routine decision-making, program development, and distribution of funds, the use of an evaluation framework that tracks and discloses their findings can help SEOs keep accountability to stakeholders, including employers and employees.

¹ The Bipartisan Infrastructure Law and the Inflation Reduction Act allocate more than \$25 billion for programs and tax incentives to improve energy efficiency, electrify, and reduce greenhouse gas emissions from existing homes (Ungar and Nadel 2022).

² The U.S. Department of Energy's State Energy Program provides funding to SEOs to advance energy security and state-led energy initiatives.

1.1 Considerations for SEO Program Reporting

SEOs are required to document and report on their use of annual State Energy Program funds via the Performance and Accountability for Grants in Energy (PAGE) system.³ At the time of writing this paper, the PAGE system includes 11 core program areas⁴ with metrics that (1) help describe the SEO’s program’s goal(s) and (2) assess the program’s impact. SEOs are only required to report on one metric total per program but are encouraged to report on metrics for which they collect data. Table 1 highlights the core program areas related to workforce development currently in the PAGE system, and the accompanying metrics SEOs can select when reporting on their workforce efforts.

Table 1. State Energy Program Metric Area 10, Training and Education/Technical Assistance

Workforce Development Areas in the PAGE System	State Energy Program PAGE Metric
Education and outreach	<ul style="list-style-type: none"> • Number of contacts reached • Number of workshops, training, and education sessions held • Number of people attending workshops, training, and education
Technical assistance provided	<ul style="list-style-type: none"> • Number of participants
Workforce development	<ul style="list-style-type: none"> • Number of people trained • Number of professional certifications achieved • Jobs retained (full-time equivalent) • Jobs created (full-time equivalent)
Building codes and standards training conducted	<ul style="list-style-type: none"> • Number of people trained
Energy assurance (security, emergency, resiliency) activities	<ul style="list-style-type: none"> • Number of training sessions completed • Number of workshops and tabletop exercises, training and education sessions held

An intentional effort to evaluate equity outcomes of SEOs’ initiatives is required to support a workforce that reflects the diversity of their state and aligns with the White House’s Justice40 (J40) initiative.⁵ The J40 initiative directs federal, state, and local governments to ensure that 40% of certain federal climate and infrastructure investments benefit disadvantaged communities (White House 2021).⁶ Among these benefits is the creation and expansion of economic opportunities such as jobs.

³ Available at: <https://www.page.energy.gov/default.aspx>

⁴ There are 11 core areas in the PAGE system: (1) building codes standards, (2) benchmarking, sub-metering, and energy management, (3) energy audits, (4) retrofits, (5) planning, policy, & studies, (6) energy efficiency certification, rating, & labeling, (7) financial instruments, (8) renewable energy market development, (9) transportation infrastructure & vehicles, (10) training & education/technical assistance, and (11) others.

⁵ Available at: <https://www.whitehouse.gov/environmentaljustice/justice40/>

⁶ The J40 initiative defines disadvantage communities as (a) “group of individuals living in geographic proximity to one another, or (b) a geographically dispersed set of individuals, where either type of group experiences common conditions.” These conditions can include low-income, high unemployment or underemployment, or racial and ethnic segregation. View the full list in White House’s interim implementation guidance for the J40 initiative: <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>.

The J40 initiative is especially important in the energy efficiency and clean energy workforce, which typically employs more men than women, and fewer Hispanic, Black, and Asian workers compared to the national workforce (Shoemaker, Ayala, and York 2020). While the number of women and people of color demonstrate underrepresentation in energy efficiency careers, it often does not fully capture the inequities experienced by marginalized professionals. Recent research profiled workplace challenges experienced by women and ethnic and racial minorities professionals working in the energy industry (NASEO 2021). For example, researchers found that 38% of Black or African American energy workers surveyed as part of the study stated that they experienced challenges with “overcoming prejudice or bias in the workplace.” As discussed in the report, achieving equity in the workforce should not be limited to expanding job training opportunities. SEOs can help bridge the skills gap for marginalized professionals, create pathways for career growth, and enable access to more financial stability through increased access to career opportunities (NASEO 2021).

Furthermore, and in response to the J40 initiative, SEOs can use the proposed evaluation framework shared in this paper to tailor their workforce initiatives to align with current and long-term needs of marginalized communities. At the time of this research, efforts to finalize J40 metrics are ongoing. Still, we include equity metrics that SEOs can use to measure and track their workforce program’s impacts on marginalized communities. The framework and the metrics will help SEOs track not only how they meet program goals, but also how they can update program components to embed equity considerations in their programming.

1.2 Methodology for Framework Development

The proposed evaluation framework builds on the State Energy Program’s existing reporting structure as well as the metrics included in the PAGE system to further empower SEOs to comprehensively track the impact of their workforce programs. NREL and ACEEE collaborated on this effort to create a workforce evaluation framework for SEOs that helps measure the performance and impact of existing workforce efforts and inform the design of energy efficiency and clean energy workforce programs.

NREL completed a literature review on evaluation processes used by workforce program administrators in the climate, green, or adjacent industries. ACEEE used the findings from this literature review as a starting point to analyze workforce programming efforts, identify key themes in evaluation methods, and categorize metrics for evaluation.

ACEEE also conducted interviews with workforce program stakeholders, energy efficiency and clean energy program administrators, and subject matters to understand how they evaluate workforce programs and the metrics they use. These insights, combined with the literature review, informed the development of the proposed evaluation framework outlined in this paper.

2 Review of Existing Workforce Development Program Approaches and Best Practices

2.1 Aligning Workforce Development Goals and Objectives With Evaluation Metrics

Programs with well-defined goals and objectives that describe how to achieve the intended program outcomes can better inform the evaluation process and selection of evaluation metrics. Using metrics that measure a program objective can help illustrate and communicate the performance of a program and engage relevant partners to support or deliver a program's activities (DOE, n.d.).

Based on examples from the literature review and additional research, we identified six common workforce development program goal categories, organized by who is being trained and what the intended outcome is:

1. ***K-12 programs*** that build awareness of energy efficiency and clean energy, offer students hands-on learning in technology, and access to jobs in the green economy.
2. Programs geared toward ***young adults*** that create career pathways in the energy efficiency and clean energy sector.
3. Programs that focus on ***reskilling workers***, training them to learn new skills so they can transition to work in the energy efficiency and clean energy sector.
4. ***Upskilling programs*** increase and strengthen the skills of existing energy efficiency or clean energy professionals to meet new requirements in their current role.
5. Programs targeting ***businesses owned by minority, women, veterans, or LGBT persons***, offering specialized training and support for them to increase their participation in and ability to compete for energy efficiency or clean energy projects.
6. Programs focused on training ***underrepresented individuals*** including Black, Indigenous, or people of color, women, or returning citizens to prepare them for jobs to complete energy efficiency or clean energy projects.

Table 2 highlights examples of workforce programs in each of the goal categories identified, along with a sample of metrics that are used by those programs for evaluation. We recognize that the target audience may overlap between these goal categories; still, the specific program goals lend themselves to different types of workforce training and education approaches, as well as different metrics (as discussed in the following section). SEOs can reference this to help identify goals and metrics that align with their state's workforce and market demand.

Table 2. Examples of Existing Workforce Development Programs and Metrics for Evaluation by Program Goal

Program Goals	Program Name	Program Description	Example Metrics for Evaluation
Build awareness of clean energy jobs among K-12 students	Energize Connecticut Green Technology “E-House” initiative ⁷	Hands-on learning and green workforce development program for high school students and trade instructors.	<ul style="list-style-type: none"> • Number of students hosted • Number of students trained
	Baltimore Gas and Electric’s Smart Energy Internship Program ⁸	Paid internship program with hands-on or virtual experience for students who are studying trades in automotive technology, carpentry, construction, electrical, engineering, plumbing, or welding.	<ul style="list-style-type: none"> • Number of training facilities built • Number of former interns hired into jobs • Number of paid summer internships • Educational material sent out to highlight career pathways
	Philadelphia Energy Authority’s Bright Solar Futures Program ⁹	Career and Technical Education program with state-of-the-art teaching and learning environment to grow a diverse and equitable workforce in solar, battery storage installation, design, sales, weatherization, construction basics, and job site safety.	<ul style="list-style-type: none"> • Community engagement activities completed • Weekly debriefs to analyze and support program issues including curriculum modification
Create pipeline of workers in the energy efficiency field among young adults	District of Columbia Sustainability Energy Utility Externship ¹⁰	Connects those new to the workforce, between jobs, or looking for a career change to green economy jobs.	<ul style="list-style-type: none"> • Number of registrants or participants • Courses conducted
	Emerald Cities Collaborative Green Path Careers program ¹¹	Creates career pathways for youth in the energy efficiency industry by teaching them life (e.g., financial literacy) and employment skills (e.g., Building Performance Institute Training and Certification).	<ul style="list-style-type: none"> • Number of program graduates • Percentage of participation relative to eligible target population

⁷ <https://energizect.com/eesmarts-e-houses>

⁸ <https://www.bge.com/safety-community/education/career-training>

⁹ <https://philaenergy.org/programs-initiatives/bright-solar-futures-curriculum/>

