Process Evaluation of NYSERDA's 2013 Workforce Development Initiative

Final Report

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Abstract

This report presents the results of a review of the NYSERDA Workforce Development (WFD) Initiative, which is part the NYSERDA's Technology and Market Development (T&MD) Portfolio. Among other activities, WFD provides funds for Technical Training (TT) to improve the skills of those already in the construction and building trades industries, for Career Pathways (CP) training for underserved and underemployed populations, and for on-the-job training (OJT) to newly hired workers. All three of these programs seek to advance the skills of – and increase the supply of – workers in the clean energy economy. This evaluation developed and assessed indicators using the Kirkpatrick evaluation framework for the CP, TT, and OJT participants. For CP and TT programs, the evaluators analyzed pre-/post-training survey data on 750 trainees, and interviewed 38 trainees. For OJT, the evaluators interviewed 18 employers and 26 trainees.

The study concludes that CP, TT, and OJT training activities evidence effectiveness in the areas of reaction, learning, behavior, and results (the Kirkpatrick evaluation framework). The TT and OJT programs are instrumental in preparing workers for jobs in the clean energy industry. The OJT program is instrumental in increasing the number of employed clean-energy workers; the CP and TT programs also led to increased employment in the clean-energy field. The multiple WFD activities are providing an integrated, coordinated approach to the market that meets the needs of workers with a wide range of skill levels. It is common that trainees have participated in, or intend to participate, in two of the three programs, reflecting the continuum of training offered.

Key Words

Training, Career Pathways, Technical Training, on-the-job training, OJT, workforce training, classroom training, certification, job shadowing

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Executive Summary

NYSERDA's Technology and Market Development programs are funded by an electric distribution System Benefits Charge (SBC) paid by customers of Central Hudson Gas and Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric and Gas Corporation, National Grid, Orange and Rockland Utilities, and Rochester Gas and Electric Corporation. All customers who pay into the SBC are eligible to participate in the programs, which are administered by The New York State Energy Research and Development Authority (NYSERDA), a public benefit corporation established in 1975.

This report provides the findings, conclusions, and recommendations of an early stage process evaluation of NYSERDA's 2013 Workforce Development (WFD) Initiative activities. WFD delivers its training through a network of training partners, chosen through a competitive selection process (PON 1816). At the time of this report, 77 partners were providing training Career Pathways (CP) and Technical Training (TT). CP courses range from basic skills through entry-level technical training to prepare for employment in clean energy field; TT provides entry or advanced-level technical training to advance skills and careers. In addition, WFD supports on-the-job training (OJT), delivered by participating employers and coordinated through the New York State Department of Labor (NYSDOL). As of the end of 2013, NYSERDA had engaged 52 employers in the clean energy field providing OJT to 250 employees. WFD also provides other support to the developing workforce not addressed in this study.

The current study analyzed data from about 750 pre-training and post-training surveys completed by CP and TT trainees, and administered by the training partners in mid 2012 to late 2013. In addition, the study conducted (in late 2013) and analyzed short-answer interviews with 19 CP and 19 TT trainees from trainings mid 2012 to late 2013, and 18 OJT employers and 26 OJT trainees from OJT programs in 2013.

Compared to before the training, a few of the interviewed CP trainees had been hired and at least partially attributed their new employment to the training; half of the interviewed CP trainees were currently employed. One CP trainee obtained a promotion as a result of the training. All interviewed TT trainees were currently employed. A few contacts reported having been hired since the training, while other TT contacts reported the training either had, or would, assist them in obtaining a promotion or in retaining or obtaining certification. Both interviewed OJT employers and trainees agreed that the program successfully prepared trainees to work in the clean energy field. Both OJT employers and trainees held the opinion it was unlikely the trainees would have been engaged by the firm without the program.

Recognizing that the study's findings are drawn from relatively small interview sample sizes, the evaluators offer conclusions and recommendations as suggestions for the program team's consideration.

Conclusion: The CP, TT, and OJT training activities evidence effectiveness in the areas of reaction, learning, behavior, and results. The TT and OJT programs are instrumental in preparing workers for jobs in

the clean energy industry. The OJT program is instrumental in increasing the number of employed clean-energy workers; the CP and TT programs also led to increased employment in the clean-energy field.

Conclusion: The multiple WFD activities are providing an integrated, coordinated approach to the market that meets the needs of workers with a wide range of skill levels. It is common that trainees have participated in, or intend to participate, in two of the three programs, reflecting the continuum of training offered.

Conclusion: Although few employers expressed any dissatisfaction with the OJT program, those few expressed dissatisfaction with program elements relating, broadly speaking, to communication among WFD staff, NYSDOL Business Service Representatives (BSRs), and employers.

- **Recommendation:** The many routes through which employers and candidates come to the OJT program is a sign of successful integration and coordination of the larger WFD effort. There remains opportunity for the WFD program to further coordinate all parties in working together efficiently to meet participants' needs.

Conclusion: A combination of on-the-job and classroom training appears to be valuable and valued by OJT trainees and employers; the 2013 OJT program provided incentives for classroom training. The current OJT design does not pay for classroom training for OJT trainees, although these trainees may be eligible for TT incentives through other WFD activities.

- **Recommendation:** Encourage OJT trainees to attend at least one TT course to complement their hands-on learning with formal education. Ensure that OJT employers and trainees are informed of the upcoming TT trainings and opportunities for financing the training.

Conclusion: CP trainees varied in how difficult they found the materials covered in the courses. For some, the course material was too difficult, while for others the material covered was at a good level, and for still others the course materials were mostly a review.

- **Recommendation:** Encourage all training partners to incorporate into CP registration information (as some partners do) a checklist of the basic educational skills needed for understanding course content, perhaps illustrating the concepts by having a score-yourself quiz.

Conclusion: OJT employers may not be effectively planning their participation in the OJT program, as evidenced by one employer who apparently did not realize the firm could have more than one trainee. OJT employers may need help strategizing their OJT participation, and may need additional program information early on in outreach and application stages, to increase their training efficiency.

- **Recommendation:** WFD staff should develop an approach, with clear roles for WFD and NYSDOL staff, for strategizing with employers about their effective use of WFD resources.

1 Introduction and Program Description

NYSERDA's Technology and Market Development programs are funded by an electric distribution System Benefits Charge (SBC) paid by customers of Central Hudson Gas and Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric and Gas Corporation, National Grid, Orange and Rockland Utilities, and Rochester Gas and Electric Corporation. Programs are available to all electric distribution customers that pay into the SBC. The New York State Energy Research and Development Authority (NYSERDA), a public benefit corporation established in 1975, administers the SBC funds.

This report provides the findings, conclusions, and recommendations of an early-stage process evaluation of NYSERDA's 2013 Workforce Development Initiative (WFD) activities conducted by Research Into Action from October 2013 to February 2014. This evaluation assesses three components of the multi-pronged WFD Initiative: two classroom training components (Career Pathways and Technical Training) and the On-the-Job Training component.

In early 2013, NYSERDA consolidated training funding from Energy Efficiency Portfolio Standard (EEPS) and System Benefits Charge (SBC3) programs with new Technology and Market Development (T&MD) funds to create the T&MD Workforce Development (WFD) Initiative. The Initiative will continue to broaden or extend training offerings with partners initially contracted under EEPS and SBC3 programs under T&MD funds, while contracting with new partners as needed.

The WFD Initiative functions to equip the state's present and future workforce with the technical skills needed to meet the goals of NYSERDA's T&MD, EEPS, Renewable Portfolio Standard, and Green Jobs Green New York efforts. By placing all training under the same funding umbrella, WFD supports a broad array of training programs targeting energy efficiency (EE), renewable energy (RE) and advanced technology and emerging technology (AT/ET). Collectively, these training programs support the development of a clean energy workforce. (This report uses the term "clean energy" to refer to EE, RE, and AT/ET.)

The WFD Initiative seeks to advance the skills of existing and emerging or future workers in the clean energy field through classroom, online, and hands-on training. To bridge gaps between training and employment, the Initiative offers internships, apprenticeships, and on-the-job training. The WFD program facilitates the adoption of new and underused technologies into the marketplace through training in AT/ET. WFD also supports certification and accreditation programs.

Through WFD, existing clean energy workers have opportunities to further develop their skills, pursue training leading to – or maintaining – industry certifications, and perhaps advance their careers. Also through WFD, individuals seeking to enter the clean energy field can obtain the basic skills necessary for

entry-level work in the field or for more advanced training. These WFD training and skill-building efforts yield a more skilled workforce for New York.

Within the WFD Initiative, NYSERDA has three primary types of training activity – Career Pathways (CP) Training, Technical Training (TT), and On-the-Job Training (OJT) – funded by two sets of PONs. These three training activities are the focus of this evaluation.

- **Energy Efficiency Career Pathways Training and Technical Training (previously PON 1816[1] and PON 1817,[2] the focus of this evaluation; currently PON 2774[3] and PON 2032,[4] efforts too recent to evaluate)**

  WFD delivers its training through NYSERDA's network of training partners, including community colleges, community organizations, and unions. NYSERDA engages the training partners through its PONs (as described in footnotes at the end of this page). Training partners train individuals in clean energy basic and advanced skills, conduct training for trainers, develop course curricula, and provide tuition support to trainees. The training partners deliver courses in classrooms and online. Trainings include workshops, seminars, credit-bearing courses, degrees (two- and four-year), and certification offerings or professional development courses providing continuing education credits.

  This evaluation assesses the Career Pathways (CP) and Technical Training (TT) programs. These two training programs are distinguished by their target audience. CP provides training appropriate for people seeking work in the clean energy field at an entry level or for people needing additional

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1 *PON 1816, Workforce Development Training for Energy Efficiency,* sought partnerships with eligible training entities to deliver energy efficiency training programs throughout New York, with a goal to "quickly ramp up workforce training through established energy efficiency, equipment and training curriculum to support work for programs funded under EEPS." Funded by EEPS, the PON targeted both the Career Pathways and Technical Training populations.

2 *PON 1817, Energy Efficiency Career Pathways Training and Technical Training*, expands the Career Pathways and Technical Training part of the EEPS WFD and Green Jobs Green New York (GJGNY) training activities. EEPS and GJGNY funded this PON. The GJGNY funding enabled training in Long Island and training for GJGNY audits and oil efficiency measures in heating applications.

3 *PON 2774, Career Pathways Training Partnerships for Energy Efficiency & Renewable Energy*, continues the activities of PON 1817. It provides experiential learning opportunities (internships/apprenticeships) to enhance the skills of unemployed or underemployed adults, as well as the skills of the people currently working in the efficiency and renewable energy fields. The PON is funded under T&MD. At the time of this evaluation, NYSERDA is currently executing PON 2774 training contracts, thus so no data are evaluable available from this PON for the current evaluation data were available.

4 PON 2032, *Training, Expanding Field Certification Exam Capacity and Development of Oil/Gas Furnace Installation Technician Standards*, addresses WFD needs to support GJGNY in promoting energy efficiency and the installation of clean energy technologies. Most of the funding targets the development of training workshops, curriculum development, and delivery of workshops and curricula. This PON targets the Technical Training population. GJGNY funds this PON.

skills before they can pursue the advance training. TT provides entry and higher-level training for people in the clean energy field seeking to advance their skills and careers.

- **Clean Energy On-the-Job Training (PON 2033)**[5]

  This program offers employers incentives to place and engage employees in On-the-Job Training (OJT); participating employers agree to retain the trainee as a regular employee after the OJT period ends.[6]

  NYSERDA pays up to $15,000 of a trainee's salary for up to six months of employment, for up to a total of $150,000 for multiple trainees. Although NYSERDA does not currently pay for additional classroom training for OJT placements, some of the employer agreements investigated in this early-stage evaluation included incentives for program-supported classroom training.

  NYSERDA collaborates with the New York State Department of Labor (NYSDOL) to implement the OJT program. Among other services, NYSDOL organizes New York State Career Centers (formerly One-Stop Career Centers) to assist people who are out of work or are employed and seeking advancement or new opportunities to access job listings, learn of training and apprenticeship opportunities, or attend a job fair.

  Employers and candidate employees or job seekers can become involved in the OJT program through a number of routes. Employers typically learn about the program from NYSERDA (its program staff or outreach activities), the NYSDOL BSR, or job seekers. Employers may have identified a candidate suitable for OJT engagement, the BSR may identify the candidate, or the job seeker may have initiated the process.

  Job seekers typically learn about the program from a business contact (such as an employee of the firm the job seeker is now pursuing), the NYS Career Centers or NYSDOL staff, NYSERDA training partners (during CP or TT training),or nonprofits focused on sustainable career preparation, such as Green City Force.[7] Job seekers also learn about clean energy employers from these sources, and may learn about the OJT program through contact with informed employers.

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5 PON 2033, *Clean Energy On-the-Job Training*, funded by T&MD, provides support for on-the-job training of workers engaged in the energy efficiency and renewable energy fields.

6 The OJT program's initial design included training funding for incumbents being promoted when the employer would be hiring a new worker into the role vacated by the incumbent, as this situation met the twin OJT goals of increasing workforce skills and size. The current OJT program design provides OJT support for new hires only; incumbents are eligible for funded TT training through other WFD PONs.

7 Green City Force is a service corps that prepares young people from low income backgrounds for sustainable careers.

Regardless of the route, the job candidate needs to register with their local NYS Career Center. Similarly, the employer needs to complete an application (the first step of which is an "Intent to Apply" form), for which NYSDOL staff conduct a due diligence review.[8] Subsequent to approval, the applicant employer and a NYSDOL Business Service Representative (BSR) come to agreement on the suitability of the candidate and the appropriate OJT training goals to be met through OJT teaching, mentoring, and active participation in current jobs. The employer, NYSDOL, and NYSERDA sign an OJT training contract.

Table 1-1 describes the programs and associated PONs assessed by the current study. As previously discussed, PONs 2774 and 2032 also support the three programs assessed in this study, yet at the time of this study, NYSERDA was engaged in contracting for these PONs and thus they had not as yet generated any trainees. (NYSERDA has issued additional PONs as part of the WFD Initiative, yet these are also outside the scope of this evaluation.)

Table 1-1. Training Programs Evaluated

Programs Assessed	Assessment Period	PON	Title	Funding Source
CP	Mid 2012 to late 2013	1816	Workforce Development Training for Energy Efficiency	EEPS
		1817	Energy Efficiency Career Pathways Training and Technical Training	GJGNY/EEPS
TT	Mid 2012 to late 2013	1816	Workforce Development Training for Energy Efficiency	EEPS
		1817	Energy Efficiency Career Pathways Training and Technical Training	GJGNY/EEPS
OJT	2013	2033	Clean Energy On-the-Job Training	T&MD

[8] NYSDOL staff verify the employer's good standing with NYS unemployment insurance, Workers' Compensation, disability insurance, NYS labor standards, and other conditions.

2 Evaluation Methodology

2.1 Research Objectives

As specified in NYSERDA's *Operating Plan for Technology and Market Development Programs (2012-2016), Systems Benefit Charge*,[9] NYSERDA is committed to evaluating its WFD training activities using an adapted Kirkpatrick four-level Evaluation Model.[10] The four levels of assessment are:

1. *Reaction*: Response of the trainee to the training
2. *Learning*: Degree to which trainees acquire the intended knowledge, skills, and attitudes, based on their participation in the training event
3. *Behavior*: Skills and knowledge from training applied, and performance in the workplace that can be attributed to training
4. *Results*: Degree to which targeted outcomes occur as a result of training and subsequent reinforcement (that is, effects of training on the workplace)

For this study, the evaluators analyzed primary and secondary data relating to program effectiveness for the CP and TT programs, and analyzed primary data for the OJT program. Section 2.2 describes the datasets and samples in more detail; briefly, the evaluators analyzed five datasets:

- Career Pathways and Technical Trainees pre-/post-training surveys (secondary data to this evaluation)
- Career Pathways follow-up phone interviews
- Technical Trainees follow-up phone interviews
- On-the-Job Training employer phone interviews
- On-the-Job Training trainee phone interviews

The evaluators developed research objectives and issues for each dataset, including both topics corresponding to the Kirkpatrick Evaluation Model and objectives, and topics related to a broader process evaluation inquiry. Table 2-1 summarizes the objectives and issues, clearly identifying those associated with the Kirkpatrick Evaluation Model.

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[9] Operating Plan for Technology and Market Development Programs (2012-2016), Systems Benefit Charge. NYSERDA. February 15, 2013.

[10] Adapted from *Kirkpatrick Four Levels*: *A Fresh Look after 50 Years 1959-2009 (2009).* Available at: *www.kirkpartrickpartners.com*, the website.

