ILLUME

PROJECT:

X2022 - Connecticut Education, Workforce Development, and Community Engagement Evaluation - Appendices

Prepared for CT Energy Efficiency Board

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APPENDICES

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Appendix A. Evaluation Methodology

Task Details

This section outlines the team's task-specific approach to the evaluation.

Task 1. Evaluation Planning

Task 1 included activities to plan for the evaluation. We held formal kick-off meetings with the EEB and the Companies' program teams, conducted interviews with the Companies, and developed data requests which we have sent to the Companies.

Task 2. Understand Current Program Efforts

Task 2 consisted of a comprehensive documentation and analysis of education, workforce development, and community and customer engagement efforts (including additional initiatives we identify).

For each initiative we documented:

- The objective and goals
- The activities and efforts that take place as part of the initiative, such as courses, trainings, program activities, community outreach initiatives, software platforms, etc.
- Who performs these activities
- The target audience for each effort
- The information collected to show the efforts have taken place
- The desired learning objective of the efforts
- Energy-related behaviors the effort is trying to change and mechanism for doing so
- The resources and follow-up support the effort offers

This effort to comprehensively document the scope and scale of education, workforce development, and community and customer engagement efforts provided a baseline understanding of current Energize CT initiative activities. The team conducted an analysis of the measures and metrics that are being tracked and made recommendations about additional metrics that could be tracked to demonstrate behavior change. The team identified what initiative activities were likely to lead to behavior change as currently implemented.

Task 3. Identify Best Practices

In Task 3, we conducted secondary research to inform best practices in education, workforce development, and engagement and potential for savings.

What we did:

- Outlined what other regions/states are doing
- Identified any lessons learned
- Understand how programs are trying to change behaviors and identify activities that could lead to behavior change related to energy savings
- Assessed whether these activities show energy savings
- Explored how other programs are trying to claim savings from education/training efforts

We did this by reviewing program evaluations and other documents outside of CT.

What we delivered:

- Demonstrated how CT efforts align with these best practices and opportunities to improve alignment
- Provided guidance on how to structure programs to create behavior change

This secondary research task allowed the team to draw on lessons learned from other programs across the country and across industries. We looked to best practices in behavior change – not only in energy efficiency programs, but more broadly—to ensure that our recommendations build on best practices.

The team identified specific program activities to focus on in Task 4. The team presented results of both Task 2 and 3 in an interim share-out meeting in May 2021. The team presented the programs we selected for our in-depth research in Task 4 during that meeting. Findings on best practices have been integrated into each chapter in the report.

Task 4. Primary Research

The team conducted primary research to explore the Workforce Development trainings programs, the Green STEP program, and is in the process of conducting primary research to understand the community partnerships program experience.

Details of each stream of primary research have been included in the relevant program chapter or the appendix to the chapter.

Questions to support applying the recommendations

We offer the following considerations to the implementation and program teams in thinking about how to move forward with the recommendations. We recommend the following set of steps in moving forward with the recommendations provided by the evaluation team.

- Step 1: Identify Goals, Outcomes, Activities, Metrics
- Step 2: Check for Gaps
- Step 3: Refine and plan for activities
- Step 4: Develop Metrics
- Step 5: Implementation and continuous feedback and improvement

Step 1: Identify Goals, Outcomes, Activities, Metrics:

The initiative team should work internally and with stakeholders to outline specific goals, outcomes, activities, and metrics

Questions to ask:

1. What are the market challenges your initiative is addressing? What are the most pressing challenges (either because of urgency or size)?
2. What will it take to meet that goal?
3. How will you reach those outcomes? What activities will take place to meet the outcomes?
4. How will you know when you've achieved the outcomes? How will you know when you've achieved your goal?
5. Is this doable? Why or why not?