¹⁰ <https://www.dcseu.com/workforce-development>

¹¹ <https://emeraldcities.org/our-work/green-path-careers-gpc/>

Program Goals	Program Name	Program Description	Example Metrics for Evaluation
	New York City's Green City Force's Love Where You Live Program ¹²	Train participants to engage with New York City Housing Authority residents, educate them on weatherization and energy savings, and distribute LED lights.	<ul style="list-style-type: none"> • People placed in internships, apprenticeships, or jobs • Certifications/credentials awarded or received • Number of participants joining a union or other labor organization • Number of partnerships by sector • Percentage of incentives spent on measures installed by contractors with demonstrated commitment to provide career pathways to disadvantaged youth
Reskilling workers to learn new proficiencies to enter the energy efficiency industry	Energy Efficiency for All's Connecticut Workforce Program ¹³	Develop interest in weatherization jobs/careers and increase access to industry-recognized certifications.	<ul style="list-style-type: none"> • Number of participants trained • Number of unemployed individuals trained • Number of hands-on training events • Technical skills or soft skills enhanced through the program • Number of certificates earned • Number of participants joining a union or other labor organization
	Red Cloud Renewable Pre-Apprenticeship/Apprenticeship Readiness Program ¹⁴	Provides free, place-based workforce development opportunities for Native Americans including all native-run weatherization programs that focus on developing skills to complete energy assessments, identify retrofit projects, and prioritize home safety and health.	
Upskilling incumbent energy efficiency professionals to learn new skills and competencies	Building Operator Certification ¹⁵	Training and certification program for building engineers and operations and maintenance professionals.	<ul style="list-style-type: none"> • Number of participants trained • Count of trainees receiving certificates • Electricity and fossil fuel savings • Cost-effectiveness, and water savings • Coaching or advising offered to participants
	Interstate Renewable Energy Council Training and Credential Program ¹⁶	Clean energy training for professionals in a variety of sectors including code officials and maintenance technicians. Clean Energy Clearinghouse ¹⁷ offers free educational resources in renewable energy, electric vehicle charging, grid-enabled and advanced building products and energy storage systems.	

¹² <https://greencityforce.org/service-corps/love-where-you-live/>

¹³ <https://efficiencyforall.org/wordpress/efa-ct-workforce-program/>

¹⁴ <https://www.redcloudrenewable.org/apply>

¹⁵ <https://www.theboc.info/>

¹⁶ <https://irecusa.org/allied-professional-training/>

¹⁷ <https://sustainableenergyaction.org/clean-energy-clearinghouse/>

Program Goals	Program Name	Program Description	Example Metrics for Evaluation
	Building Performance Institute's Home Energy Professional Energy Auditor certification ¹⁸	Offers candidates in-depth knowledge of how to use diagnostic equipment and modeling software to identify energy savings, produce an audit report, and develop a prioritized scope of work.	<ul style="list-style-type: none"> • Level of satisfaction with the training program from both the student and key stakeholders (e.g., employers and utilities) • Annual assessment of existing curriculum and updates • Clear career pathways created and shared with participants
Targeting minority and women business enterprises/contracting business to diversify workforce	ComEd Diverse Energy Efficiency Service Provider Incubator Program ¹⁹	Provides education and training to minority, women, and veteran contractors to increase knowledge on utility offerings and includes one-one-one assistance to help develop business growth plan and connect with finance lenders.	<ul style="list-style-type: none"> • Demographic analysis of all participants' race, gender, ethnicity, geography, education, disability, socioeconomic status • Proportion of students with certain demographic factors relative to surrounding community • Number of minority-owned businesses contracted on projects • Number of wraparound services offered • Wages or reimbursement provided
	Emerald Cities Collaborative E-Contractor Academy ²⁰	Training program for women, minority, and disadvantaged business enterprises contractors to learn necessary skills to perform energy efficiency and renewable energy retrofits projects.	
Training underrepresented people including people of color, Black, indigenous people, women or returning citizens for career pathways in energy efficiency industry	Energy Coordinating Agency's Knight Green Hubs ²¹	Train and prepare professionals (including entry level and young adults) to deliver weatherization services and retrofits.	<ul style="list-style-type: none"> • Formerly incarcerated or at-risk trainees recruited into a program • Number of skills training offered to marginalized communities • Number of women with certifications earned • Number of employers who contract minority or women-owned businesses
	Illinois Department of Commerce & Economic Opportunity Returning Resident Clean Jobs Program ²²	Training for entry-level clean energy jobs for people in the custody of the Illinois Department of Corrections.	

¹⁸ <https://www.bpi.org/certified-professionals/energy-auditor>

¹⁹ <https://diverseproviderprogram.com/>

²⁰ <https://emeraldcities.org/our-work/e-contractor-academy/>

²¹ <https://www.ecasavesenergy.org/training-center>

²² <https://dceo.illinois.gov/ceja.html>

2.2 Types of Workforce Program Evaluation Metrics

Considering evaluation early in the program design or redesign process can enable SEOs to discern participants' needs relative to program goals, and help refine goals to create more impactful programs. Metrics for evaluating programs should be selected to support and illustrate workforce program goals and objectives.

Metrics can track program progress by quantitatively or qualitatively measuring whether a program's goal or objective were met. A quantitative metric numerically captures program outcomes, such as the number of participants trained or number of trainings offered. Qualitative metrics provide insight beyond what the quantitative metrics capture and include narratives gathered from surveys, interviews, and observations. For example, a qualitative metric can capture a participant's satisfaction with training offered or track how the program has improved a participant's physical and mental well-being. Qualitative, quantitative, and equity-focused metrics can be tracked at the program level and participant level. [Appendix B](#) includes a list of metrics.

Program Metrics

Program metrics help assess, compare, and track programmatic activities and strategies. These metrics can help evaluate overall program impact and promote improvement of program components. Some examples of these types of metrics include number of trainings held, number of program enrollees or graduates, professional development activities conducted, or assessment of instructional material or program curriculum.

Participant Metrics

Participant metrics measure and track how individuals in target populations are impacted by the program. Example metrics include the number of students placed in internships, wages of workers before and after program completion, number of participants working in the energy efficiency or clean energy industry, or satisfaction with a program. Participant metrics can also capture how participants improve technical skills (the ability to perform technology-specific tasks) and soft skills (e.g., customer service, teamwork, leadership).

Equity-Focused Metrics

Equity-focused metrics illustrate the impacts of workforce programs on marginalized communities. These metrics can help assess the extent to which workforce programs promote and support the diversity of participants and ensure that benefits of workforce programs are equitably distributed. Equity-focused metrics may include the percentage of marginalized participants trained or the number of diverse contractors that obtained industry-recognized certifications. New federal funding will give SEOs the opportunity to apply innovative approaches to build a diverse and inclusive workforce in the energy efficiency and clean energy sector. In their pursuit to diversify the workforce it will be critical for SEOs to select metrics to track, measure, and evaluate equitable outcomes, as well as take action to respond to findings of their evaluations.

2.3 Program Evaluation Frameworks and Methods

Once programs have well-defined goals, objectives, and evaluation metrics, selecting an evaluation method or framework can help measure progress and inform improvement of program strategies. Evaluation methods differ from an evaluation framework. An evaluation framework is a tool used to systemically approach program evaluation, whereas evaluation methods are processes that assess and present results of a specific step within a framework.

In our research, we found limited examples of energy efficiency and clean energy program administrators, including SEOs, using a comprehensive evaluation framework. A few workforce program administrators incorporated program-level metrics (e.g., the number of individuals enrolled or trained), or participant-level metrics (e.g., satisfaction with the program) to evaluate their program. Even fewer used equity-focused metrics to track their progress in increasing a diverse and inclusive workforce.

Based on the literature review and research, we identified four main types of evaluation methods used by program administrators or contracted third-party evaluators:

- **Logic models** that highlight the relationships between a program’s inputs, activities, outputs, and outcomes to determine if the program’s intended goals or objectives were achieved.
- **Self-assessments** that are composed of checklists to guide program or process evaluation.
- **Guiding questions** that offer an informal approach to evaluation and include a series of questions or recommendations to perform an evaluation.
- **Discrete metrics**²³ that track a set of program outcomes and are used to collect programmatic and participant data to evaluate progress of a program’s goals and objectives.

The four evaluation methods discussed above can be used as processes within an evaluation framework.

Table 3 summarizes the four main evaluation methods. It includes examples of programs that have used these evaluation methods, and a few examples of metrics used in the respective evaluation method. We offer detailed workforce program examples that use three of the evaluation methods in the next section.

²³ We refer to discrete metrics as metrics that are specific to program’s goal or describe them as a set of metrics.