Table 2-1. Research Objectives Across Datasets

Research Objective	Research Issues	Kirkpatrick Evaluation Model Level(s)
Career Pathways and Technical Trainees Pre-/Post-Training Surveys		
Characteristics	Background/demographics	(None)
	Job search strategies	(None)
Expectations and Experiences	Trainee expectations about training	Influences Reaction
	Trainee assessment of training	Reaction
	Trainee experience of training	Learning
Improvements	Suggestions for improvement	Reaction
Next Steps	Trainee plans	Behavior
Career Pathways and Technical Trainees Follow-Up Phone Interviews		
Characteristics	Background/demographics	(None)
Expectations and Experiences	Trainee assessment of training	Reaction
	Trainee experience: acquired knowledge and skills	Learning
	Employability	Results
	Applicability of training	Results
Improvements	Suggestions for improvement	Reaction
Next Steps	Trainee plans	Behavior
On-the-Job Training Employer Interviews		
Characteristics	Firmographics	(None)
	Work activities of trainee, OJT activities	Context for All Levels
Expectations and Experiences	Employer satisfaction with trainee placement; with classroom trainings	Reaction
	Interactions with NYSDOL Business Services Representatives (program processes)	Context for All Levels
	Trainee learning, behavior, results	Learning, Behavior, Results
Improvements	Suggestions for improvement	Reaction
Next Steps	Hiring plans	Behavior
On-the-Job Training Trainee Interviews		
Characteristics	Background/demographics	(None)
Expectations and Experiences	Trainee satisfaction with placement	Reaction
	Assess trainee workplace experience	Learning, Behavior
	Attainment of trainee needs/goals	Learning, Behavior
	Assess OJT program processes	(None)
	Assess opportunities trainee has for applying OJT knowledge and skills taught; for applying classroom content	Behavior, Results
	Changes attributed to training	Results
Improvements	Suggestions for improvement	Reaction
Next Steps	Employment plans, activity	Behavior

The research objectives are consistent across the datasets to facilitate cross-program and cross-sample comparisons. The pre-/post-training surveys that generated the secondary data had been designed prior to this evaluation; the current evaluators retrospectively associated those survey questions with the objectives of the current evaluation.

Appendix A provides the data collection instruments.

2.2 Data Collection and Sampling

Table 2-2 displays the primary data collection activities (phone interviews) to assess the effectiveness of the CP, TT, and OJT programs.[11] The evaluators also analyzed secondary data for CP and TT (the pre-/post-training surveys completed by trainees and administered by the training partners during mid 2012 to late 2013).[12] The evaluators drew the CP and TT interview samples from trainees completing pre- and/or post-training surveys.

Table 2-2. WFD Populations Interviewed

Population	Date of Program Involvement	Data Collection Type	Average Interview Length	Population Size	Sample Target	Sample Obtained
CP trainees completing a pre- or post-training survey	Mid 2012 to late 2013	Phone interview	22 minutes	~200	12 to 18	19
TT trainees completing a pre- or post-training survey	Mid 2012 to late 2013	Phone interview	22 minutes	~550	12 to 18	19
OJT employers	2013	Phone interview	35 minutes	52	15 to 20	18
OJT trainees	2013	Phone interview	23 minutes	250	25 to 30	26

The population sizes shown in Table 2-2 are defined relative to the contact data available to the evaluation team. The sample sizes for the CP trainee, TT trainee, OJT employer, and OJT trainee interviews provide a better than 90% confidence level, with 20% precision for interview items when all contacts are included. Because the primary datasets are relatively small (ranging from 18 to 26), the evaluators express the

[11] Interview guides are given in Appendix A. Note that while most questions in the guides include pre-codes for potential answers, to facilitate subsequent coding of the data, the interviewer posed all questions in an open-ended form and captured the contacts' verbatim responses. Thus, the final evaluation dataset includes for each question verbatim responses and categorical coding of those responses.

[12] The training partners for energy efficiency and GJGNY solar thermal ask each training participant to complete both a pre-training and post-training short survey; the partners provided PDF versions of these surveys to NYSERDA. To analyze the pre- and post-training surveys administered by the training partners, the evaluation team created an electronic dataset in *Excel* of the completed surveys NYSERDA received from its training partners.

findings for these data sets in terms of number of respondents, such as 15 of 18, instead of percentages. For the secondary data, the sample sizes are much larger (ranging from ~200 to ~550), and these data are reported as percentages or proportions.

The evaluators designed a purposive sample of OJT employers to reflect the 2013 employer diversity, as shown in Table 2-3.[13] All interviewed employers were engaged with one or more OJT trainee at the time of the interview. The evaluators sampled the OJT trainees from the interviewed employers. All interviewed trainees were working for the participating employer at the time of the interview.

Table 2-3. Characteristics of Purposive Sample of OJT Employers

Characteristic	Descriptor	Count
Funding Source*	T&MD RE/AT	3
	T&MD EE	8
	GJGNY	10
Training Type	OJT	18
	Classroom	5
Funding Amount (quartile)	1st Quartile (lowest incentives)	4
	2nd Quartile	6
	3rd Quartile	2
	4th Quartile (highest incentives)	6

* Multiple responses allowed for Funding Source. Data on funding source from "GYGNY and SBC Hire Data Final" spreadsheet, received from WFD staff in November 2013. WFD staff initially developed this tracking spreadsheet prior to the T&MD portfolio; consequently, the file uses the term "SBC," for which the evaluators substituted "T&MD" in this table.

Table 2-4 shows the disposition for the telephone interviews in aggregate.

Table 2-4. Disposition Report for Phone Surveys/Interviews

Disposition	Number	Percent
Complete	79	64%
Partial	0	0%
Refused	3	2%
Contact no longer available*	40	32%
Not eligible	2	2%
Total	**124**	**100%**

* All but 1 of the 40 "contact no longer available" records are from the CP / TT dataset; one contact is from the OJT trainee dataset.

[13] Both NYSERDA and NYSDOL staffs supporting OJT maintain program-tracking databases. Although the two databases track different program data, collectively they include information on participating employers, funding awarded for OJT and classroom training, trainees, and training objectives.

3 CP and TT Findings

The evaluators analyzed the pre-/post-training surveys submitted to NYSERDA between June 2012 and November 2013. The evaluators found about 600 pre-training surveys and 600 post-training surveys from approximately 750 unique trainees. Approximately 200 of the surveys were completed by trainees involved in the CP track, while 550 were completed by TT trainees. These surveys had been submitted to NYSERDA by 23 training partners and spanned 44 unique courses (22 CP and 22 TT). The courses ranged from basic-skills training (i.e., *Basic Construction*) for CP trainees, to advanced-skills training (i.e., *Energy Modeling and Code Compliance*) for TT trainees.

The evaluation team created an *Excel* database of pre-/post-survey data that NYSERDA had received in PDF format from its training partners. As expected from original data captured in hand writing on a paper survey form and subsequently converted to PDF format, the data necessitated substantial cleaning. A number of entries (such as trainee name or contact information) was illegible and thus not entered into the *Excel* database. The surveys had vagaries in nomenclature and missing data for such elements as course title and training partner, which the trainee (rather than the training partners) needed to enter. After the data were cleaned, duplicates removed, and records restricted to those with accurate training course identification, the dataset comprised the following:

- Out of an estimated 200 or so unique CP trainees, the analysis dataset contained 104 pre-training surveys and 158 post-training surveys for the CP trainees; 39 CP trainees completed both pre- and post-training surveys.[14] These CP trainees attended 8 unique training courses offered by seven training partners.
- Out of an estimated 500 or so unique TT trainees, the analysis dataset contained 495 pre-training surveys and 436 post-training surveys from the TT trainees; 300 TT trainees completed both pre- and post-training surveys. These TT trainees attended 16 unique training courses offered by 10 training partners.

The discussion in this chapter draws comparisons between the findings from the current CP and TT pre-/post-training survey dataset (referred to as the "2013 cohort"[15]) and the CP/TT survey dataset compiled for

[14] The low rate of matching pre- and post- surveys may be due to the uneven response rate from training partners to provide pre- and post- training surveys, and the varying level of quality of the handwritten and scanned surveys. In many cases, surveys were received for either pre- or post-training but not for both for each course.

[15] The term "cohort" is used because the secondary data analysis comprises all trainees completing pre- and/or post-surveys submitted by training partners to NYSERDA; no sample was drawn.

a prior process evaluation of NYSERDA's WFD activities concluded in mid 2012 and referred to here as the "2012 cohort."[16]

The pre- and post-training surveys comprised different questions; the discussion reports results by research area informed by the relevant question.

In addition to analyzing the pre-/post-training survey data, the evaluation team conducted interviews with 19 of the CP trainees and 19 of the TT trainees sampled from the dataset constructed for the secondary data analysis. The interviewed former trainees had completed a pre- and/or a post-training survey during training courses they completed between mid 2012 and late 2013.

Because of the relative small sample sizes of the interview samples (19 for CP and 19 for TT), the evaluators report results in terms of numbers of trainees (such as 12 of 19), instead of percentages or proportions. The reader is cautioned to interpret these early stage process evaluation findings as suggestive; the sample sizes lack the precision needed to support extrapolation of the results to the population.

As with all interview data, contacts can provide multiple responses. Thus, reported counts can exceed the sample sizes.

In contrast to the interview data, the secondary data includes observations from all trainees completing pre-/post-training surveys submitted to NYSERDA. Thus, the evaluators use percentages to summarize these findings.

The evaluators used the Kirkpatrick four-level framework to assess the following elements of training effectiveness:

1. *Reaction*: Response of the trainee to the training
2. *Learning*: Degree to which trainees acquire the intended knowledge, skills, and attitudes, based on their participation in the training event
3. *Behavior*: Performance in the workplace that can be attributed to training
4. *Results*: Degree to which targeted outcomes occur as a result of training and subsequent reinforcement (effects of training on the workplace)

[16] See *Process Evaluation: Workforce Development Program Final Report*. Prepared for NYSERDA by Research Into Action, June 2012.

3.1 Kirkpatrick's Level 1: Reaction

The CP and TT trainees who completed pre-/post-training surveys during mid 2012 to late 2013 were satisfied with their experiences of the training overall (*n*=594); almost half of the trainees said the training met their expectations and 45% of the trainees said the training exceeded their expectations. Three-quarters of the CP and TT trainees described the training as appropriate for their level of knowledge, while about 12% each of the trainees said that the training was either too hard or too easy. In contrast to this finding, the interview findings (discussed in section 4.1.2) suggest a much lower rate of preparedness among CP trainees.

Interviewed CP contacts from courses offered mid 2012 to late 2013 reported varying degrees of preparation in understanding course content. Specifically, about half (9 of 17) said they had sufficient preparation to understand course content (a rating of "8" or higher on a 0-to-10 scale, where "0" represented "no preparation" and "10" represented "significant preparation"), while the other half (8 of 17) had "partial" preparation (a "5," "6," or "7" on the same scale). Most CP contacts (15 of 19) stated that more than half of the course content was new to them.

Interviewed TT contacts from courses offered mid 2012 to late 2013 reacted positively to the WFD training. Most of them (16 of 19) said they had sufficient preparation to understand course content and the information in the course was new to them, not a refresher.

3.2 Kirkpatrick's Level 2: Learning

Of the trainees completing pre-/post-training surveys, 85% of the CP trainees and 79% of the TT trainees reported that the training "definitely" or "probably" prepared them for a job in the clean energy field, while the other trainees were not sure how well the training prepared them (CP *n*=158, TT *n*=436). The evaluation team may conduct further analysis, including a comparison of the skills and experience levels the trainees reported prior to and after the training.

About half of interviewed CP contacts (8 of 15) commented that the training provided good preparation ("8" or higher on a 0-to-10 preparation scale) for obtaining a job in the clean energy field, or for their current work, or for advancement in their field (8 of 19 were employed at the time of the interviews). Two-fifths of CP contacts said that the course provided partial preparation (a "5," "6," or "7" on the same scale). Over two-thirds (11 of 16) of the CP contacts expressed that the training was relevant or helpful to their work or in seeking work in the clean energy field.

As evidence that TT participants learned from their training, almost two-thirds of interviewed TT contacts (12 of 19) reported the training provided good preparation (an "8" or higher on a 0-to-10 scale) for their current work or advancement in their field. Over three-quarters of TT contacts (15 of 19) noted the training

was relevant or helpful to their work, and three contacts said they have or will advance in their career because of the training they received.

3.3 Kirkpatrick's Level 3: Behavior

Consistent with CP targeted population, 70% of CP trainees completing the pre-/post-training surveys said that they were unemployed or employed in areas other than energy efficiency at the start of the training (*n* =102). Consistent with TT objectives, 90% of TT trainees completing the surveys reported they were employed at the start of the training and 75% had experience in the clean energy field (*n*=495). Immediately after the training, 28% of the CP and 50% of the TT trainees reported they planned to take additional clean energy training, while 16% of CP trainees and 5% of TT trainees anticipated taking other training unrelated to clean energy; the remaining trainees did not plan to take any additional training. Four-fifths (80%) of the CP trainees and over two-thirds (70%) of the TT trainees said they "probably" or "definitely" would either continue or pursue a job in the energy efficiency field.

Four of the eight interviewed CP contacts that were currently employed said they were using skills they learned in their training; two use those skills daily. The one respondent who did not report using those skills at work was taking the course as a refresher, and the remaining four employed CP contacts did not provide feedback on how they were using the training. Most (12 of 17) CP contacts reported they were eligible to pursue certifications after receiving training, and three-quarters (9 of 12) pursued the certifications.[17]

Most interviewed TT contacts (16 of 18) reported regularly using skills they learned in the training; three of them said they used the skills daily. All interviewed TT trainees explained that they were eligible to pursue certifications after receiving their training and did so successfully.

3.4 Kirkpatrick's Level 4: Results

The secondary CP and TT data did not provide information from which the evaluators could assess training results.

About half of the interviewed CP contacts (8 of 17 who responded, or 8 of 19 total) were employed at the time of the interview, which is an increase from 6 of 19 who were employed during the training. One CP respondent reported the training helped him obtain a promotion. Of the five CP respondents currently employed in CE, three were working in the clean energy field before the training and still are, and two started working in clean energy after the training, after being unemployed at the time of the training. The

[17] The evaluation team did not have, for each CP and TT course, a list of certifications for which the course may have prepared the trainee. For that reason, as well as brevity, the interview guide phrased the question of certification in terms of *pursuing subsequent to training*. This phrasing relies on the respondent to distinguish between formal certification that requires demonstration of mastery versus a simple paper (or informal certificate) of course completion.

two trainees who were unemployed at the time of the training and are now employed in the clean energy field reported that the training provided adequate or good preparation for work in the field.

All interviewed TT contacts were employed at the time of this evaluation; two of them were unemployed when they took the training. Of the two trainees who gained employment after the training, one reported that the training provided good preparation for their field, and the other reported adequate preparation. Three TT contacts reported the training either had, or would, assist them in obtaining a promotion.

The current early stage process evaluation explored, as just discussed, CP and TT Level 4 Results in terms of employment. In addition, a Level 4 assessment might include an investigation of quality of job performance, energy savings impacts, and other non-employment program outcomes that were beyond the scope of this early stage evaluation. The evaluators suggest NYSERDA consider such investigations in future WFD Initiative research.

3.5 Trainee Characteristics

3.5.1 CP Trainee Characteristics

3.5.1.1 CP Secondary Data

Consistent with the CP program objectives, most CP trainees completing the pre-/post-training surveys lacked post-secondary education. Most CP trainees from courses offered mid 2012 to late 2013 (78%) did not have a college degree. Most (64%) had only high school degrees, and 14% had less than a high school degree. Sixteen percent had two-year college degrees; 5% of the CP trainees also had just a four-year college degree and 1% had a post-graduate degree (n=100). Compared to the previous analysis, which was conducted in 2012, the percentage of trainees with high school degrees remained about the same (64% in 2013 versus 66% in 2012), a greater percentage of CP trainees had less than a high school degree (9% in 2012, 14% in the current cohort), and fewer of the trainees had post-graduate or college degrees.

Three-quarters of the surveyed CP trainees were unemployed at the time of the training (n=102), and nearly all had been unemployed for more than six months (92%). Compared to the 2012 cohort, a somewhat higher proportion was employed (25% versus 18%). The employed CP trainees were almost evenly split in the duration of their employment; 46% had been employed for more than six months, while 54% had been employed for fewer than six months.

To determine whether CP courses were attracting workers with minimal construction-related experience, the survey asked trainees to self-rate their skill level across several related work categories. Respondents could indicate that they had no skill or could rate their skill level as *introductory* (basic experience, requiring significant supervision), *general* (some working experience, requiring some supervision), or *advanced* (capable of performing a job independently).

More than half of the surveyed CP trainees reported having at least introductory-level skills in one or more areas. This was a drop from the three-quarters of trainees who said they had at least introductory level skill in at least one area in the 2012 analysis. The current CP trainees had fewer skills overall. Moreover, one-fifth reported general skills in at least one area, and about one-quarter reported advanced skills in at least one area. Respondents noted the greatest skill levels in general residential and general commercial construction; just under one-quarter of trainees reported either general or advanced levels in these areas. (Table B-1 in Appendix B).

WFD Program staff said that the New York State Department of Labor Career Centers play an important role in finding employment for CP trainees. To explore this role, the pre-training questionnaire asked trainees if they had heard of the NYSDOL Career Centers, understood their function, and intended to register with one. Of the 96 CP trainees who provided information about where they look for a job, the most common source they cited was newspaper classified ads (40%). One-quarter of the CP trainees said they used Internet job sites, and 16% of them relied on the NYSDOL Career Centers; the remaining participants used either a training provider (2%), guidance counselor (2%), networking (9%), or other sources (6%). The "other sources" included family and friends, walk-ins, and word-of-mouth. Compared to the 2012 analysis, the current cohort relied on newspaper classified ads more and NYSDOL Career Centers less (classifieds – 40% compared to 21% overall in 2012; Career Centers – 16% compared to 27% overall in 2012).

3.5.1.2 CP Interviewed Contacts

About half of the interviewed CP trainees were employed (8 of 17 who provided an answer), which is more than were employed at the time of the training (6 of 19). Four of the 17 CP trainees interviewed were still employed in the clean energy industry, all with the same company they worked for before they started the training. One of the interviewed CP trainees was employed in the clean energy field, but had changed companies since the training.