   Answers help identify goals, outcomes, activities, metrics
6. Addressing this challenge should become your primary goal
7. These will become your outcomes, which are the building-blocks of the goal.
8. These are your activities.
9. These will become your metrics
10. This will inform your planning and identify hurdles early on

Step 2: Check for Gaps:

Next, the team should identify what may be missing and where the program isn't addressing market challenges

Questions to ask:

- What are the needs of the people you're trying to serve? These should be encompassed by the challenges and addressed by the program goals.
- How is your initiative addressing market challenges? How is it addressing the primary goal? What is missing? What's missing can help identify opportunities for new program activities or outcomes.
- What activities is the program currently doing? What are the outcomes of those activities? Do the activities and outcomes line up with what you developed in Step 1? If not, where are there gaps?
- What goals are you working toward? Do those goals align with what you developed in Step 1? If no, how do they differ? Are there ways to close those gaps by tweaking the specific program?
- Are the goals/outcomes/activities identified in Step 1 feasible?
- If not, what do you need to make them feasible (e.g., more staff, additional funding, support from different entities at the utility or the state, etc.)

Step 3: Refine and plan for activities

Once the goals, outcomes, activities, and metrics have been defined, the team can begin working to refine the activities and plan for new activities or new cycles of activities.

This plan should also include targets for meeting specific outcomes and associated times.

Questions to ask:

- What do you need to do to run X activity (in terms of staff, time, budget, etc.)?
- What factors are limiting your ability to implement this activity?

Step 4: Develop Metrics

Planning should identify metrics as well how the program will collect the data necessary for assessing the metrics. That is, if the metric is not only attendance at a workshop but a subsequent change in practice, the program will need to ensure they have collected relevant contact information to follow up with participants later to report any changes they've made.

Questions to ask:

- How will you know if you've achieved your goals?
- How will you measure success?
- When will you need to collect information to show progress?
- What information will you need to collect to enable subsequent information collection?

Step 5: Implementation and continuous feedback and improvement

With these considerations in place, begin program implementation. Consider a pilot framework to trial and test what is working or not. Incorporate feedback from implementation teams, participants, and program staff at regular intervals.

Questions to ask:

- What worked and what didn't?
- What would you want to keep vs. change if you were to do this again?
- Where are areas for program improvement?
- What could have gone more smoothly?

Appendix B. References and Works Cited

Ali Jaffer and Mona Mourshed, "A Better Metric for the Value of a Worker Training Program," *Harvard Business Review,* February 14, 2017, https://hbr.org/2017/02/a-better-metric-for-the-value-of-a-worker-training-program.

Ameren Illinois Market Development Initiative. "Energy Efficiency For All," Accessed August 5, 2021. https://amerenillinoissavings.com/mdi/.

Ameren Illinois. "Energy Efficiency Programs," Accessed August 6, 2021, https://amerenillinoissavings.com/wp-content/uploads/2021/03/PY20-DEC-2020-Illinois-Black-Chamber-of-Commerce-and-Urban-Ministries-FINAL.pdf.

ASWB Engineering. "Lighting Controls Training Assessment." Southern California Edison, Pacific Gas and Electric Company, San Diego Gas and Electric Company and Southern California Gas Company, April 8, 2016. https://www.calmac.org/publications/Lighting_Controls_Training_Assessment_Report_2016-04-08b.pdf

Bean, Meghan, and Marjorie McRae. "Power to the People: Using Community-Based Approaches to Deliver Efficiency and Sustainability to Hard-to-Reach Populations." *ACEEE Summer Study on Energy Efficiency in Buildings* (2016): 1-12. https://www.aceee.org/files/proceedings/2016/data/papers/11_943.pdf

Christopher Pappas, "6 Traits That All Successful Workforce Development Programs Have In Common," *eLearning Industry,* February 23, 2020, https://elearningindustry.com/successful-workforce-development-programs-essential-traits.

Clark, Benedict. "Digital Customer Engagement: 7 Trends to Look Out For". *Acquire* (May 2021). https://acquire.io/blog/digital-customer-engagement-trends/

ComEd Energy Efficiency Program. "ComEd Equity Hiring & Workforce Development Update." Accessed August 6, 2021. https://ilsag.s3.amazonaws.com/SAG-Meeting-Equity-and-Workforce-Development-ComEd-Presentation_10-1-2020.pdf

ComeEd. "Workforce Development Implementation Plan." (2017) Accessed May 16, 2022. http://blogs.edf.org/energyexchange/files/2017/10/ComEd-Ex.-1.0-Workforce-Development-Plan.pdf

Connecticut Technical Education and Career System (CTECS). 2022. *Partner With Us: Career Technical Education Advisory Committees - Connecticut Technical Education and Career System (CTECS)*. Accessed 16 May 2022. [online] https://www.cttech.org/about/career-technical-education-advisory-committee

Connecticut's Energy Efficiency & Demand Management Plan. "2019-2021 Plan Conservation & Load Management Plan Update." Eversource Energy, United Illuminating, Connecticut Natural Gas Corporation and Southern Connecticut Gas. March 1, 2019. Accessed May 16, 2022.