Table 3. Summary and Examples of Key Evaluation Methods

Evaluation Method	Description	Example Metrics	Example Program That Uses the Evaluation Method
Logic model	Delineates program inputs, activities, outputs, and outcomes to assist evaluation	<ul style="list-style-type: none"> • Series of classes held • Students placed in internships • Number of students who attend sessions • Number of students completing a session • Number of participants employed 	Southern California Regional Energy Network*
Self-assessment	Includes evaluation checklist to help implementers review programs, policies, and processes; analyze evaluation results; and enable organizational and management change	<ul style="list-style-type: none"> • Increased level of education attainment • Increased skill proficiencies • Improved well-being • Employment success including work readiness skills 	Build It Green Program*
Guiding questions and/or recommendations	Series of questions for evaluating workforce education programs and undertaking equity assessment	<ul style="list-style-type: none"> • Partnership quality • Instruction quality • Student level-data 	Inclusive Economics' High Road Workforce Guide for City Climate Action
Discrete metrics	Includes defined set of metrics for evaluating program progress (i.e., participant metrics)	<ul style="list-style-type: none"> • Number of job vacancies • Number of interns offered employment • Promotions offered • Demographic data 	Mass Save's Workforce Development Program

* Indicates program case study detailed below

Workforce Program Evaluation Case Studies

In this section we profile energy efficiency and clean energy workforce programs with details on the evaluation methods and metrics used to analyze overall program performance and outcomes. These programs target a range of individuals, including students, young adults, mid-career professionals, and historically marginalized individuals.

Emerald Cities Collaborative, Southern California Regional Energy Network (Evaluation Method: Logic Model)

Emerald Cities Collaborative (ECC) is a national nonprofit organization advocating for the development of policies and programs that create sustainable and inclusive economic opportunities for communities (ECC n.d.). ECC's Southern California regional office is a third-

party workforce program implementer for the Workforce Education & Training Sector under the Southern California Regional Energy Network (SoCalREN). The workforce programs target small and diverse contractors (e.g., women, people of color) and offer workforce training to disadvantaged and hard-to-reach communities and participants.

ECC’s Southern California region currently implements three workforce programs: Architecture Construction Engineering Students (ACES),²⁴ Green Path Careers,²⁵ and E-Contractor Academy²⁶ (ECC n.d.). While all three workforce programs have varying goals and targeted audiences, their evaluation method is similar. ECC reports the outcomes of these workforce programs to the California Public Utility Commission (CPUC) by using six common metrics set by the commission (see Table 4).

Table 4. CPUC-Set Metrics for Tracking Workforce Development Programs

Goal	Common Metric
Expanding workforce programs through collaboration	Number of partnerships by sector
Uptake of training	Number of partnerships by sector Percent of participation relative to eligible target population for curriculum
Diversity of participants	Percentage of disadvantaged participants trained (identified by zip code) Percent of incentive dollars spent on measures verified to have been installed by contractors with a demonstrated commitment to provide career pathways to disadvantaged workers Number of energy efficiency projects related to the workforce training on which a participant has been employed for 12 months after receiving the training

In addition to using common metrics, ECC has developed metrics internally known as unique value metrics. ECC uses these metrics internally to track progress and success more holistically, as common metrics do not always capture details of how participants and community benefit from the program. While common metrics help utilities understand the broad impact of the program (e.g., number of participants), value metrics capture and translate impacts that provide additional insight to help refine program components to better serve participants. Examples of value metrics include the number of contractor businesses that obtain certifications, number of businesses with insurance, or businesses that seek legal counseling. These value metrics have helped ECC to better understand how their programs have benefited contractors and other program participants. Additional examples of value metrics include:

- Percent of contractors that received one-to-one mentoring/coaching
- Number of career plans developed for transitional adults
- Number of students who participate or contribute to climate policies and projects
- Inclusion of diverse workers in energy efficiency careers

²⁴ <https://emeraldcities.org/our-work/architecture-construction-engineering-students-aces/>

²⁵ <https://emeraldcities.org/our-work/green-path-careers-gpc/>

²⁶ <https://emeraldcities.org/our-work/e-contractor-academy/>

- Number of partnerships to expand access for small or women-, minority-, veteran-, or disabled-owned business enterprises.

SoCalREN contracted a third-party research and consulting company to perform an evaluation using data collected from common value metrics. As part of their review, the company interviewed ECC, investor-owned utilities, and program participants that received training, and reviewed program materials. Figure 1 demonstrates the evaluation method, a logic model the consulting company developed. This logic model highlights the activities performed under the E-Contractor, ACES Pathway, and Green Path Careers programs. These activities are tracked using the common and value metrics (as shown in the outputs and outcomes section) to measure program progress. The output and outcomes section has two tones, shaded maroon and white, to indicate outputs that target disadvantaged workers or populations (shaded maroon) that are supported by CPUC's equity-focused objectives.

WE&T Logic Model

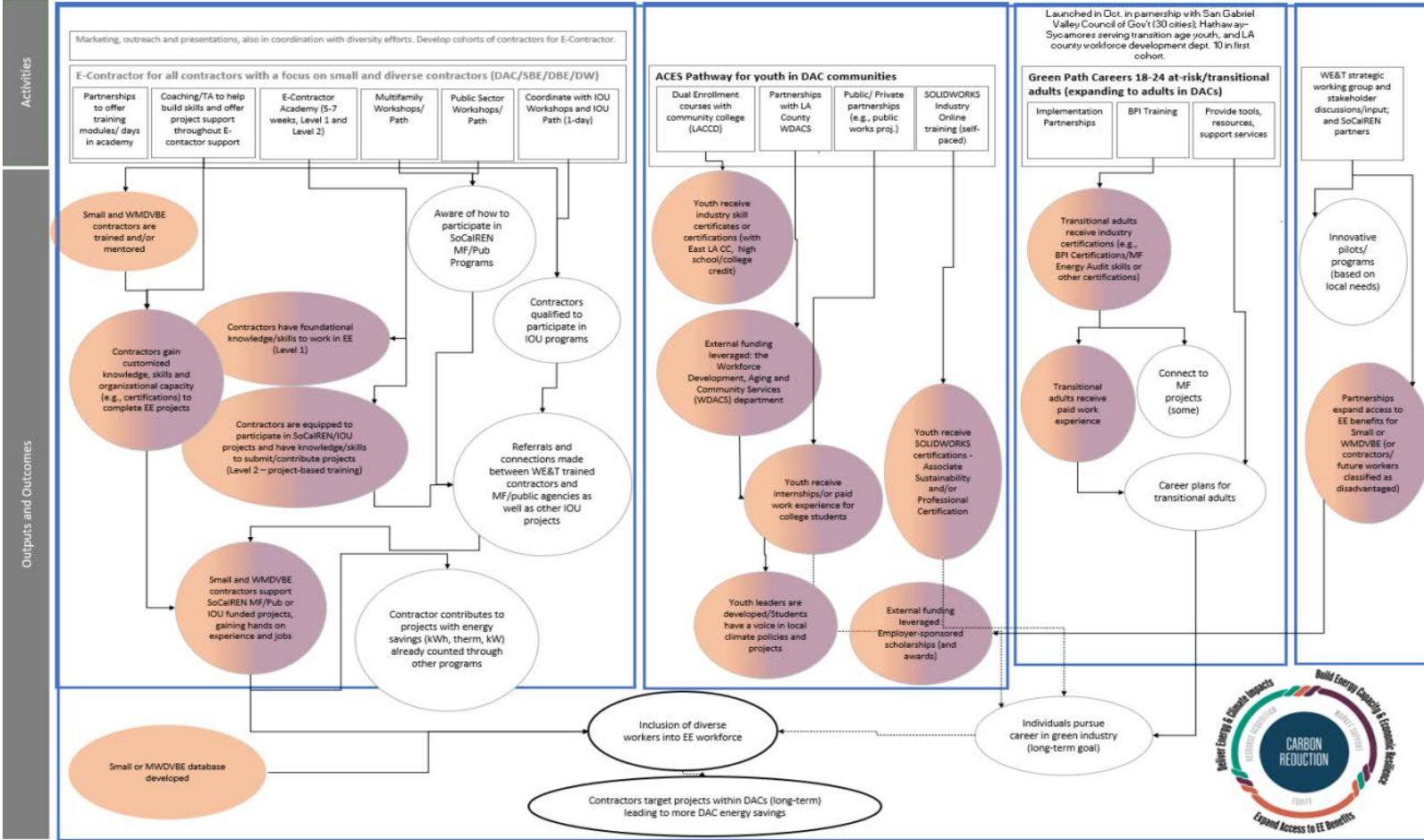


Figure 1. Logic model evaluating the CPUC workforce programs

Figure from SoCalREN 2021

Build It Green Program, Tennessee (Evaluation Method: Self-Assessment)

green|spaces is a nonprofit organization focused on building sustainable and thriving communities in Chattanooga and the surrounding area through advocacy, education and training, and community partnerships (green|spaces n.d.). In 2018, they launched a workforce development program called Build It Green. The program aims to equip young adults (18–24 years old) with technical and soft skills and a professional development plan for careers in construction, energy services, and the workforce broadly (green|spaces n.d.).

As part of their evaluation process for the program, green|spaces performed a participant vulnerability assessment at the beginning, middle, and end of an individual's program participation. As seen in Figure 2, the vulnerability assessment consists of a matrix of different socio-demographic parameters. For each parameter (e.g., housing), participants select the description that represents their current life situation. Conducting this assessment allowed green|spaces to better understand the needs and priorities of individuals, and to also track if and how an individual's life has evolved during their participation in the program. Ultimately, the program's goal is to help each individual report a status (i.e., stable, safe, thriving) above the green line upon their completion of the program.

green|spaces notes that if they can support individuals reach an assessment above the green threshold then they have attained successful program outcomes. If not, they seek solutions to improve their program offerings or structure to ensure participants reach a living situation above the prevention line.