The nine interviewed CP trainees who were not employed at the time of the interview were actively seeking work in the clean energy field, as well as fields other than building and construction, and eight of them had applied for jobs since the training. Unemployed CP trainees had applied for a variety of positions, including customer service, building maintenance, construction, food service, and factory work. Five of the employed CP trainees described their daily tasks and roles, which ranged from building maintenance, to energy auditing, readiness instruction, maintenance technician, and laborer in LEED construction projects.

3.5.2 TT Trainee Characteristics

3.5.2.1 TT Secondary Data

Compared to the 2012 cohort, fewer TT trainees completing the pre-/post-training surveys had at least a four-year college degree (53% versus 64% in 2012), and greater percentages had a two-year degree (26% versus 20% in 2012) or a high school education or less (21% versus 17% in 2012).

Almost all (91%) of the surveyed TT trainees were employed at the time of the training (*n*=491), and most of them had been employed for longer than six months (83%); the other 9% were unemployed at the time of the training. Most employed TT trainees worked for a large company with more than 25 employees (81%), while 10% were either self-employed or owned a company that employed others, and the remaining 9% worked for a company with 25 or less employees (*n*=478). Although the employment rate in the current cohort is high, the 2012 cohort showed even higher employment rates (97%).

The survey asked TT trainees to self-rate their skill level across several related work categories. The levels were: *no skill*, *introductory* (basic experience, requiring significant supervision), *general* (some working experience, requiring some supervision), and *advanced* (capable of performing a job independently). The results show that more than three-quarters (79%) of TT trainees had general or greater experience in the construction industry; general residential construction and plumbing were the most common reported advanced skills, with one-quarter of the trainees saying they had advanced skills in each (*n*=426; Table C-9 in Appendix C). Compared to the 2012 cohort, the current TT trainees had fewer overall skills at the general or greater skill level (92% compared to 79%), although the current cohort indicated having greater skill in more specific skills, which they may have received through previous training courses, such as greenhouse gas emission calculations, energy modeling, and energy auditing.

Surveyed TT trainees most commonly cited Internet job search sites (36%) and networking (18%) as sources of job seeking information. Other sources were the training provider (14%) and newspaper classified ads (10%). TT trainees said they seldom used the NYSDOL Career Centers (*n*=421). This is consistent with the results found in 2012.

3.5.2.2 TT Interviewed Contacts

All of the 19 interviewed TT trainees were employed at the time of the interview and most were employed at the time of the training (17 of 19). At the time of the training, all trainees who were employed were employed in the clean energy field, and all but one trainee still was employed in the clean energy field at the time of the interview. Most TT trainees still worked for the same company that employed them during the training (13 of 17).

3.6 Trainee Expectations and Experiences

3.6.1 CP Trainee Expectations and Experiences

3.6.1.1 CP Secondary Data

The pre-training survey sought to determine if trainees' motives and goals regarding the training aligned with the program's purposes. To address this, the survey included questions about trainees' reasons for attending a training session, what they expected the training to accomplish for them, and their perceptions of how well the course fit their experience and goals. In general, the responses to these questions were consistent with what would be expected from the program's target audience.

Trainees could indicate more than one reason for attending a training session. The most common reasons surveyed CP trainees reported for taking the training (n=104) were for job or career advancement in general (49%), for personal interest (41%), and to help get a job in a construction or clean energy field (39%). These findings are generally consistent with the program's purpose of preparing workers to enter the workforce, especially in construction and energy efficiency fields. (Table B-2 in Appendix B). Compared to the 2012 analysis, in which the most common response was "getting a job in construction or energy efficiency field" (64%), the focus of current CP trainees seems to have shifted toward general employment concerns.

Of the 100 surveyed CP trainees who responded to the question on expectations about the training, most expected the training to help them obtain employment (71%, multiple responses allowed), and provide them with new skills (64%), while one-third wanted to improve their skills for promotion (see Table B-3 in Appendix B for additional data). Compared to the 2012 analysis, the focus remains on acquiring new skills and getting a job, with both still having the highest percentage responses.

Finally, the survey asked trainees to assess how well the course fit their experience and goals. More than 60% of the surveyed CP trainees said the course they took was well-suited to their experience and career goals, primarily because it would teach new skills and knowledge they wanted to learn, while 13% said they were taking the course as a refresher (Table B-4 in Appendix B). This is a change from the 2012 analysis, when 73% of trainees said they wanted to learn new things and only 9% took the course as a refresher.

Successful CP training is delivered at a level that is appropriate to the trainees' experience and prepares them to pursue more technical training or enter the energy efficiency workforce. To provide feedback on how well the program may be advancing its CP goal, the post-training survey asked trainees how well their recent class met their expectations and their experience level, how the training could be enhanced, and how well it had prepared them to enter the workforce. In addition, since a specific course may be the first step in a career pathway that may include additional training, the survey asked trainees what their immediate post-training plans were and what plans they had, if any, for additional training.

Of the 155 CP trainees who took the post-training survey, almost two-thirds reported that the training "met" or "somewhat exceeded" their expectations (63%), 30% said that the training "far exceeded" their expectations, and 7% said that it "fell somewhat short of" their expectations. Also, over three-quarters said that the training level was appropriate for their goals and level of experience (n=153; Table B-5 in Appendix B). Compared to the 2012 analysis, the current cohort was slightly less satisfied with the training overall; 93% of current trainees indicated that the training met or exceeded their expectations (97% in the 2012 analysis), while 7% of current trainees said the training fell short of their expectations 2% in the 2012 cohort).

3.6.1.2 CP Interviewed Contacts

More than half of the interviewed CP contacts reported that their background "fully prepared" them for the training (9 of 17 who responded to the question), while the remaining 8 interviewed CP trainees said they were "adequately prepared" for the training. Most (15 of 19) CP trainees reported that more than half of the information presented to them at the training was new to them, while two CP trainees reported that less than half of the information was new to them, and another two did not provide an answer. In terms of certification, most of the CP trainees were eligible to earn a professional certificate related to the training (12 of 19), and most who were eligible did pursue getting the certificate (9 of 12)[18].

A little less than half of the interviewed CP trainees (8 of 19) said that the training prepared them "very well" for work in the clean energy field, while one-third (6 of 19) reported that the training prepared them "somewhat," and one reported that it "did not prepare them at all." Two contacts were not sure how well the training had prepared them and the remaining two contacts did not provide an answer. CP trainees said the hands-on and basic construction skills portions of the trainings prepared them well for employment, although some noted that they would need more training to be fully prepared for the clean energy field, or that they feel underprepared for the clean energy field because they have not been able to find jobs using the specific skills gained in the training, such as retrofitting.

Most employed interviewed CP trainees (3 of 5) reported that the training was "very applicable" to their current job, while one respondent found the training "somewhat applicable," and another found the training to be only "slightly applicable." Of the unemployed CP trainees seeking work in building or construction, almost half reported that the training was "highly applicable" and "very helpful" to jobs they were applying for (4 of 9), while two of the nine reported that the training was "somewhat applicable," four of the nine reported that the training was "somewhat helpful" to their job search, three found the training "not very

[18] The evaluation team did not have, for each CP and TT course, a list of certifications for which the course may have prepared the trainee. For that reason, as well as brevity, the interview guide phrased the question of certification in terms of pursuing subsequent to training. This phrasing relies on the respondent to distinguish between formal certification that requires demonstration of mastery versus a simple paper (or informal certificate) of course completion.

applicable" to the jobs they were seeking, and one reported that the training was not helpful to their job search process.

For the employed interviewed CP trainees, the helpfulness of the training to their current positions was mixed. Two CP trainees reported that the training "did not help" them in their current positions, another two said the training helped "some," and one said the training helped "a lot." Additionally, when asked about how often they use the skills and information from the trainings, four of the five employed contacts reported that they used the skills learned in training at least sometimes, while one reported that they never used these skills in their current position. All of the CP trainees who found the training helpful for their current position said the training helped them enhance their performance, and take on new activities and greater responsibilities. The training also helped one CP trainee earn a promotion and pay increase.

3.6.2 TT Trainee Expectations and Experiences

3.6.2.1 TT Secondary Data

WFD training offerings for those already in the building and clean energy workforce should enhance their skills, making them more proficient at improving the energy efficiency of buildings. TT trainees completing the pre-training survey reported reasons for attending a class, expectations for the training, and perceptions of the classes' appropriateness for them in general were in line with the program's expectations.

As Table C-10 (Appendix C) shows, the most common reason for taking the training reported by surveyed TT trainees was that their employer had recommended it, followed by job or career advancement and personal interest (n=495). This is consistent with the 2012 analysis of pre-/post-training surveys.

In response to the question about what they expected the course to accomplish for them, a large majority of the surveyed TT trainees said they hoped to acquire new skills from the training, and over one-third specifically said that they wanted to improve their skills to gain a promotion (n=470; Table C-11 in Appendix C). Six percent of trainees reported they expected to obtain employment and 3% expected to change their field of employment.

As with the CP trainees, most (75%) of the surveyed TT trainees reported that the course was a good fit with their experience and career goals, primarily because it would teach them new things they wanted to learn (Table C-12, in Appendix C). About one-tenth of the surveyed TT trainees said that the course would provide a refresher on things they had learned before. Another one-tenth of the TT trainees reported that the training might be either "over their head" or "below their level" (n=476). These results are similar to the 2012 cohort, with a little lower expectation of learning new things (75% compared to 80% in 2012).

Successful TT training is delivered at a level that is appropriate to the trainees' level of experience and improves their energy efficiency-related skills. To assess training success, the post-training survey included

questions that asked trainees about how their recent class fit with their expectations and experience level, and suggested improvements to the training. In addition, the survey asked trainees what their immediate post-training plans were and specifically what plans they had, if any, to obtain additional training.

Most results indicate that the trainees considered the training successful. Of the 413 TT trainees providing post-training survey data on this question, almost half (46%) said the course "exceeded" their expectations and nearly all others said that it "met" their expectations (Table C-13, in Appendix C). This is slightly higher than the 2012 cohort, in which 41% said the training exceeded their expectations. About three-quarters of the trainees said that the training level was appropriate for their experience; most others said it was either "somewhat too high" (the respondent needed more time or hands-on experience) or "somewhat too low" (the respondent was already familiar with most concepts). More trainees in the current cohort reported that the training was appropriate (76%) compared to the 2012 cohort (66%).

3.6.2.2 TT Interviewed Contacts

Most of the interviewed TT contacts reported that their background "fully prepared" them for the training (16 of 19), while the remaining three interviewed TT trainees said they were "adequately prepared" for the training. Most TT trainees reported that at least half of the information presented to them at the training was new to them (16 of 19), while three trainees indicated that less than half of the information was new to them. In terms of certification, all of the TT trainees were eligible to earn a certificate because of the training, and all of them pursued the certificate successfully.

Most of the interviewed TT trainees reported that the training prepared them "very well" for work in the clean energy field (12 of 19); less than one-third said that it prepared them "somewhat" (5 of 19), and two reported that it did not prepare them at all. More specifically, trainees explained that the information on new energy efficiency technology and terminology, greater understanding of how certain tasks fit into larger efficiency plans, new skills from hands-on experience like using a thermal camera, and expanded uses of equipment beyond manual or basic settings were particularly helpful in preparing them for advanced work in the clean energy field.

Most interviewed TT trainees reported that the training was "very applicable" to their current job (15 of 17), while two contacts found the training "somewhat applicable." Half of the trainees said that the training helped "a lot" in their current position (9 of 18), and the other half found the skills and information learned at the trainings "sometimes helpful" in their current position (8 of 18).

When asked about how often they use the skills and information from the trainings, almost all of the interviewed TT contacts said they used them "sometimes" (17 of 19), while two reported that they never used the training in their current position. For the TT trainees who found the training helpful in their current position, most reported that the training helped them enhance their performance (15 of 17), and take on new

activities (15 of 17) and greater responsibilities (10 of 17). The training also helped two TT trainees earn a promotion and pay increase.

3.7 Trainee Suggestions for Improvement

3.7.1 CP Suggestions

3.7.1.1 CP Secondary Data

Even though most CP trainees surveyed post-training reported that the training level was appropriate for them, more than two-thirds of them indicated that enhancing the hands-on experience with equipment and tools would make the training more effective.[19] In addition, about half said that enhanced supervised field experience would improve the training class (Table B-6 in Appendix B). The requests for additional field and hands-on experiences are consistent with the 2012 cohort.

Seventy percent of the CP trainees surveyed post-training said that the training "definitely" prepared them for employment, and another 19% reported that the training "probably" prepared them (n=156), while 10% were "unsure," and less than 1% reported that the training did not prepare them for employment. The current cohort indicated that the training "definitely" prepared them for employment more than the previous 2012 cohort, an increase from just over half to nearly three-quarters, indicating program success.

3.7.1.2 CP Interviewed Contacts

The interviewed employed CP trainees reported that nothing in the training should be changed or that they did not know what they would change. All interviewed employed CP trainees reported that no change was needed regarding how the training material was presented or taught. Feedback from the unemployed interviewed CP trainees focused on the desire for more hands-on training that lasted longer than a day or a week, as well as help with job placement after the training.

Additional feedback from the interviewed CP trainees about the training program reiterated a need for more hands-on experience during the trainings, and either a longer training or less extensive agenda in the trainings, since they said the course seemed rushed.

[19] The new PON 2774 training agreements require hands-on training in courses, but hands-on training was not a component of all the trainings from the time period that the data were collected, from trainings that occurred mid 2012 to the end of 2013.

3.7.2 TT Suggestions

3.7.2.1 TT Secondary Data

Despite reporting that the training level was "highly appropriate," about two-thirds (68%) of the TT trainees surveyed post-training who provided feedback said they would like more hands-on experience with equipment and tools (*n*=329; Table C-14 in Appendix C), which was an increase from 51% in 2012. In addition, about two-fifths (39%) said they wanted supervised field experience and nearly one-quarter (24%) wanted to learn applied math skills. Both of these are large increases from 2012, which were 18% and 4% respectively.

One-third of the 369 TT trainees surveyed post-training reported that the training "definitely" prepared them with useful skills for working in the clean energy industry and another 43% reported that the training "probably" had prepared them for that work. Fourteen percent were "not sure" whether the training had prepared them for that work and the remaining 9% reported "definitely not" or "probably not" being prepared to work in the clean energy industry. Many fewer trainees planned to take additional training in the current cohort (28%) than those in the 2012 cohort (86%) and there was an increase in the percentage of trainees who were looking for new employment (9% versus 0%), although this may be attributed to the slightly lower employment rate in the current cohort.

3.7.2.2 TT Interviewed Contacts

When asked if they would recommend any changes to the training content, more than half of the interviewed TT trainees did not want to change anything about the material presented in the training. Several of these respondents noted the course material covered everything they were tested on. A few interviewed trainees thought some course content needed updating to match current practices. A few others offered comments not directly pertinent to the training.

When asked about how the training materials were presented, four interviewed TT trainees reported that they wanted more in-person class time and less online instruction, more hands-on experiences (especially opportunities to use the equipment that was being described), and more teaching by the instructor (and less anecdotal sharing by the other trainees). One trainee also wanted the training to focus more on the concepts and less on preparation for the certification exam. Other trainees praised the training as an effective source of information for clean energy concepts; they thought the trainings were "very helpful" for the tasks they wanted to do (6 of 19).

3.8 Trainee Next Steps

3.8.1 CP Next Steps

3.8.1.1 CP Secondary Data

CP trainees completing a post-training survey reported a variety of post-training plans (multiple responses allowed). Of the quarter of the trainees who were employed at the time of the training (*n*=102), the most common post-training plan (73%) was to remain in their current job, followed by seeking advancement with their current employer (29%). Twenty-eight percent of all the CP trainees surveyed post-training also planned to seek additional training, but only 4% mentioned OJT training, a decrease from the 17% of trainees who mentioned OJT training in 2012. One-third of trainees said they planned to take additional training in energy efficiency, and 14% also mentioned renewable energy training (Table B-7 in Appendix B). There was an increased focus in the current cohort (multiple responses allowed) on maintaining their current job (54%) and seeking advancement (29%) compared to the 2012 trainees' focus on seeking additional training (62%) and finding employment (51%). This could be in part because of the higher rate of unemployment in the 2012 cohort compared to the current cohort (25% in 2012 to 18%).

Over half of the surveyed CP trainees reported that they "definitely" planned to continue or pursue employment in a clean energy career (*n*=100), and over one-third said they "probably" would pursue a clean energy career. Eight percent were not sure if they would pursue a clean energy career, and the remaining 2% reported that they "probably" would not or "definitely" would not pursue a clean energy career.

The survey also asked about trainees' plans to pursue various energy efficiency-related certifications, as well as what certifications they already had. Responses are shown in Table B-8 in Appendix B. Over three-quarters of the surveyed CP trainees reported that they either already had or planned to take the examination for at least one certification.

3.8.1.2 CP Interviewed Contacts

Three of the interviewed CP trainees had taken additional training since they responded to the pre-/post-training surveys (*n*=19). Two of the trainings were on building maintenance and construction, while the other was on non-building topics. Four of the interviewed CP trainees planned to take additional clean energy trainings in the next year, but were not sure which courses they would take.

3.8.2 TT Next Steps

3.8.2.1 TT Secondary Data

When asked in the post-training survey about what they planned to do after completing their current course, nearly all trainees said they would remain with their current employer (Table C-15 in Appendix C). Most of those said they would remain in their current position, while about one-third of them said they would seek advancement with their employer (*n*=390). These results are consistent with the 2012 analysis.