Crosby, Kate and Anisa Baldwin Metzger. 2013. "Powering Down: A Toolkit for Behavior-Based Energy Conservation in K-12 Schools". U.S. Green Building Council. http://centerforgreenschools.org/sites/default/files/resource-files/Behavior-based-Efficiency.pdf

DiMatteo, Julie, Cynthia Radnitz, Jamie Zibulsky, Jeffrey Brown, Courtney Deleasa and Stephanie Jacobs. 2014. Is Energy Conservation Education Effective? An evaluation of the PowerSave Schools Program. *Applied Environmental Education & Communication*. 13:2, 99-108. https://doi.org/10.1080/1533015X.2014.947050

Denson, Ronald Jr., and Sara Hayes. "The Next Nexus: Exemplary Programs That Save Energy and Improve Health." *ACEEE* (March 2018). https://www.aceee.org/research-report/h1802

Department of Energy and Environmental Protection Bureau of Energy and Technology Policy. “Equitable Energy Efficiency: Proposed Phase I Actions and Recommendations.” May 5, 2021. Accessed May 16, 2022. https://portal.ct.gov/-/media/DEEP/energy/ConserLoadMgmt/E3-Proposed-Phase-I-Actions-and-Recommendations.pdf

Dodda, Raviteja. “Five Customer Engagement Trends That Will Continue In 2021” *Forbes* (February 2021). https://www.forbes.com/sites/forbesbusinesscouncil/2021/02/01/five-customer-engagement-trends-that-will-continue-in-2021/?sh=5a1baabb52d8

Drehobl, Ariel, and Kate Tanabe. “Extending the Benefits of Nonresidential Energy Efficiency to Low-Income Communities.” *ACEEE* report U1910 (November 2019): 1-76. https://www.michigan.gov/documents/mpsc_old/ACEEE_u1910_Nonresidential_EE_to_Low-Inocme_Communities_673398_7.pdf

Energy Trust of Oregon and BTAN Consulting. “ESP Training Evaluation Final Report,” 2015. Accessed May 16, 2022. https://www.energytrust.org/wp-content/uploads/2016/12/ESP_training-final_report_12may2015_w_appendices_and_SR.pdf

EPA. “Case Study: Energy Outreach Colorado, A nonprofit hub for energy assistance.” (June 2017): 1-8 https://www.epa.gov/sites/default/files/2017-06/documents/energy_outreach_colorado_case_study_6-1-16_508.pdf

Evergreen Economics. “Evaluation of the Hawaii Energy Conservation and Efficiency Programs,” 2014. Accessed May 16, 2022.

Finegold, Aaron, Alfonso Pulido, and Scott Perl. “The revival of customer loyalty: How regulated utilities can reshape customer engagement.” *McKinsey & Company* (May 2018). https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-revival-of-customer-loyalty#

Gallup. “State of the American Consumer Report.” (2014): 1-60. https://www.gallup.com/services/176282/state-american-consumer.aspx

Garcia, Edward and Mella, Katherine. “The Bronx Healthy Buildings Program.” *Northwest Bronx Community and Clergy Coalition and Bronx Cooperative Development Initiative* (September 2018). https://www.health.ny.gov/health_care/medicaid/redesign/sdh/summit_docs/finalist_slides_nwbronxcomm.pdf

Gonzáles, Rosa. “The Spectrum of Community Engagement to Ownership” *Community Commons* (2020). https://www.communitycommons.org/entities/3aec405c-6908-4bae-9230-f33bef9f40e1

Green Jobs Academy. “About” Accessed August 2021, http://greenjobsacademy.org/index.php/sample-page/.

Hannigan, Eileen. “Workforce Development as Economic Agency,” *ILLUME Advising LLC,* May 11, 2021, https://illumeadvising.com/2021/workforce-development-as-economic-agency/.