Community Services Block Grant Assessment Tool: Details

DRAFT

Status	Employment	Education	Income Mgt.	Housing	Nutrition	Self-Sufficiency	Health	Child Care	Transportation	Supports
Thriving (9-10)	Permanent, stable employment working desired hours and offering benefits – health, vision, dental & retirement (10)	Post-secondary degree, e.g. Bachelors, Associates (9), Masters or Doctorate (10)	> 200% of poverty; sufficient, stable & adequate for paying mo. Bills, savings & some non-essential purchases (10)	Home ownership or secure rental housing within a safe, community-oriented neighborhood of their choosing (10)	Awareness of nutritional needs; routinely prepares balanced, nutritious meals; ample food, resources (10)	Able to provide beyond basic needs of daily living for self and family; able to set goals and be resourceful (9-10)	Good health insurance with low co-pays. Enrolled in Medicare with supplemental insurance (9-10)	Ample resources of licensed, safe or dependable friends and family childcare; children's education valued (10)	Reliable. Family has a car, or regular access to a car or public transportation. Able to meet obligations. (10)	Has excellent emotional and/or physical support. Is able to give as well as receive support (10)
Safe (8-9)	Permanent, stable employment the past 12 months with desired hours; "living wage" or above min. wage w/ at least some benefits (9)	Post-high school education: technical, vocational or some college (8-9)	176-200% of poverty; sufficient, stable, adequate for paying mo. bills, but little savings or non-essential purchases (8)	Safe and secure home ownership (9), or non-subsidized housing (8); choice limited by moderate income	Usually has resources and knowledge to purchase and prepare nutritious food (8-9)	Able to provide beyond basic needs of daily living w/out assistance; frequently able to set goals, be resourceful (8-9)	Has private insurance. No chronic illness or illness is stable; maintains preventative care, medical and dental (8-9)	Enrolled in licensed, subsidized childcare of own choice (9), or possibly with limited choices (8)	Access to reliable transportation most of the time. Occasional difficulties will cause problems (late for work or appointment) (8)	Has a healthy support system most of the time. Physical support is provided when requested (8-9)
Stable (6-7)	Permanent, stable employment for as many hours/week as desired; min. wage w/no benefits (6)	High school diploma or GED and functional reading, writing and/or math skills (6)	126-175% of poverty; meets basic needs; pressures, debt exist, but don't significantly hinder activities (6-7)	Safe & secure subsidized housing; minor problems staying in same residence (6)	Meets basic nutritional needs; access to sufficient and varied food; meals may not always be balanced (6-7)	Usually able to meet some basic needs of daily living w/out assistance; usually able to set goals & be resourceful (6-7)	Has subsidized health insurance (6). Chronic illness generally well-managed & attempting to keep routine appointments (6)	Childcare only available by a family member or friend; or by various other caregivers (6)	Access to reliable transportation some of the time; difficulties will cause problems (late for work or appointments) (6)	Healthy support system only in times of crisis. May only request support during times of crisis (6-7)
PREVENTION LINE										
Vulnerable (3-4)	Temporary, seasonal or part-time employment for most of the desired number of hours, w/ (4) or w/out (3) benefits	No high school diploma or GED, but basic reading, writing and/or math skills (4); working toward GED or diploma (3)	100-125% of poverty – income is adequate for meeting basic needs, difficulty balancing bills for food, housing, clothing (3-4)	Safe & secure transitional housing (4); or unaffordable overcrowded housing, temporary shelter (3)	Little knowledge or ability to buy and/or prepare nutritious meals; relies on food stamps and food banks (3-4)	Some basic skills or ability to meet basic needs (4); understands how to, but seldom sets goals or is resourceful (3)	Chronic medical conditions, potentially life-threatening, with inconsistent follow-up with care (3-4)	Insufficient resources, barriers exist (eligibility, location, waitlist, transportation) that prohibit access to needed childcare (3)	Rarely has reliable transportation; inhibits work, increases social isolation, and/or limits access to services, etc. (3)	Support system exists, but is unreliable, unhealthy and/or limited. May lack emotional or physical support (3-4)
In Crisis (0-2)	Unemployed, with (2) or w/out skills; may desire work but limited or "negative" work history 2 or more times (0)	No GED or high school diploma; has not learned to read or write (0)	50-100% (2) or 0-49% (0) of poverty – no income. Unable to meet basic needs, pay bills for food, housing, clothing; no public assistance	Household facing eviction or displacement, couch surfing or doubling up with others (2); substd. or unsafe housing (1); or homeless (0)	Inadequate food supply, often going hungry. Lack of awareness of nutritional needs. Lots of "junk" food; relies on food stamps and food banks (0-2)	Has not learned the skills to manage a household (0-2)	No insurance or access to care (2). Untreated medical, life-threatening conditions, with inconsistent use and/or limited access to health care (0)	No access to childcare; may be unsafe; child(ren) have minimal supervision (0)	No transportation; inhibits work, increases social isolation, and/or limits access to services, and/or prevents regular school attendance (0)	Does not have a support system. May have burned bridges and/or the community. Support may be hostile and destructive (0)

Source: Tennessee Department of Human Services, 7/1/14

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Figure 2. green|spaces vulnerability assessment for the Build It Green program

Figure from green|spaces, adapted from the Tennessee Department of Human Services

3 Proposed Workforce Program Evaluation Framework for State Energy Offices

In this section we describe the proposed evaluation framework presented within this paper. We begin with discussing the key components of a workforce program, and then provide a step-by-step evaluation framework that SEOs can use to evaluate those components. If through their evaluation, SEOs find they did not meet goals, they can use the findings from the evaluation to explore the possible reasons and identify the ways they plan to make changes to program components to achieve their goals. The framework offers an opportunity to showcase success, inform future workforce efforts, and scale program goals for greater impact.

3.1 Workforce Development Program Components

Understanding the components of a workforce program is critical for planning and implementing an approach for program evaluation. It can strengthen a SEO's or third-party program evaluator's evaluation process by identifying which data to collect to assess program performance and impact and inform decisions for improvement.

Based on our research, we identified six key components of a workforce program:

- *Opportunities and goals*: Identifying the “big-picture” outcome(s) a program intends to achieve during its life cycle
- *Objectives*: Setting objectives to provide direction on how to achieve the program goals
- *Stakeholder engagement and outreach*: Engaging relevant stakeholders to understand the types of activities, workforce services, and delivery of programs
- *Activities*: Selecting a set of tasks to help meet the program's objectives
- *Metrics and data collection*: Collecting data to track and measure a program's performance, progress, and impact
- *Reporting*: Disclosing and disseminating findings to ensure accountability and transparency among the public and stakeholders.

We offer more details on the six components below.

Opportunities and Goals

Program goals help define and communicate the purpose and desired outcomes of a workforce program. To successfully establish program goals that yield results, program administrators should conduct a gap analysis or a needs assessment to analyze market needs, skills gap or trends, and identify energy efficiency and clean energy opportunities. Findings from the assessment can reveal details related to a workforce's demand and assess the training needed across different categories of jobs and reflect these findings in program development and implementation. For example, based on the findings of a needs assessment, program administrators can create a goal to increase interest and awareness of energy efficiency and clean energy jobs, streamline education and training pathways for existing workers, or focus on improving knowledge and skill competencies. Periodically revisiting this program component can ensure goals align with findings of needs assessment or analysis.

Objectives

Defined and clear objectives illustrate a plan on how to achieve program goals. Setting program objectives upfront can inform the evaluation process and help with the selection of evaluation metrics to communicate progress and program success. Objectives must be **Specific, Measurable, Achievable, Realistic, and Time-bound** (DOE n.d.). The “M” in SMART shows the direct connection between goals and objectives and evaluation metrics. To develop objectives program administrators can use the results of the gap analysis or seek community input to determine an action plan for achieving a program goal(s). For example, if a goal is created to train young adults from marginalized communities, a relevant objective might include creating an apprenticeship program and forming partnerships with community-based organizations to recruit young adults from the target communities.

Stakeholder Engagement and Outreach

Stakeholder engagement is a critical program component, as it can inform program planning and help gather information to select activities based on workforce needs, opportunities, and challenges from organizations or businesses working directly with individuals. Engaging with stakeholders such as community organizations, employers, training organizations, or academia, either individually or as part of an advisory group, can help program administrators learn about existing programs working toward a similar goal. Additionally, it can help them connect with stakeholders interested in standing up or partnering on new programs with similar objectives. Last, consulting and engaging stakeholders during program development and implementation can offer insights and feedback on how to customize program activities to meet program objectives.

Activities

Activities are a set of tasks that aim to achieve a program goal and objective. Activities may include, but are not limited to, on-site classes, workshops, mentorship, coaching on technical and soft skills, virtual trainings, and hands-on training events, as well as promotional activities to support recruitment. While planning activities, program administrators must consider what will be required to plan and implement them, such as what teaching material they will need, availability of qualified instructors, and partnerships with employers or training centers to host participants or provide employment support.