Half of the surveyed trainees reported they would seek additional training (*n*=390). Many of those (45%) said they would seek training in energy efficiency, while some (14%) said they would seek renewable-energy-related training. (Table C-15 in Appendix C). Nearly half of the surveyed TT trainees reported that they "definitely" were prepared to continue or enter into the clean energy industry (43%, *n*=436), while an additional 28% reported that they were "probably" prepared. Fourteen percent of surveyed TT trainees were "not sure" whether or not they were prepared for the clean energy industry, 4% said they were "probably not" or "definitely not" prepared, and the remaining 11% did not respond to the question.

The survey also asked trainees about their plans for pursuing clean energy-related certification. About one-quarter of surveyed TT trainees reported that they already had some certification, most frequently related to building performance (Table C-16 in Appendix C). Over half of the surveyed TT trainees reported planning to take additional certification exams, most frequently ASHRAE certifications, USGBC LEED-related, and BPI Building Analyst. There were fewer reports of both current certifications and planned certifications than in the 2012 cohort (from 69% planned and 35% certified in 2012, down to 59% planned and 25% already certified in 2013).

3.8.2.2 TT Interviewed Contacts

Almost all of the interviewed TT trainees had taken additional training since the trainings that were on record at the time of the pre-/post-surveys (17 of 19). Many of the trainings covered building envelope-related topics (5 of 17), while the others included spray foam, fire alarm installation, HVAC, multifamily building analysis, solar PV, Green Professional Building Skills Training (GPRO), and energy modeling with software.

Most of the interviewed TT trainees planned to take additional clean energy trainings in the next year (15 of 19), five trainees planned to take a heating or HVAC course, two planned to take a building envelope course, two would take a training at a conference or within their own company, and another four planned to take trainings in HERS rating, high voltage termination, using infrared thermography equipment, and Certified Energy Management. Three trainees planned to retake part or all of a TT training course to take the exam and get certified in either BPI heating or building envelope.

3.9 Comparison of CP and TT Findings

3.9.1 Comparison of CP and TT Secondary Data

Overall, CP trainees completing a post-training survey reported that their training experiences prepared them well for employment in the clean energy field, which was an increase in perceived preparedness from the 2012 cohort. The surveyed TT cohort also were satisfied with the training as preparation for working in the clean energy field, but the TT trainees overall were somewhat less confident than the CP trainees that the trainings prepared them for work in CE: 85% of CP trainees felt "definitely" or "probably" prepared, compared to 79% of TT trainees. The TT cohort's lower ratings on preparedness could be attributed to the advanced nature of the TT courses and the high percentage of already-employed TT trainees.

Both CP and TT surveyed trainees said they wanted more hands-on instruction during the training (which was similar to the findings in the 2012 cohort) and more field experiences (which was an increase from the 2012 cohort). TT trainees also wanted to learn more applied math skills, which was a large increase from the 2012 analysis. Three-quarters of each of the CP and TT surveyed trainees reported that the information covered in the trainings was appropriate for them, which was an increase from the 2012 cohort of 69% and 66% respectively, and indicates improvements in the course material and trainee selection.

Compared to the 2012 cohort, fewer of the 2013 surveyed CP trainees planned to enter the OJT program (17% and 4%, respectively), although some of the 2013 trainees asked for the CP training to include much more hands-on and field experience – which the OJT program provides. Additionally, more of the 2013 surveyed CP trainees than 2012 trainees said they took the training as a refresher rather than to learn new things, suggesting they are seeking to be better prepared for certification or employment in the clean energy field.

In addition, the quarter of the 2013 surveyed CP trainees who were employed were more focused on their current job than those in the 2012 cohort (18% of who were employed), who said they were more focused on seeking additional training and finding employment. This may be attributed to higher employment rates in the 2013 CP trainee cohort (25% versus 18% in 2012). It also may be that the 2013 CP trainees were retaking courses they intended to use soon in the workplace.

The surveyed TT trainees had a much higher employment rate than the CP trainees, as expected by the program design, although the TT trainee employment rate was slightly lower in the 2013 cohort than it was in the 2012 cohort. Similarly, there was an increase in surveyed TT trainees looking for new employment, compared to the previous cohort, and a decrease of TT trainees planning to take additional training. Many more trainees indicated that they had skills in specialized clean energy areas, indicating that this program and perhaps other programs have been effective in training this cohort of trainees.

3.9.2 Comparison of CP and TT Interview Findings

Prior to taking the training, all interviewed TT trainees were well prepared in terms of background experience and knowledge for taking the training. In contrast to TT contacts, interviewed CP contacts provided mixed reports, with about half reporting sufficient preparation to take the course, while the other half reported only partial preparation. Interviewed CP trainees' interview comments indicate three types of CP trainees: 1) those for whom the content was mostly review (about 2 to 3 contacts of 19); 2) those who were sufficiently prepared prior to the training and were able to understand training content (about two-thirds of the contacts); and 3) those for whom the content was more advanced than they were ready for (about two to three contacts of nineteen).

Interviewed CP trainees had mixed reports of how well the training prepared them for work in the clean energy field. Less than half of the interviewed CP trainees reported that the training had fully prepared them, although they reported that the hands-on and basic construction skills trainings increased the CP trainees' employability. The unemployed interviewed CP trainees reported concern that they would need much more training before they would be employable (consistent with CP's design to provide the basic skills in preparation for the more advanced TT training). These trainees also expressed, frustration that more entry-level positions were not available for which they qualified,[20] and desire for more trainings to be longer and more in-depth.

Half of the employed interviewed CP trainees found the skills they learned in the training useful and applicable to their current positions (4 of 8 employed at the time of the interview); two CP Trainees became employed in the clean energy field after the training and reported that the training provided adequate or good preparation for work in the clean energy field. Almost all of the interviewed TT trainees found the training very applicable and used the information at work. Also, three of the interviewed CP trainees had taken additional trainings and four planned to take additional trainings. Almost all of the interviewed TT trainees had taken additional trainings since the training that was on record from the pre-/post-surveys, and planned to take more. This is consistent with the program expectations that TT trainees will apply advanced skills to their current position and that CP trainees will need more general skills to become employable in the clean energy field.

Several interviewed TT trainees wanted less online class time, more class time devoted to preparing for certification, and either certification testing built into the training or guidance to achieve certification after the training ended. Several interviewed CP trainees expressed interest in trainings that were longer in duration, with more hands-on and field experience.

[20] Acting on prior evaluation findings, WFD staff designed the current CP funding with the stipulation that 15% of participants have paid internships

4 OJT Findings

As of the end of 2013, NYSERDA had engaged 52 employers in the clean energy field to provide on-the-job training to 250 employees. The evaluation team conducted phone interviews with 18 of these employers, and subsequently with 26 trainees working for these 18 employers, to assess program satisfaction and efficacy. All interviewed employers had at least one trainee engaged in OJT at the time of the interview, and all interviewed trainees were engaged in OJT training at the time of the interview.

Because of the relative small sample sizes of the interview samples (18 for employers and 26 trainees), the evaluators report results in terms of numbers (such as 12 of 18), instead of percentages or proportions. The reader is cautioned to interpret these early stage process evaluation findings as suggestive; the sample sizes lack the precision needed to support extrapolation of the results to the population.

As with all interview data, contacts can provide multiple responses. Thus, reported counts can exceed the sample sizes.

4.1 Kirkpatrick's Level 1: Reaction

The interviewed 2013 OJT employers had universally positive reactions to the program. All interviewed employers were willing to recommend the program to other companies in the clean energy field. Four of the employers stated that they would recommend the program because it produced more potential employees, while three said it helped them financially by reducing the cost to train new employees, and two said it reduced the risk of hiring employees that may not be a good fit.

The interviewed 2013 OJT trainees were "highly satisfied" with their OJT experience; the great majority indicated the OJT was an excellent fit for them (24 of 26 rated this item as "9" or "10" on a 0-to-10 satisfaction scale) and that they would recommend OJT to others interested in working the energy efficiency field (25 of 26). Similarly, most (22 of 26) trainees indicated no improvements were needed when asked what could be done to better serve trainees. Two trainees with suggestions for improvement indicated they would have liked some classroom training in tandem with the OJT, as they needed some additional time to go over the material before going into the field.

4.2 Kirkpatrick's Level 2: Learning

The interviewed OJT employers observed that OJT trainees had developed skills and had become more adept at assigned tasks. Half of the interviewed OJT employers reported they had taken the lead in defining the training objectives for each trainee, while the other half of the employers reported collaboratively identifying each trainees' training objectives in conjunction with NYSDOL.

Interviewed employers used several methods to deliver training, including shadowing other employees (9 of 18), learning while doing (8), and third-party training (8). Some also provided lessons through one-on-one training (5) or in a classroom setting (3).

Interviewed OJT trainees reported learning and acquiring a wide variety of new skills during the OJT. Most commonly, trainees indicated that they began their training by shadowing and assisting a team of experienced direct installers (11 of 26). Others spent the beginning of their OJT learning and practicing auditing skills (7 of 26) or company procedures (such as computer systems and paperwork; 5 of 26). Seven other contacts offered less specific descriptions of their initial responsibilities, such as "shadowing the crew on various tasks." In all, OJT trainees commonly reported learning about conducting audits (9 of 26) and retrofits (insulation, weatherization, and lighting; 10 of 26), general clean energy industry and building science principles (7 of 26), and basic job skills (organizational and communication skills, completing paperwork, basic computer skills, and management skills; 7 of 26). All OJT trainees reported they acquired their new skills and knowledge by shadowing and assisting experienced crew members, with eight indicating this hands-on experience was supplemented with classroom-type training.

4.3 Kirkpatrick's Level 3: Behavior

The interviewed OJT employers observed positive improvements in the behavior of the OJT trainees as they progressed through the program. All employers typically were able to assign trainees to relevant tasks that the trainees could complete independently within six months after the training. The only exception, reported by one employer, was that it took longer than six months to assign work to auditors. Employers also noted that if a trainee is not picking up skills at the expected rate, they will provide additional training or retraining (9), one-on-one coaching or other additional attention (4), or find a better fit for the trainee's skills (2). Three employers mentioned that they never needed to help a trainee learn faster. Most employers (16 of 18) reported that trainees were meeting (10) or exceeding (6) expectations for performing the tasks they were learning through the OJT program. Over the course of training, the quality of trainees' work increased, with the following exceptions: two employers had a trainee fail to meet their expectations for improvement on the job; and two trainees quit before the employer could assess their work. Otherwise, work quality either met or exceeded employers' expectations.

According to interviewed OJT trainees, OJT provides trainees with the skills they need to succeed in their clean energy career. The majority (17 of 26) of the interviewed trainees reported that, after the training, they worked independently (without supervision) and some (6 of 26) noted they were managing crews or projects. Most (25 of 26) trainees reported that they were able to apply their training to a job site a month or less after the start of their training.

4.4 Kirkpatrick's Level 4: Results

Most interviewed OJT employers observed that the program successfully prepared trainees to work in the clean energy field, indicated by a median rating of "8" on a 0-to-10 preparedness scale.

All but two employers said that trainees met (9) or exceeded (7) their expectations for the assigned tasks and that the quality of work improved with practice.[21]

Interviewed employers said it was unlikely that they would have hired the trainees without the training (a median score of "1.5" on a 0-to-10 likelihood scale, with "0" meaning "not at all likely," and "10" "extremely likely").

Most interviewed OJT trainees said that the training prepared them to work in the clean energy field. Trainees reported that the training prepared them to work in the energy efficiency field; on a 0-to-10 scale, with "0" meaning "not at all prepared" and "10" meaning "extremely prepared," trainees ranked their level of preparedness from "7" to "10," with a median score of "10."

All but two interviewed trainee were highly satisfied that the training met their training goals (on a 0-to-10 scale, with "0" meaning "not at all satisfied" and "10" "extremely satisfied," 15 reported "10," 6 reported "9", 3 reported "8," 1 reported "3," and 1 "didn't know"; median and mode are "10," average is 9.2).

Most trainees (20 of 26) thought it unlikely that – in the absence of the program – they would be working in a job similar to what they have now or the clean energy field in general (20 of 26 rated this item as a "0" to "3" on a 0-to-10 likelihood scale; median score was 2.0). The six trainees rating the likelihood greater than "3" already had some exposure to the field. When asked what they might be doing had they not participated in the program, trainees speculated they would have worked in retail and other low-skill jobs (8), construction and housing (6), and other skilled jobs (4); the other 8 trainees either did not know what they would have done or said they would have been unemployed.

About half (14 of 26) of the interviewed trainees reported plans to take additional clean energy training in the next year, and more than half (9 of 14) of them thought their employer would pay for some or all of the training.

These findings suggest that the program was instrumental in preparing workers for jobs in the clean energy industry, fostering a culture that values training, and increasing the number of employed clean-energy workers.

[21] One employer indicated the trainee fell short of expectations, and one employer terminated the trainee prior to completion of the training.

The current early stage process evaluation explored, as just discussed, OJT Level 4 Results in terms of employment with our sample of employers currently engaged in OJT and trainees currently working for their OJT employers. This study is not able to assess the long-term employment status of OJT trainees, such as a year or more after the conclusions of their six-month OJT trainings.[22] In addition, a Level 4 assessment might include an investigation of quality of job performance, energy savings impacts, and other non-employment program outcomes that were beyond the scope of this early stage evaluation. The evaluators suggest NYSERDA consider such investigations in future WFD Initiative research.

4.5 OJT Employer and Trainee Characteristics

4.5.1 OJT Employer Characteristics

Most of the interviewed companies participating in OJT in 2013 were small; the median size was 10 employees, and only three companies had more than 30 employees. Many of these companies had experienced a lot of growth since entering the program; five employers experienced growth of 100% or more. The remaining 15 employers increased staffing from 20% to 400% (the company with 400% growth went from 2 to 10 employees); the median growth was 41%. The age of the company varied widely, from 3 to 86 years, with a median age of 11 years. The most common services provided by employers were: energy audits (15); shell, including weatherization and insulation (13); and HVAC-related work (9).

Most employers entered the program within the last two years (15), while three entered the program three or four years ago. All but two employers had more than one trainee through the program, with numbers ranging from two to 25 trainees.[23] At the time of the interviews, two-thirds (12) of the employers still had OJT trainees.

4.5.2 OJT Trainee Characteristics

Prior to program participation, nine of 26 interviewed trainees had experience in the building construction industry, six had experience with the energy efficiency field, two in the renewable energy field, and one in building supply. Ten trainees had high school degrees or the equivalent, two attended trade or technical schools, nine had some college education, and four had college degrees. Prior to the training program, half the trainees (13 of 26) worked full time, four worked at least half time, two worked less than half time, and six were unemployed.

[22] Possible employment status includes continued employment with the OJT employer, employment with a different clean energy firm, employment outside of the clean energy industry, or unemployment.

[23] The program caps employer incentives at $150,000 for a six month period, and no more than $15,000 per trainee.

In their roles through the program, 25 trainees' work involved energy upgrades and 1 trainee worked on renewable projects. Work on energy upgrades included energy audits (9), direct installations of clean energy equipment (7), weatherization activities (6), energy modeling (3), and energy efficiency education (3).

4.6 OJT Employer and Trainee Expectations and Experiences

4.6.1 OJT Employer Expectations and Experiences

Interviewed employers reported they learned about the OJT program from NYSERDA (staff (8), website (1), webinar (1)), through a NYSDOL BSR (4), through a colleague (2), or through a Career Center (1).[24]

The program is designed with multiple routes leading to employer involvement with the program and trainee engagement. [25] Thirteen of 18 interviewed OJT employers recalled that they discussed with the NYSDOL BSR the candidates they were interested in training, including one case in which the employer wanted to train an existing employee for a more advanced position, and hire a new employee into the vacated lesser-skilled position. The other five employers had a mix of candidates that they and/or the BSR identified. When the BSR helped with placement, most employers were satisfied with the BSR's placement abilities. On a 0-to-10 satisfaction scale, where "0" was "not at all satisfied" and "10" was "extremely satisfied," the median score was 9.0.

As discussed subsequently, regardless of how the candidates were identified, interviewed OJT employers indicated a very low probability that they would have engaged those individuals in the absence of the OJT program. Employers indicated that the trainees did not have the requisite skills for the jobs the employer sought to fill without the OJT training.

As part of the program, trainees underwent a skill gap analysis to determine learning objectives for the trainee. Half of the interviewed employers (9 of 18) reported they identified the skill gap and learning objectives for the trainees, which the BSRs reviewed, a finding consistent with expectations that employers best understand the skills required to deliver their products and services and the gaps they have in staffing to meet those skills. Eight (of 18) employers reporting identifying objectives in conjunction with the BSR, and one said that the BSR provided an initial job description for the employer to edit.

Once learning objectives were identified for a candidate, a work plan was developed for the training required to meet the learning objectives. The findings on who led the work plan development are similar to

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[24] The other employer reported "don't know."

[25] As discussed in Chapter 1, employers typically learn about the program from NYSERDA (its program staff or outreach activities), the NYSDOL BSR, or job seekers. Employers may have identified a candidate suitable for OJT engagement, the BSR may identify the candidate, or the job seeker may have initiated the process.

the findings on learning objective development. Ten of 18 interviewed employers reported taking the lead in work plan development, while six employers reported collaborating with the BSR. One employer modified a work plan template provided by the BSR and received assistance from the BSR to ensure that the training was completed on time.

The employer reporting that BSR led the development of both learning objectives and work plan (via an initial job description and a work plan template) described the process of identifying learning objectives very disorganized.

Five of the 18 interviewed employers included offsite training in the training work plans. The NYSERDA incentives covered the entire cost of the training.[26] In the case of offsite training, three of five employers selected the training courses for their trainee, one developed their own training (which was adjusted by NYSDOL), and one worked with a NYSERDA training partner to identify appropriate weatherization learning objectives. In addition to these activities, ten employers had non-trainees attend NYSERDA-supported classroom trainings or gained certification in 2013.