Harrigan, Merrilee. 2014. “Behavior Change in Schools: Quantifiable Savings in Commercial Buildings” Presented at the Behavior, Energy, and Climate Change conference, 2014. https://beccconference.org/wp-content/uploads/2014/12/presentation_Harrigan.pdf

Higgins, Paul, Trace O’Rorke, and Derek Dinsmoor. “ComEd Business Energy Analyzer Program Impact Evaluation Report.” *Navigant* (August 2018): 1-21. https://cdn2.hubspot.net/hubfs/1698209/Asset%20PDFs/ComEd%20PY9%20Agentis%20BEA%20Evaluation%20Report%202018-08-22.pdf

ILLUME Advising. “Energy Efficiency Behavioral Programs: Literature Review, Benchmarking Analysis, and Evaluation Guidelines.” (May 2015): 1-116. https://mn.gov/commerce-stat/pdfs/card-report-energy-efficiency-behavorial-prog.pdf

Illume Advising COMM-86775. “Energy Efficiency Behavioral Programs: Literature Review, Benchmarking Analysis, and Evaluation Guidelines.” (May 2015): 1-116. Accessed May 25, 2022. https://mn.gov/commerce-stat/pdfs/card-report-energy-efficiency-behavorial-prog.pdf

Jacob, A, and Cyr, S. Clean Energy Works Oregon Final Technical Report. United States: N. p., (2013). Clean Energy Works Oregon.

Jane Pulaski, “Green Jobs Academy (MA) Making a Difference with Weatherization Training,” *Interstate Renewable Energy Council*, May 16, 2014, https://irecusa.org/blog/irec/green-jobs-academy-ma-making-a-difference-with-weatherization-training/.

Jayaraman, Mallika and Sereen Dababneh. “Insights on Engaging Customers with Real-Time Energy Use.” *Navigant, DTE Energy* (November 2019): 1-19. https://beccconference.org/wp-content/uploads/2019/11/jayaraman_presentation.pdf

Jen Giovannitti and Dr. Elizabeth Weigensberg, “Metrics for Success: Critical Elements for Workforce Development Programs,” *The Federal Reserve Bank of Atlanta's Economic Development Podcast Series*, November 2012, https://www.atlantafed.org/podcasts/transcripts/economic-development/121114-critical-elements-for-workforce-development-programs.

Julie DiMatteo, Cynthia Radnitz, Jamie Zibulsky, Jeffrey Brown, Courtney Deleasa & Stephanie Jacobs (2014) Is Energy Conservation Education Effective? An Evaluation of the PowerSave Schools Program, Applied Environmental Education & Communication, 13:2, 99-108, DOI: 10.1080/1533015X.2014.947050

KEEF (KEEA Energy Education Fund). 2013. “Moving to the Head of the Class: An Energy Efficiency Resource Guide for Pennsylvania Schools.” http://keealliance.org/wp-content/uploads/2016/09/Moving-to-the-Head-of-the-Class-2013.pdf

LADWP staff communication with ILLUME, December 7, 2020.

Los Angeles Department of Water and Power. “Non-Profit Opportunities.” June 2021. Accessed May 25, 2022. https://www.ladwp.com/ladwp/faces/ladwp/commercial/c-savemoney/c-sm-rebatesandprograms/c-sm-rp-non-Profitopportunities;jsessionid=z35GhRpGGny2QhsL6vyzcffvQGpv1scJvG9n3qvyhb2CqXpNpzXd!184478703?_afrWindowId=null&_afrLoop=198938081566068&_afrWindowMode=0&_adf.ctrl-state=m1v0n3tvk_4;#%40%3F_afrWindowId%3Dnull%26_afrLoop%3D198938081566068%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dgp5msbktw_4

Logic Models for Workforce Education & Training. “Integrated Energy Education and Training.” *Sub-Program Components and Linkage Explanation.* Accessed May 16, 2022.

Lung-Sheng Lee, Kuen-Yi Lin, Yunn-Horng Guu, Liang-Te Chang & Chih-Chien Lai (2013) The effect of hands-on ‘energy-saving house’ learning activities on elementary school students’ knowledge, attitudes, and behavior regarding energy saving and carbon-emissions reduction, Environmental Education Research, 19:5, 620-638, DOI: 10.1080/13504622.2012.727781

Magids, Scott, Alan Zorfas and Daniel Leemon. “The New Science of Customer Emotions.” *Harvard Business Review* (November 2015). https://hbr.org/2015/11/the-new-science-of-customer-emotions

Mary Shoemaker, Roxana Ayala, and Dan York, "Expanding Opportunity Through Energy Efficiency Jobs: Strategies to Ensure a More Resilient, Diverse Workforce," *American Council for an Energy-Efficient Economy*, October 2020, https://www.aceee.org/sites/default/files/pdfs/u2010.pdf.