Metrics and Data Collection

Metrics are indicators used to collect, track, and measure programmatic outcomes, including equity-specific outcomes. They are used to ensure program components are effective and benefit all participants. For example, program administrators can develop metrics to collect data on participants’ demographic and geographical information. Collecting this information can convey if and how program activities are reaching diverse professionals.

Program administrators should select and report on at least one program-level and participant-level metric, and at least one metric focused on tracking equitable outcomes. These metrics should measure a program’s performance compared to programmatic goals and objectives, capture impact on program participants, and evaluate how the program advances equity.

[Appendix B](#) includes a list of program-level, participant-level, and equity-focused metrics SEOs can consider using to track outcomes of their workforce program.

Reporting

To move toward an evaluation system that institutionalizes accountability and transparency, program administrators should disclose program evaluation findings to relevant stakeholders and the public, beyond reporting that may be required by funders. They can explore different avenues for sharing evaluation results and considerations. For example, program administrators can choose to report on the impact the program has had on participants during the first few months of the program, at the end of the program, and a couple of years after the program ended. Disclosing findings from an evaluation report can discern progress and refine programs to optimize results.

3.2 Proposed Evaluation Framework

In this section, we describe a new evaluation framework that SEOs can use to evaluate their workforce program. This framework builds on our research findings and the six workforce program components discussed in the previous section. The framework combines three of the evaluation methods discussed in Table 3, including the characteristics of a logic model, guiding questions, and an extensive list of discrete metrics.²⁷

SEOs can use the framework to evaluate their workforce development programs, use findings to identify program components not achieving the intended program goals, and propose modifications to improve the program, if needed. It is up to the discretion of SEOs to determine the frequency at which they evaluate their programs. Successful evaluation builds on thorough tracking throughout implementation. Therefore, SEOs should think through evaluation prior to program implementation and should not view it as the final step. The guiding questions accompanying each step in the framework reinforce this approach, with the evaluation results offering insight into the ways the program was effective or ineffective.

Figure 3 provides an overview of our proposed workforce development evaluation framework, consisting of six steps—each step assesses a workforce program component. SEOs with existing programs that are looking to report on their program’s overall performance can begin their evaluation process at Step 1 to evaluate if they have met their goals and to center or include equity considerations. Adopting this evaluation framework can help SEOs articulate why a goal or objective was not met and improve a program going forward, as needed. SEOs without a workforce development program can benefit from using the framework as well, as it can serve as a guiding tool for future program development and implementation.

²⁷ For this framework we include some level of the self-assessment evaluation method. We do not include an approach for program participants to self-assess their experience, rather we include questions to guide SEOs or program implementors in assessing their evaluation findings per step.



Figure 3. Overview of proposed SEO workforce program evaluation framework

Instructions

In this section, we include instructions on how SEOs can navigate and apply the evaluation framework to their workforce programs. We provide details for the six evaluation steps below. Each step has a series of “guiding questions” that SEOs can browse and respond to the questions most relevant to their evaluation needs. Each question includes a “yes” or “no” or write-in response, with suggestions for next steps they can take. For example, in step 1, if a SEO completed a needs assessment, they should respond “yes” and write in a summary of their findings. SEOs do not need to answer each guiding question listed in every step, but are highly encouraged to answer all the questions for a thorough evaluation. After documenting their responses for the key evaluation questions, SEOs should refer to the concluding question to determine their next steps.

Step 1: Evaluating Goals and Opportunities

In the first step of the framework, SEOs can evaluate their program goals and understand if they meet market, participant, and workforce demands and needs. Refining and adding goals can articulate the value of the program to different stakeholders (both internal and external) and increase the program impact for participants. Findings from a preliminary assessment can be used to design goals specific to market data, technology trends, climate policies, or workforce needs and demands. Regularly evaluating goals can help SEOs better achieve their desired outcomes if they were not met in the first iteration of the program.

Table 5. Key Evaluation Questions for Step 1: Evaluating Goals and Opportunities

<p>Question 1.1: Was a needs assessment or a gap analysis conducted?</p> <p>Yes, an assessment/analysis was completed.</p> <ul style="list-style-type: none">- Action: Describe findings for program participants and stakeholders. Communicate value as well as areas for improvement. Detail next steps based on the assessment/analysis. <p>No, an assessment/analysis was not completed.</p> <ul style="list-style-type: none">- Action: Conduct a needs assessment and describe findings for program participants and stakeholders. Communicate value as well as areas for improvement.- Revisit program goals and consider revising. We strongly recommend that SEOs perform a workforce landscape assessment or skills gap analysis before moving on to Step 2.
<p>Question 1.2: Do the program goals align with market needs identified through the needs assessment?</p> <p>Yes, our program goals reflect the market needs accurately.</p> <ul style="list-style-type: none">- Action: Describe what market needs are being met by program and how. <p>No, program goals do not reflect the market needs.</p> <ul style="list-style-type: none">- Action: Revisit goals and consider revising. See Appendix C for resources.
<p>Question 1.3: Has the market changed (e.g., new policies, economy-wide changes, new training programs, new skills needed for new technologies) such that program goals may be impacted?</p> <p>Yes, there have been changes in the market and policies.</p> <ul style="list-style-type: none">- Action: Consider updating or conducting a new needs assessment and engaging stakeholders. <p>No, there are no significant changes in policy or market needs.</p> <ul style="list-style-type: none">- Action: No action needed.
<p>Question 1.4: Does a program goal include equity consideration to promote a diverse and inclusive workforce?</p> <p>Yes, a program goal(s) prioritizes diversity, equity, and inclusion considerations.</p> <ul style="list-style-type: none">- Action: Describe how your goal(s) aims to increase diversity, equity, and inclusion in the energy efficiency and clean energy workforce. <p>No, a program goal(s) does not include considerations for diversity, equity, or inclusion.</p> <ul style="list-style-type: none">- Action: Revisit goals and consider revising (see Appendix A for energy equity definition).

Table 6. Evaluation Findings for Step 1: Evaluating Goals and Opportunities

<p>Evaluation 1.1: Did the workforce program meet program goals?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Evaluation 1.2: Describe why your goals were or were not achieved (e.g., what factors influenced performance or were ineffective in meeting the goals).</p> <hr/> <hr/> <hr/> <hr/>
<p>Evaluation 1.3: Describe how your responses above affect your program goals (i.e., describe if will you make changes to goals or add new goals).</p> <hr/> <hr/> <hr/> <hr/>
<p>After responding to Step 1’s evaluation questions, SEOs can proceed to Step 2, Evaluating Objectives.</p>

Step 2: Evaluating Objectives

In the second step, SEOs can evaluate program objectives to examine if they were effective or ineffective in achieving a program's goals. During the evaluation, SEOs can confirm that each objective has at least one associated metric with proven success in tracking and measuring progress. This information can help SEOs be responsive to potential program objective changes and prioritize adjustments to realistically meet goals.

Table 7. Key Evaluation Questions for Step 2: Evaluating Objectives

<p>Question 2.1: Do the program objectives align with program's goals?</p> <p>Yes, they align with program goals.</p> <ul style="list-style-type: none">- Action: Describe how they align. Determine how to communicate the objectives and goals to participants and stakeholders. <p>No, they do not align with program goals.</p> <ul style="list-style-type: none">- Action: Revisit objectives and revise. See Appendix C for resources.
<p>Question 2.2: Is each objective specific, measurable, achievable, realistic, and time-bound (SMART)?</p> <p>Yes, they are SMART objectives.</p> <ul style="list-style-type: none">- Action: Describe how the objectives are Specific, Measurable (i.e., appropriate metrics to measure the objective), Achievable (i.e., staff capacity and funds to implement the objectives), Realistic, and Time-bound. <p>No, they are not SMART.</p> <ul style="list-style-type: none">- Action: Revisit objectives and revise (Refer to Appendix C for resources).
<p>Question 2.3: Does at least one objective focus on advancing diversity and inclusion practices; and does this objective have at least one associated metric to track equitable outcomes?</p> <p>Yes, an objective(s) addresses equity.</p> <ul style="list-style-type: none">- Action: Describe how the objective(s) is advancing equitable outcomes and list metric(s). <p>No, objectives do not address equity.</p> <ul style="list-style-type: none">- Action: Revise objective (Refer to Appendix B for metrics to track equitable outcomes).
<p>Question 2.4: Does every objective have at least one associated metric to measure its progress and impact?</p> <p>Yes, each objective has an associated metric.</p> <ul style="list-style-type: none">- Action: List the metrics with the relevant objectives. <p>No, each objective does not have an associated metric.</p> <ul style="list-style-type: none">- Action: Revise metrics (Refer to Appendix B for additional examples).