Interviewed employers used the techniques of job shadowing and direct task engagement to train the trainees. Interviewed employers described that trainees were involved in the following types of projects: weatherization (11), energy audits (10), and HVAC upgrades (5). At the job site, trainees were primarily involved in conducting energy audits (9), equipment installation (8), weatherization (7), safety testing (4), and running diagnostics (4).

One employer terminated a trainee prior to the completion of training. Thus, the next two paragraphs present the findings in terms of the 17 interviewed employers who had trainees in good standing.

Fifteen of 17 employers with trainees in good standing had trainees working on tasks that would affect the quality of the job. For these employers, crew leaders sometimes looked over the work in general (7) or reviewed all of the work done by the trainee (5), while a few (3) spot-checked the trainee's work.

All but one of the 17 interviewed employers with trainees in good standing said that trainees learned enough to take on tasks regularly during the training period; one said it depended on the position. Nearly one-third of employers (5 of 17) reported they were able to assign tasks regularly to trainees within a week, while 11 remaining employers said the timeline ranged from one to six months. One employer required more than six months for trainees learning auditing.

[26] NYSERDA has subsequently revised the OJT program; it no longer includes incentives for offsite training.

As noted in Section 4.4, all but two employers said that trainees met (9) or exceeded (7) their expectations for the assigned tasks and that the quality of work improved with practice.[27] If trainees failed to pick up skills at the expected speed, employers explained that they try additional training and retraining (9), one-on-one coaching (4), or attempt to place the trainee in a more suitable position in the company (2).

The BSR monitors progress during training. Fifteen of 18 employers recalled speaking with the BSR during the training, two employers had trainees drop out of the program prematurely and did not experience this process, and one employer did not recall such interaction with BSR. The 15 employers recalled that these meetings were to review progress towards training goals (12), and for post-training follow-up (10) and checking on trainee attendance (9).

The five of the 18 interviewed employers who incorporated classroom training into their OJT plan had positive experiences. Employers were "very satisfied" with the relevance and immediate usefulness of the topics, and the appropriateness of the material; on a 0-to-10 scale, where "0" was "not at all satisfied" and "10" was "extremely satisfied," all rated the relevance and usefulness a "9" or "10"). They were nearly as satisfied with the instructional materials, the time required for the training, and the access to training (on the same 0-to-10 scale, all rated these between "8" and "10"). When asked about the likelihood that they would make the classroom trainings available to OJT trainees without the OJT incentives, three thought it was "highly likely," while the other two contacts were more neutral.

Interviewed employers cited various benefits from supplementing on-the-job training with classroom training, including preparation for certification testing (12, one of whom mentioned the firm requires BPI certification), providing a background or overview of the work (4), information on rules and regulations (1), and indicating to the employer the skills the trainee is likely to have (1).

Sections 4.1 to 4.4, which present findings relevant to Kirkpatrick's four levels of training assessment, provide additional findings relevant to employer expectations and experiences.

4.6.2 OJT Trainee Expectations and Experiences

Trainees learned about the program through several different channels. The most common ways trainees entered the program was through a business contact (10), Green City Force[28] (5), unspecified advertising (4), a WFD training course (4), and NYSDOL (3).

Eighteen interviewed trainees remembered talking with a BSR around the time of their engagement with the firm, three reported they did not talk with a BSR, and five did recall. Ten trainees remembered their

[27] One employer indicated the trainee fell short of expectations, and one employer terminated the trainee prior to completion of the training.

[28] According to its website, Green City Force is a service corps that prepares young people from low income backgrounds for sustainable careers.

OJT learning objectives. (Nonetheless, trainees could have their own goals for learning through the OJT program; all but two interviewed trainees were highly satisfied that the training met their training goals. Of the 10 trainees who remembered the learning objectives set by the BSR, all of them believed they met their learning objectives through the training.).[29]

Most trainees began their training by shadowing and assisting a team of experienced direct installers (11 of 26), learning energy audit skills (7 of 26), or learning company procedures (5 of 26). Training was conducted by team members and colleagues (13 of 26), crew chiefs and team leaders (9 of 26), and managers (4 of 26). One-third (8 of 26) said they received supplemental classroom training.

Trainees described receiving feedback from the employer as part of the training process. Trainees said they received frequent feedback from supervisors. Of the 26 trainees, 23 received feedback from their supervisor at least daily and the remaining three received feedback at least weekly. Supervisors provided feedback on performance (15), current and future tasks (9), training (5), and progress (4) (multiple responses allowed).

Interviewed trainees had less frequent feedback from senior staff who were not their direct supervisor; even so, 11 of 26 received such feedback at least weekly. The most common types of feedback from non-supervisory senior staff concerned performance (8 of 24 receiving such feedback), training progress (5), and satisfaction with the training (5).

Four of the 26 interviewed trainees reported they spoke with the BSR monthly; nine reported they met with the BSR three times or less; the remainder either reported they had not spoken to the BSR or indicated they did not know.

Sixteen trainees of the 26 interviewed trainees said they had received classroom training or other formal instruction as a component of the training process, at no cost to the trainee. Consistent with their employer's OJT contracts, trainees reported they were paid their standard wage for time spent in class. The most common classes were: building envelope and thermal imaging, typically through BPI (9); energy analyst through BPI (8); HVAC (5); and classes on energy efficiency programs (2 for EmPower, 1 for Energy Fit).

These 16 trainees reported that they gained exposure to useful material that helped them with their work and prepared them for certification through the classroom experience. Of these trainees, four reported having classes in which all of the material was new to them; seven found that more than half of the material was new, and three said that about half of the material was new.[30] Nine of the trainees reported having classes in which all of the material was useful, and the other seven found at least half or more of the material useful.

[29] See detailed findings reported in Section 4.4.

[30] One trainee reported that less than half of the material was knew and one trainee did not answer the question.

At the time of the interviews, eight trainees (of 26) had received at least one certification, primarily BPI certifications, including Building Analyst (5), Building Envelope Professional (2), and Infrared Thermographer (2) (multiple responses allowed). Ten trainees said they plan to pursue certification in the future.

Interviewed trainees learned practical skills that are applicable to the clean energy field. Trainees reported learning how to conduct audits (9), weatherization (7), general energy efficiency industry and building science principles (7), and basic job skills (7).

Most interviewed trainees reported they were able to apply skills learned to a job site within a month or less (24 of 26). One trainee said it took longer than six months after the end of the training before he/she did work that met the employer's quality expectations. Another said that, while he/she could do some tasks well soon after the training, it took longer to learn other tasks, such as working with boilers and mechanical systems.

When asked about major differences between their work at the time of the interview compared with their work when they began training, most of the trainees (17 of 26) said they worked independently on these tasks.

According to interviewed trainees, the OJT program successfully matched them with employers. Most of the trainees stated that the placement was a good fit for them (24 of 26); the other two trainees had a more neutral impression. Many trainees in the program now believe they have more employment opportunities in the clean energy field that they did not have before.

Sections 4.1 to 4.4, which present findings relevant to Kirkpatrick's four levels of training assessment, provide additional findings relevant to trainee expectations and experiences.

4.7 OJT Employer and Trainee Suggestions for Improvement

4.7.1 OJT Employer Suggestions

The evaluation team asked interviewed employers for suggestions on how to improve a number of program elements. Employers suggested the following improvements to the application process: faster approval turnaround (3); better communication with NYSDOL, as they did not believe their representative was not fully informed about the program (2); better information about how to invoice the OJT activities to the OJT program (2); templates for progress reports and other program forms (1); and more consistent review of initial OJT applications by NYSERDA staff (1).

Interviewed employers did not have suggestions on how to improve the OJT trainee selection process. Three were disappointed by the candidates put forth by NYSDOL. Most were satisfied with the opportunity to choose their own candidates. Employers did not have suggestions for improving skill gap analysis or

monitoring. When asked about how to improve communications with the BSR, several employers expressed satisfaction with the BSR, although two employers felt the BSR did not know enough about their business to be helpful.

Two interviewed employers noted it would benefit their firms to have multiple trainees at a time[31] (1) or trainees for longer periods of time (1), in part because of the administrative burden for reporting and planning the OJT training is significant for a small company.

4.7.2 OJT Trainee Suggestions

Interviewed trainees did not provide many suggestions to improve the program and most were satisfied with the program overall. Six trainees volunteered that OJT is a "great" program. Almost all of the trainees would recommend the program to others (25 of 26), although one trainee would not recommend the training, commenting that he/she would have liked more classroom education to supplement their hands-on learning. Two trainees suggested offering the program to more people, particularly those just entering the workforce.

Some interviewed trainees had suggestions for improving the OJT training. Three recommended more formal training to supplement their field work. In contrast, one trainee would have preferred a field position in order to get hands-on training. One wanted a more structured process for the training and believed it was already under development. One trainee recommended a longer training period for energy audits, suggesting that a year would be preferable to six months. This recommendation is consistent with the employer recommendation and with the remarks of the employer and trainee that the desired auditing skills were not acquired in the six-month window.

Trainees with classroom training had few suggestions for improving the classroom training. One felt the material was too dense and one would have liked more hands-on examples.

A few interviewed trainees had suggestions for improving communication. One trainee would have appreciated weekly meetings with their supervisor or employer. Three trainees would have liked more contact with their BSR, and one would have liked to provide more feedback to the program.[32]

[31] Multiple simultaneous trainees are allowed and encouraged under current and past OJT funding. The interviewer did not explore with the employer whether he/she was aware of the opportunity to have multiple trainees.

[32] This trainee appreciated the opportunity to be interviewed for this research.

4.8 OJT Employer and Trainee Next Steps

4.8.1 OJT Employer Next Steps

While the evaluation team did not ask employers directly about future interest in the program, some mentioned that they would like more trainees or would participate in the program again.

4.8.2 OJT Trainee Next Steps

Going forward, interviewed trainees said they were prepared to continue to work in the energy efficiency field.

In addition to the eight trainees (of 26) reporting they had received at least one certification (Section 4.6.2), ten trainees said they plan to pursue certification in the future. These certifications include BPI's Heating (6), Envelope Professional (5), and Building Analyst (3) certifications.

5 Conclusions and Recommendations

The conclusions and recommendations derive primarily from the interview data. Given the constraints governing this early-stage evaluation, the interview samples are relatively small (roughly 20 for each cohort). The evaluators offer these conclusions and recommendations as suggestions for the program team's consideration, recognizing that they lack the weight of recommendations drawn from larger samples.

Conclusion: The CP, TT, and OJT training activities evidence effectiveness in the areas of reaction, learning, behavior, and results. The TT and OJT programs are instrumental in preparing workers for jobs in the clean energy industry. All three programs – CP, TT, and OJT – foster a culture that values and seeks training and, for TT and OJT, values and seeks certification. The OJT program is instrumental in increasing the number of employed clean-energy workers; the CP and TT programs also led to increased employment in the clean-energy field.

Conclusion: The multiple WFD activities are providing an integrated, coordinated approach to the market that meets the needs of workers with a wide range of skill levels. It is common that trainees have participated in, or intend to participate, in two of the three programs, reflecting the continuum of training offered. Several OJT trainees learned about their OJT employer or the OJT program from their TT training partner. About one-quarter of CP trainees had subsequently taken or intend to take TT training, and most OJT trainees had or intend to take TT training. Both CP and TT trainees mentioned interest in OJT. Clean energy employers participating in OJT are aware of and value the TT training. Employers and trainees come to the OJT program through a variety of contacts, including NYSERDA, training partners, NYSDOL, and business contacts.

Conclusion: Although few employers expressed any dissatisfaction with the OJT program, those few expressed dissatisfaction with such program elements as NYSDOL's trainee candidate suggestions, apparent limitations in the BSRs' program understanding or understanding of their business, WFD's staff application review, and/or application approval time. A few employers also requested better information on how to invoice and templates for progress reporting.

- **Recommendation:** The many routes through which employers and candidates come to the OJT program is a sign of successful integration and coordination of the larger WFD effort. There remains opportunity for the WFD program to further coordinate all parties in working together efficiently to meet participants' needs. Such coordination might include:
    - Increasing the cross-marketing of CP, TT, and OJT training opportunities,
    - Providing BSRs with additional training or support,

- Tracking application/placement approval time and seeking to accelerate the process overall or troubleshoot individual applications/placements, and
- Providing employers and BSRs with program compliance information, such as invoicing and progress reporting.

Conclusion: A combination of on-the-job and classroom training appears to be valuable and valued by OJT trainees and employers; the 2013 OJT program provided incentives for classroom training. The current OJT design does not pay for classroom training, although these trainees may be eligible for TT incentives through other WFD activities. [33]

- **Recommendation:** Encourage OJT trainees to attend at least one TT course to complement their hands-on learning with formal education. Ensure OJT employers and trainees are informed of the upcoming TT trainings and opportunities for financing the training.

Conclusion: CP trainees varied in how difficult they found the materials covered in the courses. For some, the course material was too difficult, while for others the material covered was at a good level, and for still others the course materials were mostly a review.

- **Recommendation:** Encourage all training partners to incorporate into CP registration information (as some partners do) a checklist of the basic educational skills needed for understanding course content, perhaps illustrating the concepts by having a score-yourself quiz.

Conclusion: OJT employers may not be effectively planning their participation in the OJT program, as evidenced by one employer who apparently did not realize the firm could have more than one trainee. OJT employers may need help strategizing their OJT participation, and may need additional program information early on in outreach and application stages, to increase their training efficiency.

- **Recommendation:** WFD staff should develop an approach, with clear roles for WFD and NYSDOL staff, for strategizing with employers about their effective use of WFD resource

[33] PON 2397 provides financial incentives for energy efficiency training organizations in NYS to help offset the costs associated with obtaining IREC ISPQ accreditation for energy efficiency training programs. The PON also includes financial support for renewable energy training program accreditation, photovoltaic (PV) and solar thermal installer certification, and PV training company accreditation.

Appendix A: Data Collection Instruments

Pre-Training Survey Instrument

Training Organization: _____

Course Title: _____

Trainer: _____

I consent to allow the New York State Energy Research and Development Authority (NYSERDA) to use the information on this form for the purposes of research to evaluate its Workforce Development Program and to share this information with its contractor(s) that are conducting that research.

Print First name: _____ Middle I. _____ Last Name: _____

Signature: _____

Home telephone number (for evaluation purposes only): _____

Cell phone number (for evaluation purposes only): _____

Email address (for evaluation purposes only): _____

Last four digits of Social Security Number (for evaluation purposes only): _____

Please Answer the Following Questions

1. What is the highest level of education you have completed, or are currently enrolled? (Select only one.)

   ( ) Less than High School
   ( ) High School (or GED)
   ( ) 2-Year College or Vocational/Technical School
   ( ) 4-Year College
   ( ) Post-Graduate Degree (such as Masters or Doctorate)

2. Please select the item that best describes your employment status.

   ( ) Employed less than six months
   ( ) Employed greater than six months
   ( ) Unemployed the last 6 months
   ( ) Unemployed greater than 6 months

3. Which of the following best describes your current employment?

   ( ) Self-employed or independent contractor
   ( ) Work for a small company (fewer than 25 employees)
   ( ) Work for a large company (more than 25 employees)
   ( ) Own a company that employs others (how many: _____)
   ( ) Unemployed

4. Why are you taking this training? (Select all that apply.)

   ( ) Certification required to participate in utility program (e.g. Home Performance with ENERGY STAR®, Multifamily Performance Program, etc.)
   ( ) Maintain a license or certification (required professional CEU)
   ( ) Required prerequisite for other training you want to take
   ( ) Prepare for an internship
   ( ) Prepare for an apprenticeship/trades program

( ) Your employer recommended it
( ) Job/career advancement
( ) To meet specific needs indicated by a client or customer
( ) Personal interest
( ) Help you get a job in construction/energy efficiency field
( ) Help you get a better job than the one you have
( ) It is a part of a legally mandated program
( ) Other (please specify): _____

5. Have you heard of the NYS Department of Labor One-Stop Centers?

( ) Yes, I have heard of them
( ) Yes, I have heard of them, but don't really know what they are
( ) No, I have not heard of them

6. Have you registered with a local NYS Department of Labor One-Stop Center?

( ) Yes
( ) No, and I don't currently plan to
( ) No, but I plan to

7. What information source do you use to find job opportunities?

( ) One-Stop center
( ) Training provider
( ) "Help wanted" ads in a newspaper
( ) Internet (e.g. Monster.com)
( ) Guidance Counselor
( ) Networking
( ) Other sources – please list them here: _____

8. For each of the employment areas listed below, please check one of the boxes to indicate your level of skill or experience. Check only one box per employment area.

Employment Area	Level of Skills			
	No skill: No experience in this area	**Introductory: Basic level of experience but need significant supervision**	**General: Some working experience but need some supervision**	**Advanced: Capable of performing job independently**
Architectural, engineering, or related services	( )	( )	( )	( )
General residential construction (home building and remodeling)	( )	( )	( )	( )
General commercial construction (new business construction and remodeling)	( )	( )	( )	( )
Building shell improvements (insulation, windows, air sealing)	( )	( )	( )	( )
HVAC installation/technician	( )	( )	( )	( )
Plumbing	( )	( )	( )	( )
Electrical	( )	( )	( )	( )
Other (please specify):	( )	( )	( )	( )

9. Which of the following statements best describes what you hope to accomplish from this training? (Check all that apply)

   ( ) Acquire new skills
   ( ) Improve skills for promotion
   ( ) Change field of employment
   ( ) Obtain employment
   ( ) Other: _____

10. Do you believe you are attending the right course for you given your experience and career goals – why or why not? (Please read all responses and select only one answer)

    ( ) Yes – it will teach me new things I want to learn
    ( ) Yes – it will provide a refresher on things I've learned before
    ( ) Possibly – but it may be over my head
    ( ) Possibly – but it may be below my level
    ( ) No – it's definitely over my head
    ( ) No – it's definitely below my level
    ( ) I'm not sure

11. That is all the questions we have for you. Your responses will help NYSERDA improve its programs supporting workforce training. Thank you for your assistance.