MassSave. "Massachusetts program administrators' municipal partnership 2020 application." (2020): 1-10. Accessed June 10, 2021. https://www.masssave.com/-/media/Files/PDFs/Partners/2019-0919-MS-COMM-1690075-Communities-Application_FILLABLE.pdf?la=en&hash=5413555B113178E3013DE29A548D0E5DBC3F2A49

Mazur-Stommen, Susan and Kate Farley. 2013. "ACEEE Field Guide to Utility-Run Behavior Programs." Report B132. American Council for an Energy Efficient Economy. https://www.aceee.org/sites/default/files/publications/researchreports/b132.pdf

Navigant. "Comprehensive Review of Non-Residential Training and Education Programs, with a Focus on Builder Operator Certification." (2015). Accessed May 16, 2022. http://www.theboc.info/wp-content/uploads/2015/09/Training-and-Education-Programs-Final-Report-0601915-clean.pdf

Navigant. "DTE Insight: App Gas Savings" (2016): 1-7. https://www.michigan.gov/documents/mpsc/DTE_Insight_Gas_App_522661_7.pdf

Navigant. "DTE Insight: Energy Bridge Electric Savings" (2016): 1-7. https://www.michigan.gov/documents/mpsc/DTE_Insight_Electric_Energy_Bridge_522660_7.pdf

Navigant. "DTE Insight: Energy Bridge Electric Savings" (2016): 1-7. https://www.michigan.gov/documents/mpsc/DTE_Insight_Electric_Energy_Bridge_522660_7.pdf

Navigant. "Home Energy Report Pilot Program Evaluation." (February 2015): 1-90. https://www.puc.nh.gov/electric/Monitoring%20and%20Evaluation%20Reports/Eversource%20NH%20HER%20Evaluation%20Report%202016-03-24%20Final.pdf

New York State Energy Research and Development Authority. "Clean Energy Fund: Workforce Development and Training Chapter". May 7, 2021. Accessed May 25, 2022. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E63E73DA-A18D-471B-819E-147D9591E641}.

New York State Energy Research and Development Authority. "Clean Energy Workforce Development Overview". July 2021. Accessed May 25, 2022. https://www.nyserda.ny.gov/-/media/Files/Publications/Fact-Sheets/workforce-fact-sheet.pdf.

Northwest Bronx Community and Clergy Coalition. "What We Do: Energy Democracy." northwestbronx.org. Accessed June 10, 2021. https://www.northwestbronx.org/energy-democracy

NYSERDA. n.d. Clean Energy Training Services. Accessed May 2021. https://portal.nyserda.ny.gov/CORE_Solicitation_Detail_Page?SolicitationId=a0rt000000dWTlkAAG

Orfanedes, Laura, Linda Dethman, and Jamie Lalos. "Charting the Future: How to Use Customer Engagement Strategies to Ensure Energy Savings and Persistence." *ACEEE Summer Study on Energy Efficiency in Buildings* (2016): 1-13. https://www.aceee.org/files/proceedings/2016/data/papers/6_869.pdf

Organizing Engagement. "Ladder of Citizen Participation". Accessed June 10, 2021, https://organizingengagement.org/models/ladder-of-citizen-participation/

PowerSave Schools. Alliance to Save Energy. *Energy Saving Success stories from Southern California (2011-2012)*. https://www.ase.org/sites/ase.org/files/powersave_schools-success_book_2011-12.pdf

PowerSave Schools. Alliance to Save Energy. "Empowering Students, Generating Change." https://www.ase.org/sites/ase.org/files/resources/Media%20browser/powersaveschools-roadmap.pdf

Questline. "Accelerating Digital Customer Relationships: 2021 Energy Utility Benchmarks Report." (2021): 1-69. https://cdn.questline.com/asset/get/56c186ba-40d5-405d-9c37-2c2b6171baea?rand=2042591251

Research Into Action. "Spotlight on Key Program Strategies from the Better Buildings Neighborhood Program Final Evaluation Volume 6." *Research Into Action, Inc.* Vol. 6 (June 2015): 1-94, https://www.energy.gov/sites/default/files/2015/08/f25/bbnp_volume_6_spotlight_072215_0.pdf.