Table 8. Evaluation Findings for Step 2: Evaluating Objectives

<p>Evaluation 2.1: Did the workforce program meet program objectives?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Evaluation 2.2: Describe why your objectives were or were not achieved (e.g., what factors performed well or were ineffective in achieving the objectives).</p> <hr/> <hr/> <hr/> <hr/>
<p>Evaluation 2.3: Describe how your responses above affect your program objectives.</p> <hr/> <hr/> <hr/> <hr/>
<p>After responding to Step 2’s evaluation questions, SEOs can proceed to Step 3, Evaluating Stakeholder Engagement and Outreach Practices.</p>

Step 3: Evaluating Stakeholder Engagement and Outreach

In this step, SEOs should review their practices for engaging with stakeholders who can help with accomplishing a program goal or objective. Continuous improvement in these engagements can give SEOs a clear understanding of the workforce priorities, opportunities, and challenges across the state. This stakeholder feedback can be used to inform the development or modification of a program’s components. Additionally, each stakeholder will provide valuable contributions (e.g., expertise, time, resources), therefore evaluating their level of involvement can distinguish who and how SEOs need to engage to ensure relevant partners are involved in their programming.

Table 9. Key Evaluation Questions for Step 3: Evaluating Stakeholder Engagement and Outreach

<p>Question 3.1: Have you identified the appropriate partners and stakeholders to define and achieve program goals and objectives?</p> <p>Yes, the appropriate stakeholders were engaged.</p> <ul style="list-style-type: none">- Action: List the partners and stakeholders you work with and their role in the program. <p>No, we do not have the appropriate stakeholders.</p> <ul style="list-style-type: none">- Action: Identify new partners and stakeholders, and their roles for your program. Conduct outreach and establish relationships with relevant partners and stakeholders. Refer to Appendix C.
<p>Question 3.2: Have you engaged with community-based organizations or the public to inform program planning and implementation that prioritizes diversity, equity, and inclusion?</p> <p>Yes, the relevant stakeholders with experience and expertise in equity are involved with the program.</p> <ul style="list-style-type: none">- Action: List the partners and stakeholders (and their roles) you work with to ensure the program centers diversity, equity, and inclusion practices. <p>No, we do not have the appropriate stakeholders.</p> <ul style="list-style-type: none">- Action: Identify new partners and stakeholders with expertise in supporting diversity, equity, and inclusion. Establish consistent communication to form and sustain a relationship.
<p>Question 3.3: Have you engaged stakeholders and partners in a way that helped achieve the program goals and objectives?</p> <p>Yes, stakeholders and partners have been engaged on a long-term basis, and that is contributing to how our program is reaching its goals and objectives.</p> <ul style="list-style-type: none">- Action: No action needed. <p>No, our engagement with partners and stakeholders is not effectively helping our program reach its goals and objectives. There is a need for greater or different engagement with partners and stakeholders.</p> <ul style="list-style-type: none">- Action: Develop a plan to reach out and form relationships with new stakeholders and potential partners. Engagement should include describing your program’s goals, and how the relevant stakeholder/potential partner may impact or be impacted by your program. Stakeholders and partners may engage in the areas of program design, development, marketing, and recruitment, to name a few.

Table 10. Evaluation Findings for Step 3: Evaluating Stakeholder Engagement and Outreach

<p>Evaluation 3.1: Are the relevant stakeholders and partners (e.g., employers, community-based organizations) engaged with your workforce program?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Evaluation 3.2: Describe why your engagement and outreach practices were effective or ineffective.</p> <hr/> <hr/> <hr/> <hr/>
<p>Evaluation 3.3: Describe how your responses above will affect your engagement and outreach practices with stakeholders (e.g., will you seek new partners?).</p> <hr/> <hr/> <hr/> <hr/>
<p>After responding to Step 3’s evaluation questions, SEOs can proceed to Step 4, Evaluating Activities.</p>

Step 4: Evaluating Activities

Step four in our framework is key to determining the effectiveness of program activities such as technical skills training, internships, outreach events, etc. SEOs can weigh which outreach, education, training, or other workforce activities worked well to meet participants’ and employers’ needs, and identify the factors that may have contributed to an activity’s ineffectiveness. This information can be collected through metrics, self-assessments administered to participants, and feedback from employers or other partners. An evaluation of activities may help SEOs narrow the scope or number of activities they offer in order to optimize their program’s performance. Through this step, SEOs can identify solutions to improve, add or remove activities, or scale their efforts, when possible.

Table 11. Key Evaluation Questions for Step 4: Evaluating Activities

<p>Question 4.1: Do goals and objectives inform the program activities?</p> <p><u>Yes, our program includes a relevant set of activities.</u></p> <ul style="list-style-type: none">- Action: Describe how your activities support program objectives and are aligned and communicated to program participants and stakeholders. <p><u>No, our program does not include a relevant set of activities.</u></p> <ul style="list-style-type: none">- Action: Consider new activities or refining existing activities that will help directly achieve program objectives and goals.
<p>Question 4.2: Do the activities support the needs of the participants?</p> <p><u>Yes, activities support needs of the participant.</u></p> <ul style="list-style-type: none">- Action: Describe how activities support participant needs (e.g., balancing virtual and in-person events, have sufficient number of instructors, have appropriate training materials). <p><u>No, activities do not support needs of the participant.</u></p> <ul style="list-style-type: none">- Action: Consider offering new activities or refining existing activities.
<p>Question 4.3: Do the activities address the needs of employers?</p> <p><u>Yes, the activities address the needs of employers.</u></p> <ul style="list-style-type: none">- Action: Describe how activities support employer needs (e.g., balancing technical and soft skills development, offering the most relevant certification, training for in-demand occupations). <p><u>No, the activities do not address the needs of employers.</u></p> <ul style="list-style-type: none">- Action: Consider new activities or refining existing activities.
<p>Question 4.4: Do the activities meet the needs of underrepresented workers?</p> <p><u>Yes, the activities address the needs of underrepresented workers.</u></p> <ul style="list-style-type: none">- Action: Describe how activities support the needs of underrepresented professionals (e.g., wraparound service support, professional development support). <p><u>No, the activities do not address the needs of underrepresented workers.</u></p> <ul style="list-style-type: none">- Action: Consider new activities or refining existing activities.

Table 12. Evaluation Findings for Step 4: Evaluating Activities

<p>Evaluation 4.1: Were the activities of the workforce development program effective?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Evaluation 4.2: Describe why your activities were or were not effective in achieving the program objectives or goals.</p> <hr/> <hr/> <hr/>
<p>Evaluation 4.3: Describe how your responses above will affect your activities (e.g., you may consider adding, removing, or refining program activities).</p> <hr/> <hr/> <hr/>
<p>After responding to Step 4’s evaluation questions, SEOs can proceed to Step 5, Tracking Metrics and Data Collection.</p>

Step 5: Tracking Metrics and Data Collection

After reviewing the scope of activities, step five will guide SEOs in assessing if they are collecting data on the most relevant metrics to track their program’s progress and outcomes. Metrics allow SEOs to collect data that communicate the performance and impact of their activities and show their progress in meeting their program’s goals and objectives. This step can help SEOs discern the most relevant metrics to track and collect data for those metrics, or update the metrics to better communicate program’s outcomes and track equity-specific outcomes. There is no formula to best determine the number of metrics needed for program evaluation; SEOs should use findings from steps 1–4 to select the appropriate metrics to quantify program impacts, outcomes, and performance.

Table 13. Key Evaluation Questions for Step 5: Tracking Metrics and Data Collection

<p>Question 5.1: Is the relevant data collected with sufficient frequency (ongoing, quarterly, annually) to measure progress?</p> <p><u>Yes, we are collecting the relevant data.</u></p> <ul style="list-style-type: none">- Action: List the metrics for your program, how you collect the data for those metrics, and how often they are measured. <p><u>No, not collecting the relevant data.</u></p> <ul style="list-style-type: none">- Action: Consider revising the metric(s). Establish a plan for data collection (how is it collected, who is responsible, and how frequently?)
<p>Question 5.2: Are we able to collect the necessary data to measure our metrics?</p> <p><u>Yes, we are able to collect the necessary data to measure our metrics.</u></p> <ul style="list-style-type: none">- Action: Describe data collection methods. <p><u>No, we are not able to collect the necessary data to measure our metrics.</u></p> <ul style="list-style-type: none">- Action: Consider revising data collection method or the metric itself if data collection is not feasible.
<p>Question 5.3: Is the data appropriately stored?</p> <p><u>Yes, we are storing the data appropriately.</u></p> <ul style="list-style-type: none">- Action: Describe your process including who stores the data, where is the data stored, and who has access to it. <p><u>No, not storing the data appropriately.</u></p> <ul style="list-style-type: none">- Action: Your data collection plan should include gathering relevant stakeholders to determine where data should be stored, who should upload data, who should have access to data, and how the data should be disseminated.
<p>Question 5.4: Do the metrics support program objectives?</p> <p><u>Yes, metrics align.</u></p> <ul style="list-style-type: none">- Action: No action needed. <p><u>No, metrics do not align.</u></p> <ul style="list-style-type: none">- Action: Revisit the metrics and consider revising (see Appendix B).