Post-Training Survey Instrument

Training Organization: _____

Course Title: _____

Trainer: _____

I consent to allow the New York State Energy Research and Development Authority (NYSERDA) to use the information on this form for the purposes of research to evaluate its Workforce Development Program and to share this information with its contractor(s) that are conducting that research.

Print First name: _____ Middle I. _____ Last Name: _____

Signature: _____

Home telephone number (for evaluation purposes only): _____

Cell phone number (for evaluation purposes only): _____

Email address (for evaluation purposes only): _____

Last four digits of Social Security Number (for evaluation purposes only): _____

Please take a few moments to answer the following questions.

1. Based on what you expected to learn and achieve, would you say that this course:

   ( ) Far exceeded your expectations
   ( ) Somewhat exceeded your expectations
   ( ) Met your expectations
   ( ) Fell somewhat short of your expectations
   ( ) Fell far short of your expectations.

2. Considering your employment goals and experience, how appropriate was the level of training?

   ( ) Far too low – I was too experienced for this course
   ( ) Somewhat too low – I already was familiar with most concepts
   ( ) Appropriate for my level of experience
   ( ) Somewhat too high – I needed more time or hands-on exercises
   ( ) Far too high – I should have had more preparation or experience before taking this course

3. Do you feel that this training has prepared you to enter employment?

   ( ) Definitely yes
   ( ) Probably
   ( ) Not sure
   ( ) Probably not
   ( ) Definitely not

4. What areas do you feel should be enhanced to make this training more effective? (Check all that apply)

   ( ) Supervised field experience
   ( ) Hands on experience with equipment and tools
   ( ) Applied math skills
   ( ) Literacy/reading skills
   ( ) Interviewing and resume preparation

5. What do you expect to do now that you have completed this training? (Check all that apply)

( ) Remain in current job
( ) Seek advancement with current employer
( ) Find new employment
( ) Seek additional training
( ) Enter on the job training or internship.
( ) Enter apprenticeship/trades program

6. Do you plan to pursue further training? (Please check all the areas that apply)

( ) Yes, in the field of energy efficiency (energy conservation, energy auditing, weatherization, etc.)
( ) Yes, in the field of renewable energy (solar thermal, geothermal, photovoltaic (PV) installation, fuel cells, etc.)
( ) Yes, in some other field – (please specify here: _____)
( ) No, I do not plan to pursue further training at this time

7. Do you plan to pursue or continue employment in an energy efficiency or renewable energy career?

( ) Definitely yes
( ) Probably
( ) Not sure
( ) Probably not
( ) Definitely not

8. After this training course, do you plan to pursue a certification from any of the following credentialing organizations?

Certification	Have Certification	Plan to Take Exam	Not Interested
a. Building Performance Institute (BPI) Building Analyst, Building Envelope Professional, Heating Professional, etc.	( )	( )	( )
b. RESNET/HERS Rater	( )	( )	( )
c. National Association of Home Builders (NAHB) Green Building	( )	( )	( )
d. National Association of the Remodeling Industry (NARI) Green Certified Professional	( )	( )	( )
e. North American Technician Excellence (NATE) HVAC Installation Technician, Service Technician, or Senior Technician	( )	( )	( )
f. ASHRAE energy-related certifications	( )	( )	( )
g. Association of Energy Engineers (AEE) Certified Energy Manager (CEM)	( )	( )	( )
h. AEE Certified Energy Auditor (CEA)	( )	( )	( )
i. North American Board of Certified Energy Practitioners (NABCEP) Solar Thermal – Entry Level	( )	( )	( )
j. NABCEP PV – Entry Level	( )	( )	( )
k. NABCEP Certified PV Installer	( )	( )	( )
l. US Green Building Council (USGBC) LEED Green Associate	( )	( )	( )
m. USGBC LEED AP (BD+C, ID+C, Homes, or O+M)	( )	( )	( )
n. Other, please specify:_____	( )	( )	( )

9. Have you registered with a local NYS Department of Labor One-Stop Center?

   ( ) Yes
   ( ) No, and do not currently plan to
   ( ) No but I plan to

10. Are you aware that NYSERDA provides incentives for Energy Efficiency and Renewable Energy training and certifications?

    ( ) Yes
    ( ) No
    ( ) Would like more information

11. That is all the questions we have for you. Your responses will help NYSERDA improve its programs supporting workforce training. Thank you for your assistance.

Career Pathways and Technical Trainees Follow-up Interview Instrument

Introduction

Hello, my name is _____. I'm calling on behalf of NYSERDA – the New York State Energy Research and Development Authority – which sponsored the [pipe in training course name] you took from [pipe-in training organization] We would like your feedback on this training. [IF NEEDED: PIPE-IN TRAINING COURSE NAME][IF NEEDED: Research Into Action is an independent program evaluation firm in Portland, Oregon]

This is not a sales call and the information you provide will be kept confidential to the extent permitted by law. Nothing you say will be identified with you in our reports. I'll be audio recording this interview to ensure the accuracy of my notes. The recording will only be used by Research Into Action staff and will not be provided to NYSERDA.

Do you have any questions before we get started?

Screening [ASK ALL]

S1. I understand you took **[TRAINING COURSE NAME]** with **[TRAINING ORGANIZATION]** that started on **[COURSE START DATE]**. Is that correct?

[SINGLE RESPONSE]

Yes
No, I took (please specify course title, location, and date): [OPEN-ENDED RESPONSE]
No, no training – THANK AND TERMINATE
99. DON'T KNOW
100. REFUSE

Throughout this survey, I will refer to clean energy and work related to clean energy. By clean energy I mean activities associated with energy efficiency or renewable energy. The activities could be sales, installation, monitoring, maintaining equipment or providing other professional services or company support roles.

I will also refer to the building and construction industries, which includes clean energy but also includes standard building and construction activities.

Background and Current Employment Status

I have a few questions about your background and current employment status.

Q1. [ALL]Prior to the [TRAINING COURSE NAME – PIPED IN] training, had you ever held a job related to the clean energy sector? This work includes conducting audits; selling, installing, monitoring, or maintaining energy efficiency and/or renewable energy systems; or other work supporting energy efficiency or renewable energy.

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q1=1 (YES PRIOR WORK RELATED TO CLEAN ENERGY)]

Q2. Please briefly describe what that work entailed. Please let me know what aspect of clean energy and what your role was or what your primary activities were.

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
   [EE:ENERGY MODELING, AUDITOR, RATER, OR WEATHERIZING, INSULATION INSTALLER, EE HVAC, EE WINDOWS, ETC.]
   [RE: PV, SOLAR ELECTRIC, OR WIND SYSTEMS.
   [DISTINGUISH BETWEEN SALES, INSTALLATION, OR SOME OTHER FACET]
98. DON'T KNOW
99. REFUSED

[ALL]

Q3. Are you currently employed, seeking work, or not seeking work at this time?

[SINGLE RESPONSE]

1. Employed
2. Seeking employment
3. Not seeking employment at this time
98. DON'T KNOW
99. REFUSED

[IF "EMPLOYED AT START OF TRAINING" = MISSING/UNKNOWN, PIPED IN]

Q3.b Were you employed at the time of your training?

[SINGLE RESPONSE]

4. YES
5. NO

[IF Q3=1 (EMPLOYED) AND IF EMPLOYED AT START OF TRAINING PIPED DATA = 2 (missing), display if Q3b = 1 (YES employed at start of training) AND
IF EMPLOYED AT START OF TRAINING PIPED DATA = 0 or 1 (yes or no), display if EMPLOYED AT START OF TRAINING = 1 (yes employed)]

Q4. When you completed your pre-training survey, you reported that you employed. Was that work in the building and construction industries? These industries include clean energy, yet also includes standard building and construction.

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q3=1 (EMPLOYED) AND IF EMPLOYED AT START OF TRAINING PIPED DATA = 2 (missing), display if Q3b = 1 (YES employed at start of training) AND
IF EMPLOYED AT START OF TRAINING PIPED DATA = 0 or 1 (yes or no), display if EMPLOYED AT START OF TRAINING = 1 (yes employed)]

Q5. Are you currently employed with the same employer as when you took the training?

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q3=1 (EMPLOYED)]

Q6. Is your current job related to the clean energy sector? [IF NEEDED: This work includes conducting audits; selling, installing, monitoring, or maintaining energy efficiency and/or renewable energy systems; or other work supporting energy efficiency or renewable energy.]

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q6=1 (CLEAN ENERGY)]

Q7. Please briefly describe what your current work entails. Please let me know what aspect of clean energy and what your role is or what your primary activities are.

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
   [EE:ENERGY MODELING, AUDITOR, RATER, OR WEATHERIZING, INSULATION INSTALLER, EE HVAC, EE WINDOWS, ETC.]
   [RE: PV, SOLAR ELECTRIC, OR WIND SYSTEMS.
   [DISTINGUISH BETWEEN SALES, INSTALLATION, OR SOME OTHER FACET]
98. DON'T KNOW
99. REFUSED

[IF Q3 = 2 (SEEKING WORK)]

Q8. Are you looking for work in the building and construction fields, including clean energy but not limited to that?

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q8= 1 (BUILDING AND CONSTRUCTION]

Q9. Have you applied for jobs since completing the training?

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q8= 1 (YES, BUILDING AND CONSTRUCTION AND Q9 DNE 1]

Q10. Are you actively seeking work that specifically uses the knowledge and skills you gained from training? Please describe.

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q10=1 (YES, SEEKING RELEVANT WORK]

Q11. What types of jobs have you submitted applications for?

1. [OPEN ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Q12. [IF Q9=2 (NO, NOT APPLIED) AND Q3 = 2 (SEEKING EMPLOYMENT)

Do you have any plans to submit job applications in the building and construction fields? [PROBE IF NO PLANS: Can you share your reasons for this?]

1. [OPEN ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Q13. [IF Q3= 2 (SEEKING WORK)]

Are you also looking for work in fields other than the building and construction fields?

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[ALL]

Q14. In addition to the [TRAINING COURSE NAME – PIPED IN], have you taken other trainings in building trades or clean energy [renewable or energy efficiency upgrade]?

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q14=1 (YES, OTHER TRAINING)]

Q15. Please briefly describe the training. If you know details such as the course title, the training organization, the location or date, please let me know.

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q14=1 (YES, OTHER TRAINING)]
Q16. And are there any other trainings you've taken? [PROBE "ANYTHING ELSE?"]

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Q17. In the next year, do you plan to take any additional training related to clean energy [renewable or energy efficiency upgrade]?

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q17=1 (YES, PLAN TO TAKE TRAINING]
Q18. What training related to clean energy do you plan to take? If you know details such as the course title, the training organization, or whether it leads to certification please let me know.

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Q19. Do you plan to take anything else?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW [MAKE EXCLUSIVE]
99. REFUSED

Reaction

Now I would like to ask a few questions about your experience with the [TRAINING COURSE NAME] training we mentioned before.

[ALL]
Q20. How much of the information presented during training was <u>new</u> to you? Would you say it was… [READ OPTIONS] [NEW AS OPPOSED TO A REFRESHER COURSE]

[SINGLE RESPONSE]

1. None of it
2. Less than half
3. About half of it
4. More than half
5. All of it
96. Other, please specify: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED[OPEN-ENDED RESPONSE]

[ALL]
Q21. Using a 0-10 scale with 0 meaning "not at all" and 10 meaning "fully," to what extent was your background sufficient preparation for understanding the course content?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Q22. Using a 0-10 scale with 0 meaning "not at all adequate preparation" and 10 meaning "extremely good preparation," to what extent has the training prepared you to work in or advance in the clean energy field?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Q23. Why do you say that?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Learning and Behavior if Currently Employed in CE

[IF Q6=1 (CURRENTLY EMPLOYED IN CE), ELSE SKIP TO NEXT SECTION]

NOW I HAVE A FEW QUESTIONS ABOUT HOW THE TRAINING AFFECTED YOUR EMPLOYMENT OR JOB SEARCH.

Q24. Using a scale from 0 to 10 where 0 means "not at all applicable" and 10 means "extremely applicable," please rate the extent to which you think the skills or knowledge covered in this training are applicable to you current job?

[MULTIPLE RESPONSE]

1. [0 TO 10 RESPONSE]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF Q6=1 (CURRENTLY EMPLOYED IN CE)]
Q25. What role has the [TRAINING COURSE NAME] training played, if any, in helping you in your current position? Would you say…

[SINGLE RESPONSE]

1. The training did not help at all with your current position
2. The training helped some with your current position
3. The training helped a lot with your current position
96. Other, please specify: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW

99. REFUSED

[IF Q25=2 OR Q25=3 (HELPED SOME OR A LOT); ELSE SKIP TO Q32]
Which of the following ways, if any, would you say that the training has helped with your current position. Would you say…

Q26. It helped you to keep your job when your firm was downsizing

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q25=2 OR Q25=3 (HELPED SOME OR A LOT)]

Q27. It helped you to enhance your performance

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q25=2 OR Q25=3 (HELPED SOME OR A LOT)]

Q28. It helped you to work in new areas or do new activities

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q25=2 OR Q25=3 (HELPED SOME OR A LOT)]

Q29. It helped you to take on greater responsibility

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q25=2 OR Q25=3 (HELPED SOME OR A LOT)]

Q30. It helped you obtain a promotion

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Q31. It helped you obtain a pay increase

[SINGLE RESPONSE]

1. Yes
2. No
3. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q6=1 (CURRENTLY EMPLOYED IN CE)]

Q32. How often do you use any of the skills or information you gained from the training? Would you say …

[SINGLE RESPONSE]

1. You use at least some of them every day
2. You use them sometimes
3. You don't use them very much
4. You never use them
96. Other, please specify: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF Q32 =1 OR Q32 =2 (USE SKILLS]

Q33. Can you briefly describe some of the skills or information that you use?

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q6=1 (CURRENTLY EMPLOYED IN CE)]

Do you think the [TRAINING COURSE TITLE] training could be made more useful to your current position if it…

Q34. Offered different or additional skills or information

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q34=1 (YES)]

Q35. What additional skills or information would make it more useful to your current position?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q34=1 (YES)]

Q36. Taught or presented the skills or information differently

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q36=1 (YES)]

Q37. How could it be taught or presented to make it more useful to you?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF Q6=1 (CURRENTLY EMPLOYED IN CE) AND IF Q36=1 (YES)]

Q38. Do you have any other comments on how [TRAINING COURSE TITLE] could be modified to be more useful to your current position?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Learning if Seeking Employment in Building and Construction

[IF Q8=1 (SEEKING BUILDING & CONSTRUCTION EMPLOYMENT), ELSE SKIP TO NEXT SECTION]
NOW I HAVE QUESTION ABOUT HOW THE TRAINING HAS AFFECTED YOUR JOB SEARCH, IF AT ALL.

Q39. Using a scale from 0 to 10 where 0 means “not at all applicable” and 10 means “extremely applicable,” please rate the extent to which you think the skills or knowledge covered in the [TRAINING COURSE TITLE] training are applicable to any of the jobs you are seeking or applied for?

[MULTIPLE RESPONSE]

1. [0 TO 10 RESPONSE]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON’T KNOW
99. REFUSED

[IF Q8=1 (SEEKING BUILDING & CONSTRUCTION EMPLOYMENT)]

Q40. And again using a scale from 0 to 10, where 0 now means "not at all helpful" and 10 means "extremely helpful," please rate the extent to which you think the skills or knowledge covered in the [TRAINING COURSE TITLE] training have helped you to in the finding and applying for any of the jobs you are seeking or applied for?

[MULTIPLE RESPONSE]

1. [0 TO 10 RESPONSE]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF Q8=1 (SEEKING BUILDING & CONSTRUCTION EMPLOYMENT)]

Q41. Why do you say that?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Suggestions if Not Employed in CE

[IF Q6 DNE 1 (NOT CURRENTLY EMPLOYED IN CE)]

Q42. How do you think the [TRAINING COURSE TITLE] training could be improved?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Conclusion

[ALL]

Q43. Do you know whether you were eligible to pursue any clean energy certifications after taking [TRAINING COURSE NAME]. The types of certification I'm thinking of require you to take a test in the subject.

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q43=1 (YES, COULD CERTIFY)]

Q44. Did you pursue certification?

[SINGLE RESPONSE]

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[IF Q44=1 (DID CERTIFY)]

Q45. What certification did you pursue?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]

Q46. Thanks for taking the time to talk with me. Do you have any additional comments about the [TRAINING COURSE NAME] training?

[SINGLE RESPONSE]

1. [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]

Thank you so much for your feedback on the [TRAINING COURSE NAME] training. Good bye.

On-the-Job-Training: Employers Interviews Instrument

Introduction

Hello, my name is _____. I'm calling on behalf of NYSERDA about the on-the-job training program they offer in partnership with New York State Department of Labor. [IF NEEDED: Research Into Action is an independent program evaluation firm in Portland, Oregon]

According to our records, NYSERDA emailed you recently to notify you of our study. We'd like your feedback on the on-the-job program.