Table 14. Evaluation Findings for Step 5: Tracking Metrics and Data Collection

<p>Evaluation 5.1: Did you select the most relevant metrics to collect data for your workforce development program?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Evaluation 5.2: Describe why your metrics were or were not successful in tracking relevant data and information to communicate program progress, performance, or impact.</p> <hr/> <hr/> <hr/> <hr/>
<p>Evaluation 5.3: Describe how your responses above affect your selection of metrics (e.g., will you revise metrics to better support program objectives, remove a metric if data collection is not feasible, develop a data collection plan).</p> <hr/> <hr/> <hr/> <hr/>
<p>After responding to Step 5's evaluation questions, SEOs can proceed to Step 6, Reporting.</p>

Step 6: Reporting

Presenting the findings from steps 1–5 is important to maintain accountability and transparency on how a program has advanced the energy efficiency and clean energy workforce and produced equitable outcomes. Communicating these results can support peer-to-peer learning and facilitate sharing of best practices to help scale workforce programming efforts. In addition, reporting findings from an evaluation communicates the value of a program to stakeholders and distills the ways in which the program benefited participants. This step enables SEOs to share program progress, successes, lessons learned, and maintain accountability to stakeholders, partners, and the public.

Table 15. Key Evaluation Questions for Step 6: Reporting

<p>Question 6.1: Are stakeholders, partners, and the public informed and presented with the data collected on program progress and equitable outcomes?</p> <p>Yes, we effectively communicate the data with stakeholders, partners, and the public.</p> <ul style="list-style-type: none"> - Action: Describe how you are communicating progress and the data to the program participants and stakeholders. <p>No, we do not effectively communicate the data with stakeholders, partners, and the public.</p> <ul style="list-style-type: none"> - Action: Consider establishing a process to disclose progress and share evaluation results. Even if results seem unfavorable, keep in mind that you cannot manage what you don't measure. Share the broader story, key findings, and plans for program refinement/improvement with your partners and stakeholders.
<p>Question 6.2: Are the program reporting requirements being met and results published or announced?</p> <p>Yes, meeting reporting requirements.</p> <ul style="list-style-type: none"> - Action: No action needed. <p>No, not meeting reporting requirements.</p> <ul style="list-style-type: none"> - Action: Consider refining your process for reporting. This may include selecting additional metrics, establishing a communications plan to share results with relevant stakeholders, identifying a responsible party to complete the report, etc.
<p>Question 6.3: Are any proposed program changes disclosed to stakeholders, employers, and the public?</p> <p>Yes, program changes are communicated to stakeholders.</p> <ul style="list-style-type: none"> - Action: No action needed. <p>No, program changes are not communicated to stakeholders.</p> <ul style="list-style-type: none"> - Action: Consider refining your process for sharing changes in the program with internal and external stakeholders. Sharing key findings and plans for program refinement/improvement with your partners and stakeholders could be an opportunity for feedback, buy-in, and further program refinement.

Table 16. Evaluation Findings for Step 6: Reporting

<p>Evaluation 6.1: Were your reporting methods successful in communicating a program’s impact, progress, or performance?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Evaluation 6.2: Describe why your reporting method was or was not effective in disclosing a program’s performance, progress, or missteps.</p> <hr/> <hr/> <hr/> <hr/>
<p>Evaluation 6.3: Describe how your responses above affect your reporting method (e.g., will you explore different communication channels to disclose findings or data).</p> <hr/> <hr/> <hr/> <hr/>

4 Conclusion

A comprehensive evaluation framework enables SEOs to optimize performance of their states' workforce initiatives, assess progress, and pursue innovative approaches to scaling the workforce. An evaluation framework can also help SEOs to incorporate equity considerations, including Justice40 requirements, into workforce programs. The proposed evaluation framework in this paper is a 6-step approach that offers SEOs flexibility in evaluating workforce programs. Through this evaluation framework, SEOs can evaluate if their program goals and objectives are measurable and realistic, and based on evaluation findings they can revise goals to better align with market and workforce needs while centering diversity, equity, and inclusion practices to respond to the needs of participants.

SEOs can evaluate their workforce programs using a range of participant-level, program-level, and equity-focused metrics discussed in the framework. We include an extensive list of metrics to track for program, participant, and equity outcomes that can help evaluate how a program benefits marginalized communities. SEOs can use findings from their evaluation to tailor program components to align with the evolving workforce, incorporate activities that meet the current and future energy efficiency and clean energy needs, and build a workforce that is qualified, inclusive, and diverse.

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Appendix A. Contextualizing Energy Equity

While many definitions of energy equity exist, for the purposes of this paper we define energy equity using an adapted framework developed by Angela Park and colleagues at the Urban Sustainability Directors Network (Park 2014). The framework allows us to share an understanding of the components of equity in an energy system that should be considered and integrated in the development of goals, policies, and programs. This framework includes four dimensions of equity: procedural, structural, distributional, and transgenerational equity. Figure A-1 offers additional details on the four dimensions of equity.

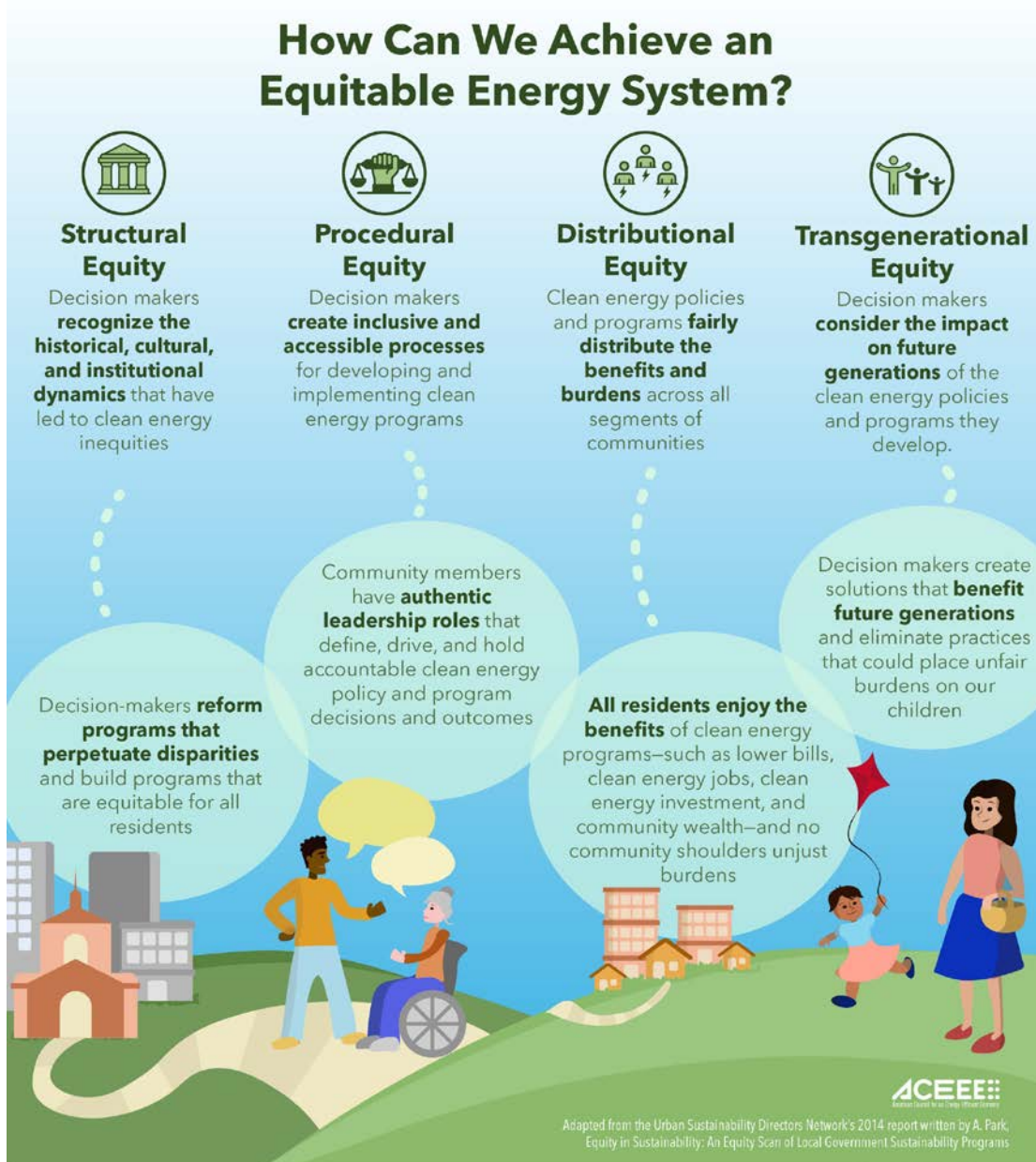


Figure A-1. Achieving an equitable energy system

Figure adapted by ACEEE, originally from Park 2014

Stakeholders who work with marginalized communities can use this framework to assess the extent to which their proposed or existing goals, policies, and programs prioritize community engagement, distribute benefits fairly, and ensure outcomes benefits future generations. For example, SEOs may align their metrics for their evaluation framework with procedural equity and focus on developing metrics that capture community engagement actions. At the same time, this framework can be used to guide the activities offered in their program that aim to distribute workforce trainings and benefits across all segments of the communities they serve.

Figure A-2 highlights the characteristics of an equitable energy system. These characteristics guide stakeholders in determining if goals, policies, or programs are helping advance an equitable future.