This is not a sales call and we will hold confidential the information you provide to the extent permitted by law. Nothing you say will be identified with you in our reports. I'll be audio recording this interview to ensure the accuracy of my notes. The recording will only be used by Research Into Action staff and will not be provided to NYSERDA.

Do you have any questions before we get started?

Screening [ASK ALL]

S2. NYSERDA gave us your name. Are you the best person to talk to about your company's OJT effort in 2013?

[IF YES, CONTINUE; IF NO, ASK FOR WHO IS MORE FAMILIAR AND OBTAIN NEW CONTACT INFORMATION]

NAME:

PHONE#:

[GET TRANSFERRED TO NEW CONTACT OF POSSIBLE]

S3. *[WHEN BEST CONTACT REACHED]* I've been referred to you because of your familiarity with your company's on-the-job training program in 2013.

[IF NEEDED: My questions are about what is going well and perhaps less well with parts of the OJT program.]

S4. Do you have 30 minutes or so now? Great!

S5. [IF NOT NOW] When do you think you'll have some time? [ON TIGHT DATA COLLECTION SCHEDULE – REQUEST SOON AS POSSIBLE TIME]

[SCHEDULE A TIME TO TALK FOR ABOUT ~30 MINUTES PREFERABLY WITHIN THE WEEK.]

IF NEEDED:

- Do you have any questions for me before we get started?
- Please be assured that the purpose of this evaluation is to assess the program so that NYSERDA may consider improvements going forward. NYSERDA is not assessing its employer partners.
- Research Into Action is part of the team that NYSERDA selected to conduct an evaluation of its OJT program. NYSERDA gave us your name as the contact on the OJT application.
- Not selling anything.
- Responses confidential
- For verification of study legitimacy, contact Todd French at NYSERDA (518) 862-1090 X 3212

[PROGRAMMER NOTE: ALLOW MULTIPLE RESPONSES FOR ALL QUESTIONS, SO THAT INTERVIEWER CAN CAPTURE VERBATIM DETAIL]

Firmographics [ASK ALL]

Let's start with a few questions about your firm.

[ALL]
Q1. What services and types of products does your firm offer? [PROBE RELATED AREAS TO DETERMINE BREADTH]

1. Other, or additional detail: [OPEN-ENDED RESPONSE]Energy audits
2. Insulation
3. Weatherization
4. Shell sealing
5. HVAC equipment
6. HVAC repair, maintenance
7. Duct sealing
8. PV / solar electric
9. Solar water heater / Solar thermal
10. Commercial lighting
11. Energy engineering
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q48. What year was your firm established?

1. [OPEN-ENDED RESPONSE]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q49. When did your first OJT trainee start their training period with your company?

1. [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q50. When the first OJT training began, how many employees did your firm have – not counting OJT trainee(s)?

1. [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q51. And how many employees does your firm have now?

1. [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q52. How many NYSERDA/GJGNY OJT trainees has the firm had in total?

1. [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q53. And how many OJT trainees does the firm currently have?

1. [OPEN-ENDED RESPONSE]
2. None (prior trainees only)
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[PROGRAMMER: PLEASE CREATE A VARIABLE TO INDICATE CURRENT OJT EMPLOYMENT STATUS. 1=YES, CURRENT TRAINEES (Q53=2); 2=NO, PRIOR TRAINEES ONLY (Q53=1, -96, -97, -98)]

Application Process [ASK ALL]

Now I'd like you to think back to the application process, trainee placement, and training goal development.

[ALL]
Q54. From what source did you learn about NYSERDA's support for training employees on-the-job?

DOL Business Services Rep
NYSERDA staff
NYSERDA website
NYSERDA webinar
Colleague
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Can you briefly describe your firm's role in selecting the specific individuals that you employ with OJT program support?

Firm sought support for specific individual
DOL provided a list of potential candidates for employer to interview
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF MORE THAN ONE TRAINEE (PROGRAMMING VARIABLE)] For the following questions, I'd like to know about your overall perspective, not your experience with specific trainees.

[ALL]
In your view, how did your Business Service Representative identify the appropriate skills your new trainee(s) would need for the position(s)? [ASSESSING SKILLS GAP AND OUTLINING APPROPRIATE TRAINING] [IF NEEDED: A Business Service Representative is someone representing NYSERDA's on-the-job training program or an affiliate with the New York State Department of Labor.]

What was your firm's role in specifying the learning objectives for your trainees? Would you say it was…

Firm identified objectives
DOL identified objectives
Both firm and NYSDOL identified objectives
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF OFF-SITE TRAINING (PROGRAMMING VARIABLE)]
What was your firm's role in identifying the off-site training for your trainees? Would you say it was…

Firm identified training
DOL identified training
Both firm and NYSDOL identified training
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
How did you and your Business Services Rep work out the OJT training that would address the skills gap identified for each trainee?

[OPEN-ENDED RESPONSE]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Please rate your satisfaction with NYSDOL's placement activities using a 0-to-10 scale, where 0 indicates you are not at all satisfied and 10 indicates you are fully satisfied.

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Do you have any suggestion for how the program might improve the following processes? [INTERVIEWER: ASK ABOUT ALL TOPICS IN TABLE]?

[MATRIX QUESTION]

Topics – as reported	Response Text	98 DK	99 RF
a. Application process (employer application)			
b. Trainee selection process			
c. Skills gap analysis (done by Business Services Rep)			
d. Monitoring of trainees			

On-the-job Training Approach [ASK ALL]

Now I have a few questions about your general training approach. Again, if you've had more than one OJT trainee, I only need your overall perspective.

[ALL]
Describe how your firm provides the training that the trainees need. For example, is training typically one-on-one, or in a group? OPTIONAL: I'm sure it's not a single way; I'm just trying to generally understand the trainees' experience.

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
How would you describe the training interactions? For example, do trainees typically shadow someone, or do they do the work under close direction and instruction, or something else? [PROBE: SEEK TO UNDERSTAND THE TYPICAL COMBINATION OF (1) OBSERVING/NOT DOING, (2) DOING UNDER INSTRUCTION, AND (3) DOING YET BEING LEFT TO FIGURE IT OUT ON THEIR OWN]

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
And once trainees have demonstrated competence with a new skill, about how long does it take before they are assigned to do this task on a regular basis? Is it…

Within a week
Within a month
Typically between 2-6 months
More than 6 months
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
If a trainee isn't learning the targeted skills at a reasonable pace, what do you do?

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE – NO SUCH CASES
98. DON'T KNOW
99. REFUSED

[IF 0 NOT EQUAL TO -96, -97, OR -98]
[IF NOT MENTIONED] How does your Business Services Representative assist you in this kind of situation?

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE – NO SUCH CASES
98. DON'T KNOW
99. REFUSED

[ALL]
Using a 0-10 scale with 0 meaning "not at all prepared" and 10 meaning "completely prepared," how well do you think a 6-month OJT training period prepares the trainee to work in the clean energy field? [LIMIT RESPONSE TO OJT TRAINING, EXCLUDING FORMAL OR CLASSROOM TRAININGS]

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
On a 0-10 scale, where 0 is "not at all likely" and 10 is "very likely," please rate the likelihood that you would have hired new trainees if your firm had not received an incentive for the training?

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Can you give me some examples of specific activities the OJT trainees do at a job site?

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE – NO SUCH CASES
98. DON'T KNOW
99. REFUSED

[ALL]
Do any trainees do activities at a job site that might directly affect the quality of the total job?

Yes
No
[OPEN-ENDED RESPONSE OFFERED REGARDING THESE TYPES OF ACTIVITIES OR HOW THIS IS MONITORED]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF 0=1 YES]
And which best describes how the crew leader [or someone else] provides quality assurance for the trainees' work?

Crew leader reviews every inch of the work of the trainee
Crew leader generally looks over all the work
Crew leader spot checks the work
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q72. What types of projects are they [the trainee(s)] working on now? [DO NOT READ. CHECK ALL THAT APPLY]

1. Energy audits
2. Insulation
3. Weatherization
4. Shell sealing
5. HVAC equipment
6. HVAC repair, maintenance
7. Duct sealing
8. PV / solar electric
9. Solar water heater / Solar thermal
10. Commercial lighting
11. Energy engineering
12. Wind generation
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ASK IF CURRENT OJT STATUS = 1 CURRENTLY HAVE OJT TRAINEE]
Compared to when your trainee(s) started, would you say trainees are exceeding, meeting, or falling short of your expectations for their ability to engage in new tasks? [READ OPTIONS AS NEEDED]

Exceeding your expectations for their ability to engage in new tasks
Meeting your expectations for their ability to engage in new tasks
Falling short of your expectations for their ability to engage in new tasks
96. Other, or additional detail [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ASK IF CURRENT OJT STATUS = 2 PRIOR OJT TRAINEES ONLY]
At the time your trainees completed the OJT period, were they exceeding, meeting or falling short of your expectations for their ability to engage in new tasks? Would you say:

Exceeding my expectations for their ability to engage in new tasks
Meeting my expectations for their ability to engage in new tasks
Falling short of my expectations for their ability to engage in new tasks
96. Other, or additional detail [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
And has the quality of trainee work increased? Would you say:

Trainee work quality is exceeding my expectations
Trainee work quality is meeting my expectations
Trainee work quality is falling short of my expectations
96. Other, or additional detail [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
How likely is it that your new hires [as opposed to incumbents taking classroom training] completing OJT training will be employed by your firm? [PROBE: Alternatively has OJT training basically provided a foundation for trainees to pursue other employment?]

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Monitoring Visits [Ask All]

I understand that the Business Services Rep conducts site visits during the training period, as well as a subsequent follow-up.

[ALL]
Q77. Do you recall talking to a program Business Services Representative at any time during the training period?

1. Yes
2. No
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF Q77=1 YES]
Q78. What is your understanding of the purpose of these meetings? [SELECT ALL THAT APPLY, INCLUDING OTHER COMMENTS]

Check on trainee attendance
Review progress being made toward training goals – occupational skill development
Follow-up on trainee retention post training
Gather contact information for non-retained trainees
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Q79. Do you have suggestions for improving the value of the monitoring visits – perhaps other types of information or support you could have used at the time?

1. [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Off-site Training

[IF OFF-SITE TRAINING IN CONTRACT (PROGRAMMING VARIABLE)]
I understand your contract includes incentives for classroom training. Did the incentives cover the full cost of that training?

Yes
No
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF 0=2 NO]
Did your firm pay the remainder of the cost or did the trainee pay? [IF TRAINING IS YET TO OCCUR, USE OPEN-END TO RECORD FIRM INTENTION (OR NOT) TO PAY THE REMAINING COST]

[INTERVIEWER / ANALYST NOTE: NYSERDA offers certification exam fee reimbursement under another PON. It was just a standalone incentive but is now offered under PON 2397.]

Firm
Trainee
Other NYSERDA incentive
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE – PROGRAM PAID FULL COST
98. DON'T KNOW
99. REFUSED

[IF OFF-SITE TRAINING IN CONTRACT (PROGRAMMING VARIABLE)]
Using a 0-to-10 scale, what is the likelihood that your firm would supplement OJT training with classroom training if your program contract did not include incentives for classroom training? [EXCLUDING INCUMBENT EMPLOYEES HERE]

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[ALL]
Have any of your regular employees (non-OJT trainees) attended NYSERDA-supported classroom trainings or attained certification or recertification during 2013?

Yes
No
96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF 0=1 YES]
Which trainings or certifications, if you recall?

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF 0=1 YES OR IF OFF-SITE TRAINING IN CONTRACT (PROGRAMMING VARIABLE); ELSE, SKIP TO NEXT SECTION (0)]

What are the benefits of combining classroom training with OJT training for new hires? [PROBE: VERSUS OJT TRAINING ONLY. DOES THIS DEPEND ON TECHNICAL SKILLS GAP?]

[OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF OFF-SITE TRAINING IN CONTRACT (PROGRAMMING VARIABLE) ASK Q41- Q46]

Using a 0-to-10 scale, where 0 means not at all satisfied and 10 means completely satisfied, please rate your level of satisfaction with the following aspects of the training taken, starting with:

General relevance of topics covered to job needs

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Specific content that was immediately useful to job needs

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Appropriateness of the information conveyed

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Instructional materials provided (workbooks, etc., trainees can take with them)

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Amount of time required for the training

[0 TO 10 response]
96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Ease of access to the training [e.g., convenient location]

[0 TO 10 response]

96. Additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Trainee Contact Information [All]

As part of our program evaluation, we would like to talk with one or two of your employees who are still in, or have completed, OJT training. We specifically want to talk with new hires, not incumbents. Our conversation with them will take about 30 minutes and we'd like to do this during business hours.

[ALL]

I have a list of trainees [PIPE IN TAINEE NAME]. As I read each name, please tell me if they are still with your company? Although I am now asking about each trainee, please be assured we will conduct interviews with only one or two of them, randomly chosen.

Trainees (fill in prior to interview)	Still employed at site? Yes/No

Is [CONTACT'S PH NUMBER] the best number to reach them?

[IF0 = NO]

What would be the best number for contacting trainees? [Ask to get alternative number from someone else, possibly a cell # for field staff.]

And when would be the best time of day to call them? _____

Closing [ASK ALL]

[ALL]

In closing, would you recommend the On-the-Job Training program to other companies working in clean energy fields?

Yes
No

96. Other, or additional detail: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

Thanks for taking the time to talk with me. Do you have any additional comments about the OJT program?

On-the-Job-Training: Trainee Interviews Instrument

Introduction

Hello, my name is _____. I'm calling on behalf of NYSERDA about the on-the-job training program they offer in partnership with New York State Department of Labor. [IF NEEDED: Research Into Action is an independent program evaluation firm in Portland, Oregon]

Your employer provided us with your contact information. We'd like your feedback on your experience with the on-the-job training program to help NYSERDA improve the program.

This is not a sales call and we will hold confidential the information you provide to the extent permitted by law.

Screening [ASK ALL]

S6. Do you have 30 minutes or so now? Great!

S7. [IF NOT NOW] When do you think you'll have some time? [ON TIGHT DATA COLLECTION SCHEDULE – REQUEST SOON AS POSSIBLE TIME]

[SCHEDULE A TIME TO TALK FOR ABOUT ~30 MINUTES PREFERABLY WITHIN THE WEEK.]

IF NEEDED:

- Do you have any questions for me before we get started?
- Please be assured that the purpose of this evaluation is to assess the program so that NYSERDA may consider improvements going forward. NYSERDA is not assessing its employer partners.
- Research Into Action is part of the team that NYSERDA selected to conduct an evaluation of its OJT program. Your employer gave us your contact information.
- Not selling anything.
- Responses confidential
- For verification of study legitimacy, contact Todd French at NYSERDA (518) 862-1090 X 3212

S8. Our records show that you started receiving on-the-job training with [**EMPLOYER/COMPANY**] back in [**OJT START DATE**]? Does that sound right?

[SINGLE RESPONSE]

0. Yes
   No [ADD TEXT BOX: ENTER DATE THE TRAINEE RECALLS] _____
99. DON'T KNOW
100. REFUSED

Roles and Responsibilities [ASK ALL]

Let's start by talking about your current job, then I'll ask you how it might have changed since you started with [**EMPLOYER/COMPANY**]

[ALL]

Q1. In your current job, please describe what you are doing in a typical week? [*Probe for: current activities and level of independence/ supervision*]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
In your time at this job, would you say your work has mostly been on energy efficiency upgrade work - like weatherizing houses or installing efficient equipment, or on renewable projects - like installing solar, or something else. [IF BOTH EQUALLY CAPTURE IN TEXT]

Mostly efficiency upgrade work [allow OPEN-ENDED RESPONSE]
Mostly renewable projects [allow OPEN-ENDED RESPONSE]
Something else [allow OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

On-the-Job Training [ASK ALL]

Now I'd like to you think back to when you first started the NYSERDA on-the-job training period for [EMPLOYER/COMPANY]

[ALL]
Before starting the training with this employer, did you have any experience working in …
Interviewer: prompt with responses for each, do not read -98,-99.

[MATRIX QUESTION]

Item	1. Yes or 2.No	[If Yes] Describe	[If Yes] Years of Experience	98 DK	99 RF
A. …the building construction trades					
B. …building supply, such as sales					
C. … the energy efficiency field					
D. …or the renewable energy field (solar or wind installations)					
E. … Is there any background relevant to your current work that I did not name?					

[ALL]
Please use a 10-point scale where zero means "not at all likely" and 10 means "highly likely," please rate the likelihood that you'd be working in the energy efficiency or renewable energy field now without the training?

[SINGLE RESPONSE]

[0 to 10 response]
98. DON'T KNOW
99. REFUSED

[ALL]
And why do you say that?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
And, without the training opportunity would you be doing the same work you doing now?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Placement

[OJT TRAINEES ONLY – NOT INCUMBANTS]
Tell me about your experience in being selected for this on the job training?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[OJT TRAINEES ONLY – NOT INCUMBANTS]
Using a 0-10 scale with 0 means "not at all a good fit" and 10 means an "excellent fit," to what extent has this OJT training placement been a good fit for you?

[SINGLE RESPONSE]

[0 TO 10 response]
98. DON'T KNOW
99. REFUSED

[IF 0=0 TO 7]
What would need to change about the placement for it to be a better fit for you?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Learning

[ALL]
When you first started the training period back in [OJT START DATE], what did your job involve doing in a typical week? [DESCRIBE A TYPICAL WEEK – ACTIVITIES AND LEVEL OF INDEPENDENCE/SUPERVISION]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Thinking just about this on-the-job training, and not any classroom training that you might have taken, what new skills or knowledge did you learn? [TYPES OF SKILLS AND KNOWLEDGE GAINED WORKING FOR [EMPLOYER/COMPANY]]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
How did your employer go about teaching you new job skills? [Probe: *For example, is training typically one-on-one – one person, such as the supervisor, teaching you – or is it typically in a team context?* AS NEEDED: I'm sure it's not a single way, I'm just trying to generally understand your experience.]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
And, who have you been learning from most often? Please tell me their role or title.

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Behavior

[ALL]
During your OJT training period, about how long would it typically take before you were given the chance to apply your new skills learned on a job site? Would you say: typically that same day, within a week, a month, or longer - about 6 months, or more than 6 months.

[MULTIPLE RESPONSE, TO ALLOW FOR OPEN-END]

That same day
Within a week
Within a month
Between 2-5 months
About 6 months
More than 6 months
96. Other, please specify: [OPEN-ENDED RESPONSE]
97. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF 0 = "4" (Between 2-5 months) OR "5" (About six months) OR "6 (More than 6 months) OR "-96 (other)"]
What was it about the task or the clients' jobs that made it take more than a month, typically, for you to use your new skills?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
In summary, what are the major differences in the work you are doing now compared with the work you did your first few weeks in the OJT placement? [PROBE: PLEASE CALL OUT ANYTHING NEW COMPARED TO WHEN YOU FIRST STARTED]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
How could the on-the-job experience you've had be improved to better serve other on-the-job trainees?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
And, would you recommend the on-the-job training you got from [EMPLOYER/COMPANY] to others interested in working in the energy efficiency field? And as I said, your answers are confidential.

Yes
No
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0=NO]
And why is that?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

BSR Monitoring Activities

[ALL]
Do you recall talking to a program Business Services Representative during your training period – this is someone representing NYSERDA's on-the-job training program or an affiliate with the New York State Department of Labor?

Yes
No
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Are you familiar with the training objectives they set for you?

Yes
No
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0 = 1 YES, FAMILIAR WITH TRAINING OBJECTIVES]
Do you believe that the training objectives set by the BSR were achieved by time your training was over?

[SINGLE RESPONSE]

Yes
No
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0 = NO, NOT MET]
What objectives were not met, and in what ways were they not met?

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
During your training how often did you get feedback on how your training was actually going with… ? [READ OPTIONS AND ASK WHAT WAS TYPICALLY COVERED]

[MATRIX QUESTION]

Item	# of times (best guess is OK)	[IF >=1] What was covered?	98 DK	99 RF
A. …your supervisor or trainer				
B. … your employer, if different than your trainer				
C. …the program Business Services Representative				
D. Anyone else?				

[ALL]
Do you have suggestions for improving the feedback you received – such as others types of information or support you could have used during the training period? Any suggestions regarding feedback from… [ITERATE BY READING ALL CATEGORIES]

[MATRIX QUESTION]

Item	Suggestions	98 DK	99 RF
A. …your supervisor or employer			
B. …the program Business Services Representative			
C. Anyone else involved with the OJT program?			
D. Anyone else?			

Using a 0-10 scale with 0 means "not at all satisfied" and 10 means an "completely satisfied" to what extent has the OJT training met your training goals so far?

[SINGLE RESPONSE]

[0 TO 10 response]
98. DON'T KNOW
99. REFUSED

Formal Instruction and Certification [ASK ALL]

[ALL]
Have you attended any classroom trainings or taken any other formal instruction such as an on-line course? [THIS MAY BE EMPLOYER OR PROGRAM FUNDED, OR EMPLOYEE FUNDED]

Yes
No
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0=YES, CLASSROOM TRAINING]
Did your employer or the OJT program pay any part of any tuition or fees for that training? [SELECT ALL THAT APPLY]

[MULTIPLE RESPONSE]

Employer
NYSERD training program
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0=YES, CLASSROOM TRAINING]
Were you paid your normal wages for the time you attended the classroom training?

[SINGLE RESPONSE]

Yes
No, why/what happened? [OPEN-ENDED RESPONSE]
96. NOT APPLICABLE
98. DON'T KNOW
99. REFUSED

[IF 0=YES (CLASSROOM TRAINING)]
What topics or major skill sets did the training(s) cover? [OVERVIEW OF MAJOR SKILL SETS]

[MATRIX QUESTION]

Number of Mentions	Skill Sets Or Knowledge Gained	98 DK	99 RF
1.			
2.			
3.			
4.			
5.			
6. (Summary of all other mentions)			

[IF 0=YES, CLASSROOM TRAINING]
How much of the information presented during classroom training was <u>new</u> to you? Would you say… [READ OPTIONS] [NOTE: NEW AS OPPOSED TO A REFRESHER COURSE]

None of it
Less than half
About half of it
More than half
All of it
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0=YES, CLASSROOM TRAINING]
And how much of what you learned through the classroom or on-line training course have you been able to apply on the job?

None at all
Less than half
About half of it
More than half
All of it
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0=YES, CLASSROOM TRAINING]
After taking this formal training course, did you pursue certification? The types of certification I'm thinking of require you to take a test in the subject.

[SINGLE RESPONSE]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0=YES, CLASSROOM TRAINING]
How could the training course better serve other on-the-job trainees?

[SINGLE RESPONSE]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
In the next year, what training related to clean energy [renewable or energy efficiency upgrade] fields do you plan to take?

Yes [OPEN-ENDED RESPONSE]
No [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[IF 0= 1 (training planned)]
Would you paying for this training on your own, or would your employer or someone else pay for it?

[MULTIPLE RESPONSE, TO ALLOW FOR OPEN-END]

On own (pay entire cost)
Employer supported (all or part)
NYSERDA supported (all or part)
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Using a 0-10 scale with 0 meaning "not at all prepared" and 10 meaning "completely prepared", to what extent has your training prepared you to work in the energy field? [NOTE: OJT AND/OR ANY CLASSROOM TRAINING COMBINATION]

[SINGLE RESPONSE]

[0 TO 10 response]
98. DON'T KNOW
99. REFUSED

Demographics [ASK ALL]

[ALL]
In the year prior to starting your training, what proportion of the time were you employed – would you say fulltime, three-quarter, about half, or less than half or something else? [DO NOT READ]

[SINGLE RESPONSE]

Didn't work at all
Full-time
Three-quarters of the time
About half of the time
Less than half time
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
What is the highest level of education you have completed so far? [DO NOT READ]

[SINGLE RESPONSE]

No schooling
Less than high school
Some high school
High school degree
Trade or technical school
Some college (including Associate degree)
College degree (Bachelor's degree)
Some graduate school
Graduate degree professional degree (PhD or other professional degree)
Post graduate
96. Other, please specify: [OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

[ALL]
Those are all the specific questions I have for you today. Is there anything else you'd like to say about your OJT experience before we close?

[SINGLE RESPONSE]

[OPEN-ENDED RESPONSE]
98. DON'T KNOW
99. REFUSED

Thank you so much for your feedback on the OJT program. Good Bye.

Appendix B: Career Pathway Trainees Pre- and Post-Training Data

Table B-1. CP Trainees Self-Reported Skill Levels

Category (*n* = 104)	No Skill	Intro-ductory	General	Advanced	No Response
Architectural, engineering, or related services	10%	10%	2%	6%	10%
General residential construction (home building and remodeling)	43%	19%	17%	11%	10%
General commercial construction (new business construction and remodeling)	54%	19%	6%	11%	11%
Building shell improvements (insulation, windows, air sealing)	48%	14%	11%	3%	24%
HVAC installation/technician	79%	5%	0%	0%	16%
Plumbing	63%	18%	7%	2%	10%
Electrical	59%	19%	9%	2%	12%
Other*	39%	7%	0%	13%	41%
Highest skill level reported	34%	17%	19%	23%	7%

* Other responses included general skills such as building maintenance, cleaning, clerical, cooking, demolition, janitorial, shipping/receiving, and welding from 22 respondents.

Table B-2. CP Trainees' Reasons for Taking Training (multiple responses allowed)

Reasons for Taking Training	Percent (*n*=104)
Job/career advancement	49%
Personal interest	41%
Helps in getting a job in construction/energy efficiency field	39%
Helps in getting a better job than the one I have	28%
Prepare for an apprenticeship/trades program	14%
Certification required to participate in utility program (e.g., Home Performance with ENERGY STAR, Multifamily Performance Program, etc.)	13%
It is a part of a legally mandated program	13%
Other	10%
Maintain a license or certification (required professional CEU)	9%
Required prerequisite for other training I want to take	9%
My employer recommended it	7%
Prepare for an internship	7%
To meet specific needs indicated by a client or customer	5%

* Ten "Other" responses included personal improvement, for their family, to explore the job market / industry, and becoming part of a green team / committee at work.

Table B-3. CP Expected Accomplishments from the Training (multiple responses allowed)

Reasons for Taking Training	Percent (*n*=100)
Acquire new skills	64%
Improve skills for promotion	33%
Obtain employment	71%
Other*	12%
Change field of employment	24%

* Of the 27 "Other" responses, three were not specified, four indicated that the respondent did not know what they expected, and the remaining responses included managing other employees, environmentalism, help their company succeed, and earning a certification.

Table B-4. How well CP Training Fit Experience and Goals

Reasons for Taking Training	Percent (*n*=96)
Course will teach new things	67%
Course will provide a refresher	13%
Not sure	10%
Course may be over my head	6%
Course may be below my level	2%
Course definitely is over my head	2%
Course definitely is below my level	0%

Table B-5. CP Training Expectations and Appropriateness

Learning and Achievement, Compared to Expectations	
Response	**Percent (*n*=155)**
Far exceeded	30%
Somewhat exceeded	25%
Met	38%
Fell somewhat short	7%
Fell far short	0%
Appropriateness of Level of Training to Employment Goals and Experience	
Response	**Percent (*n*=153)**
Far too low	1%
Somewhat too low	9%
Appropriate	79%
Somewhat too high	10%
Far too high	0%

Table B-6. Suggested Training Enhancements (multiple responses allowed)

Response	Percent (*n*=153)
Supervised field experience	48%
Hands on experience with equipment and tools	69%
Applied math skills	37%
Literacy/reading skills	9%
Interviewing and resume preparation	16%

Table B-7. CP Trainee's Post-Training Expectations (multiple responses allowed)

Post-Training Plans	
Response	**Percent (*n*=100)**
Remain in current job	54%
Seek advancement with current employer	29%
Seek additional training	28%
Find new employment	9%
Enter on-the-job training or internship.	4%
Enter apprenticeship/trades program	1%
Additional Training Plans	
Response	**Percent (*n*=100)**
Energy efficiency	31%
No plans for additional training	20%
Renewable energy	14%
Other	4%

Table B-8. CP Trainees' Certification Plans

Certification*	Certified (*n*=151)	Plan / Interested (*n*=151)
BPI Building Analyst, Building Envelope Professional, Heating Professional, etc.	9%	65%
USGBC LEED Accredited Professional (AP)	5%	32%
USGBC LEED Green Associate	5%	44%
RESNET/HERS Rater	1%	29%
AEE Certified Energy Manager (CEM)	5%	35%
NAHB Green Building	2%	40%
NARI Green Certified Professional	1%	37%
NATE HVAC Installation Technician, Service Technician, or Senior Technician	3%	44%
ASHRAE energy-related certifications	7%	36%

NABCEP PV- Entry Level	2%	34%
AEE Certified Energy Auditor (CEA)	3%	44%
NABCEP Solar Thermal–Entry Level	2%	36%
NABCEP Certified PV Installer	3%	32%
Other**	4%	11%
At Least One Certification	17%	83%

* BPI = Building Performance Institute; USGBC = US Green Building Council; AEE = Association of Energy Engineers; NAHB = National Association of Home Builders; NATE = North American Technician Excellence; NARI National Association of the Remodeling Industry; ASHRAE = American Society of Heating, Refrigerating, and Air-Conditioning Engineers; NABCEP = North American Board of Certified Energy Practitioners.

** Ninety percent of the "Other" response were not specific. The other 12 responses included Distributed Generation Certification, other solar thermal, sustainability coordinator, building codes, and National Council of Examiners for Engineering and Surveying (NCEES) FE and PE exams.

Appendix C: Technical Training Trainees Pre- and Post-Survey Additional Data

Table C-9. TT Trainees Self-Reported Skill Levels

Category (*n*=426)	No Skill	Intro-ductory	General	Advanced	No Response
Architectural, engineering, or related services	28%	19%	21%	18%	14%
General residential construction (home building and remodeling)	15%	21%	30%	25%	9%
General commercial construction (new business construction and remodeling)	23%	19%	30%	19%	9%
Building shell improvements (insulation, windows, air sealing)	17%	22%	23%	16%	21%
HVAC installation/technician	36%	24%	23%	6%	11%
Plumbing	21%	22%	20%	27%	10%
Electrical	4%	1%	2%	5%	87%
Other*	28%	19%	21%	18%	14%
Highest skill level reported	5%	11%	22%	57%	5%

* Other category includes a variety of building management and energy-efficiency areas (examples: energy evaluation project development and auditing, energy modeling, facilities management, GHG emissions, engineering, green practices outreach and education) mentioned by 18 respondents, and general skills (examples: stocking, agency operations, pneumatics).

Table C-10. TT Trainees' Reasons for Taking Training (multiple responses allowed)

Reasons for Taking Training	Percent (*n*=495)
My employer recommended it	48%
Job/career advancement	40%
Personal interest	33%
To meet specific needs indicated by a client or customer	16%
Certification required to participate in utility program (e.g., Home Performance with ENERGY STAR, Multifamily Performance Program, etc.)	15%
Helps in getting a job in construction/energy efficiency field	12%
Maintain a license or certification (required professional CEU)	12%
Required prerequisite for other training I want to take	12%
Prepare for an apprenticeship/trades program	8%
Helps in getting a better job than the one I have	7%
Other	6%
It is a part of a legally mandated program	6%
Prepare for an internship	1%

* Thirty "Other" responses included using the training for their current job (without expectations of promotion or advancement), or as a partial requirement for an apprenticeship in progress.

Table C-11. TT Expected Accomplishments from the Training (multiple responses allowed)

Reasons for Taking Training	Percent (*n*=470)
Acquire new skills	83%
Improve skills for promotion	38%
Obtain employment	6%
Other*	5%
Change field of employment	3%

* Of the 24 "other" response, 21 included specifics about how the training would help or was necessary for their current position as a refresher or for acquiring new skills. The remaining responses were not specified.

Table C-12. How well TT Training Fit Experience and Goals

Reasons for Taking Training	Percent (*n*=476)
Course will teach new things	75%
Course will provide a refresher	8%
Course may be over my head	5%
Not sure	5%
Course may be below my level	3%
Course definitely is below my level	1%
Course definitely is over my head	0%

Table C-13. TT Training Expectations and Appropriateness

Learning and Achievement, Compared to Expectations	
Response	**Percent (*n*=413)**
Far exceeded	18%
Somewhat exceeded	28%
Met	49%
Fell somewhat short	5%
Fell far short	>1%
Appropriateness of Level of Training to Employment Goals and Experience	
Response	**Percent (*n*=414)**
Far too low	>1%
Somewhat too low	12%
Appropriate	76%
Somewhat too high	12%
Far too high	0%

Table C-14. Suggested Training Enhancements (multiple responses allowed)

Response	Percent (*n*=329)
Hands on experience with equipment and tools	68%
Supervised field experience	39%
Applied math skills	24%
Interviewing and resume preparation	5%
Literacy/reading skills	3%

Table C-15. TT Trainee's Post-Training Expectations (multiple responses allowed)

Post-Training Plans	
Response	**Percent (*n*=390)**
Remain in current job	73%
Seek advancement with current employer	29%
Seek additional training	28%
Find new employment	9%
Enter on-the-job training or internship.	4%
Enter apprenticeship/trades program	1%
Additional Training Plans	
Response	**Percent (*n* = 390)**
Energy efficiency	31%
No plans for additional training	20%
Renewable energy	14%
Other*	4%

* Of the 11 "other" responses, 6 specified interest in architecture or passive / net zero design, and the remaining 5 indicated interest in climate science, sustainability, green economics, or environmental sciences.

Table C-16. TT Trainees' Certification Plans

Certification*	Certified (*n* = 375)	Plan / Interested (*n* = 375)
BPI Building Analyst, Building Envelope Professional, Heating Professional, etc.	13%	28%
USGBC LEED Accredited Professional (AP)	5%	22%
USGBC LEED Green Associate	6%	30%
RESNET/HERS Rater	3%	15%
AEE Certified Energy Manager (CEM)	2%	23%
NAHB Green Building	2%	20%
NARI Green Certified Professional	1%	15%

NATE HVAC Installation Technician, Service Technician, or Senior Technician	1%	17%
ASHRAE energy-related certifications	1%	31%
NABCEP PV- Entry Level	3%	18%
AEE Certified Energy Auditor (CEA)	1%	20%
NABCEP Solar Thermal–Entry Level	1%	17%
NABCEP Certified PV Installer	2%	17%
Other**	1%	31%
At Least One Certification	26%	59%

* BPI = Building Performance Institute; USGBC = US Green Building Council; AEE = Association of Energy Engineers; NAHB = National Association of Home Builders; NATE = North American Technician Excellence; NARI National Association of the Remodeling Industry; ASHRAE = American Society of Heating, Refrigerating, and Air-Conditioning Engineers; NABCEP = North American Board of Certified Energy Practitioners.

** Of the 22 "other" responses, 14 listed existing classes or interest in any trainings offered, and the remaining respondents expressed interest in and National Council of Examiners for Engineering and Surveying (NCEES) FE and PE exams, and lead removal.