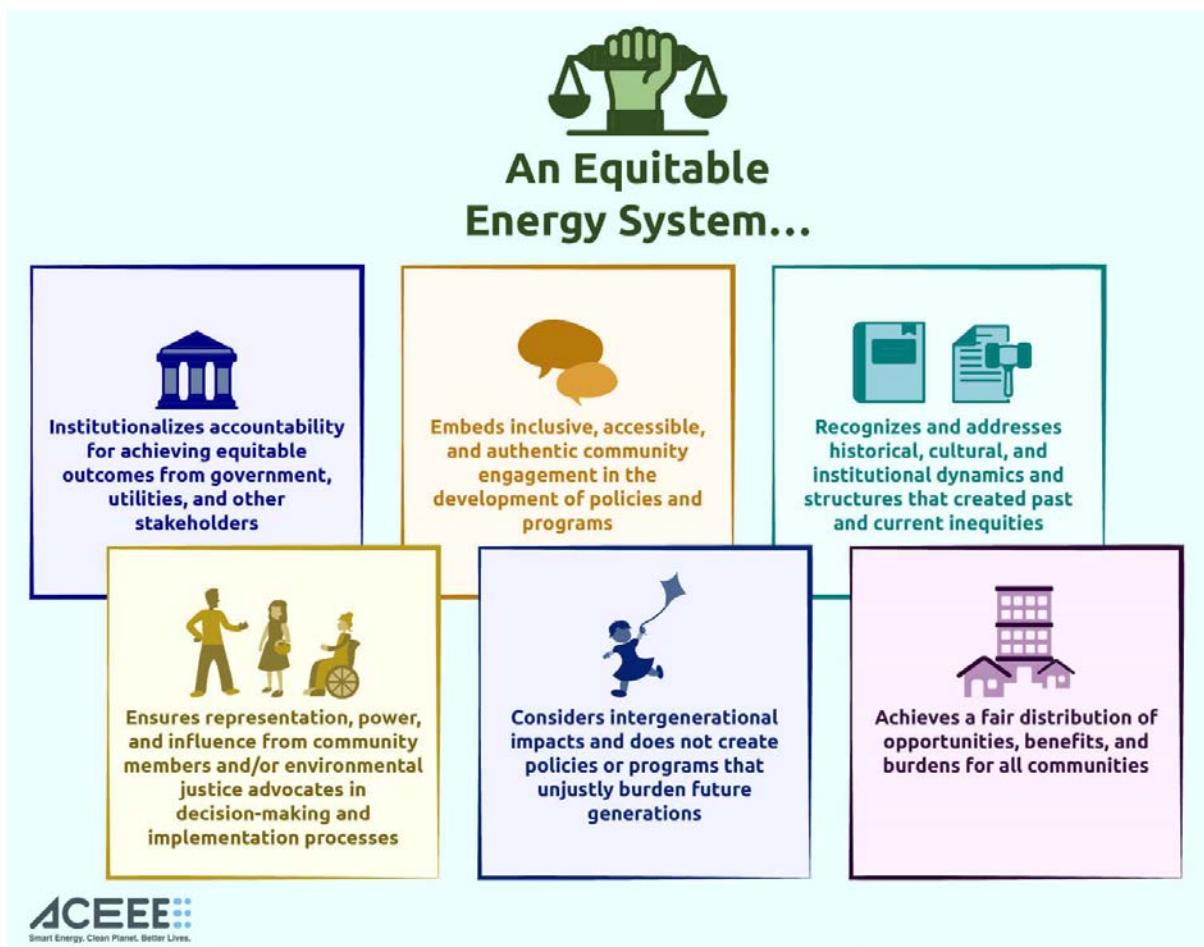


Figure A-2. Identifying an equitable system

Figure from ACEEE

Appendix B. Evaluation Metrics

Below we profile a list of metrics that SEOs and other stakeholders can choose from to track, collect, and measure program outcomes. Metrics are organized in two ways, shown in the tables below. Table B-1 offers suggested metrics based on what types of outcomes you want to measure and evaluate (program, participant, or equity outcomes, or a combination). Table B-2 offers metrics that are most appropriate to the type of program and target trainee audience (e.g., K-12, young adults, reskilling). Depending on the approach and goals of a program, program administrators can refer to either table or both.

Table B-1. List of Program, Participant, and Equity-Level Metrics

Level	Metrics
Program	<ul style="list-style-type: none"> • Number of participants • Number of classes held, presentations conducted • Number of jobs fairs • Number of newsletters sent out • Number of program graduates • Number of continuing education hours awarded • Number of students that pursue a career in climate or energy efficiency industry • Number of participants earning certifications • Type of industry-recognized skills earned • Number of participants placed in jobs, apprenticeships, or internships • Number of participants enrolled in post-secondary school • Number of partnerships established (e.g., this can include partnerships with community-based organizations, workforce centers, labor organizations, training centers) • Community engagement activities completed • Number of full-time jobs • Networking events held for trainees and employer • Types of hand-on experience (e.g., weatherization projects, installing home energy upgrades) • Energy savings, water savings or cost-effectiveness from energy efficiency measures installed by participants • Job classification for which participants are being recruited and trained • Compensation provided under apprenticeships • Estimated cost of training per participant
Participant	<ul style="list-style-type: none"> • Number of participant activities • Number of students engaged or empowered to participate in local climate projects • Wages of employed individuals above the national average after completing training • Stipends offered to trainees • Wages or reimbursement provided to trainees

Level	Metrics
	<ul style="list-style-type: none"> • Average and range of wages (\$/hour) for occupations obtain by participants after completing program • Childcare and transportation resources provided to participants • Customized mentorship provided to participants • Employee benefits for participants in training program (e.g., child care, health care, life insurance) • Health impacts (e.g. mental well-being, safety) • Number of workers newly employed, promoted within current employment or placed with a registered apprenticeship • Number of participants that attain unsubsidized employment • Number of participants joining a union or other labor organization • People still employed at specific intervals (e.g., 6 or 12 months) • Percentage of participant that registered for training and completed program • Level of satisfaction with program among participants • Participant satisfaction with trainings • Types of skills, knowledge, or organizational capacity acquired upon completion of program
Equity	<ul style="list-style-type: none"> • Number of participants from disadvantaged populations • Demographic analysis of all participant outcomes (race, gender, ethnicity, geography, education, disability, socioeconomic status, etc.) • Number of returning citizens or opportunity youth recruited • Number of minority-owned businesses trained or recruited • Number value of contracts awarded to businesses that are owned by women, minorities disabled veterans or LGBT persons • Partnerships or engagement with minority serving institutions or community-based organizations • Types of wraparound services offered to trainees • Number of hires from disadvantaged communities resulting from trainings • Percentage of funds going to local minority-owned and small energy efficiency and clean energy businesses • Dollars spent (\$) per participant from disadvantaged communities in job training or apprenticeships or recruitment • Dollar value (\$) of partnerships, contracts or training with minority serving institutions or community-based organizations • Percentage of participation relative to eligible target population • Types of skills or knowledge gained by women, minority, disabled veterans, or LGBT contractors via training • Percentage of incentive dollars spent on measures verified to have been installed by diverse contractors • Locations (census tract/zip code) of energy efficiency and clean energy contracting businesses owned by minorities, women, disabled veteran and/or LGBT persons

Table B-2. Metrics That SEOs or Stakeholders Can Use To Measure Short-Term, Intermediate, and Long-Term Outcomes by Program Goals

Program goals	Metrics that measure short-term outcomes	Metrics that measure intermediate outcomes	Metrics that measure long-term outcomes
Engage K-12 students	Training/professional development activities or other supports (e.g., group training, on-site coaching, distance training); outreach for parents and families	Training program completions, curriculum materials completed	Expected changes in behavior, attitudes, aptitude/skill, and knowledge for participants
Reach young adults (18-24 years old)	Coaching, advising, or referrals developed and delivered; outreach to parents and families	The number of complete records	Changes in employment and earnings
Reskilling	Instruction or skill development completed (e.g., technology, formative assessment(s), use of instructional time, participant groupings)	Participant job placements; number of paid internships; percentage of disadvantaged participants trained (ID by zip code)	Receipt of industry credentials; number of former interns hired into roles
Upskilling	Participant services (e.g., skill assessments, occupational training) delivered	Participant credentials; incentive dollars spent on measures verified to have been installed by contractors with demonstrated commitment to provide career pathways to disadvantaged workers	Receipt of industry credentials, electricity and fossil fuel savings, changes in employment and earnings, employment retention
Training returning citizens	Participant, employer, and community engagement activities completed	Program completions; level of satisfaction with the program from both the student and key stakeholder perspective (e.g., employers and utilities)	Number of formerly incarcerated people hired

Appendix C. Tools and Resources To Develop Program Goals and Objectives

The Better Buildings Workforce Accelerator’s [“Program Design & Evaluation” fact sheet](#) is a 3-page resource that includes key insights, such as the program design being iterative, the importance of goals and objectives, and how focusing on evaluation from the start can improve the entire program development process. Key questions and follow-on resources are included as well.

The fact sheet references a more in-depth presentation, the Better Buildings Workforce Accelerator’s [“Workforce Program Design and Evaluation,”](#) which provides additional resources in its Appendix such as “Workforce Development Goals and Objectives Worksheet,” “Ideas for Workforce Program Evaluation Metrics,” and the “Aligning Goals and Metrics” worksheet, to name a few.