Ron Israel, "Workforce Development Program Guide," *United States Agency International Development,* Accessed August 16, 2021, http://idd.edc.org/sites/idd.edc.org/files/EQUIP3-workforce-dev-program-guide.pdf.

Southern California Regional Energy Network. "Architecture, Construction, Engineering Students (ACES) Pathway Program". Accessed August 6, 2021. Accessed May 25, 2022. https://www.socalren.org/workforce-education-and-training/ACES.

State and Local Climate and Energy Program. n.d. *Energy Efficiency Programs in K-12 Schools*. Accessed 16 May 2022. https://www.epa.gov/sites/default/files/2015-08/documents/k-12_guide.pdf

Srivastava, R., M. Awojobi, and J. Amann. 2020. Training the Workforce for High-Performance Buildings: Enhancing Skills for Operations and Maintenance. Washington, DC: American Council for an Energy-Efficient Economy. https://www.aceee.org/sites/default/files/pdfs/b2003%20%281%29.pdf

Stewart, Jim. "Can High Bill Alerts Help Utility Customers to Save Energy?" *Cadmus, Xcel Energy* (November 2019): 1-10. https://beccconference.org/wp-content/uploads/2019/12/stewart_presentation_reduced.pdf

Sussman, Reuven and Maxine Chikumbo. "Behavior Change Programs: Status and Impact." *ACEE* Report B1601 (October 2016): 1-108. https://www.aceee.org/sites/default/files/publications/researchreports/b1601.pdf

The Build Health Challenge. "The Bronx Healthy Buildings Program" buildhealthchallege.org. Accessed June 10, 2021. https://buildhealthchallenge.org/communities/awardee-bronx-nyc/

Training Industry Partnerships Baseline Study," *Research Into Action, Inc*., February 2019, https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-WFD-Industry-Partnerships-Mkt-Eval-03-8-19-Report.pdf.

Tennessee Valley Authority. "TVA Donation Supports Minority Contractor Training Program," November 12, 2020. Accessed May 25, 2022. https://www.tva.com/newsroom/articles/tva-donation-supports-minority-contractor-training-program.

United States Census Bureau. "QuickFacts: Connecticut," Accessed August 16, 2021, https://www.census.gov/quickfacts/fact/table/CT/PST045219.

US Department of Energy. "Evaluating Building Energy Code Compliance and Savings Potential through Large-Scale Simulation with Models Inferred by Field Data." Energies 13, no. 9 (January 2020): 2321. Accessed May 16, 2022. https://doi.org/10.3390/en13092321

US Department of Energy. "Evaluation of the Compressed Air Challenge Training Program. (2004). Accessed May 16, 2022. https://doi.org/10.2172/1215869

White, Sarah, with Laura Dresser and Joel Rogers. 2010. "Greener Skills: How Credentials Create Value in the Clean Energy Economy." Center on Wisconsin Strategy. https://cows.org/wp-content/uploads/sites/1368/2020/05/2010-Greener-Skills-How-Credentials-Create-Value-in-the-Clean-Energy-Economy.pdf

William M. Campbell, P. Christopher Navin, "Workforce Needs Assessment: A report from the MASSCAP Green Career Ladder Initiative," *Massachusetts Association for Community Action,* November 2009, https://www.masscap.org/wp-content/uploads/2016/10/GreenCareersRpt_11-09.pdf.

Wirtshafter Associates, Inc., "Evaluation of the 2003 Statewide Education and Training Services Program Final Report," Southern California Edison, Pacific Gas and Electric Company, San Diego Gas and Electric Company and Southern California Gas Company, June 3, 2005, https://illumeadvisors.sharepoint.com/sites/ILLUMECollaboration/Shared%20Documents/Connecticut%20Education%20and%20Engagement/09_Background%20Documents/SCE_2003%20CA%20Ed%20and%20Training%20Final%20Report.pdf

Xie, Yulong, Mark Halverson, Rosemarie Bartlett, Yan Chen, Michael Rosenberg, Todd Taylor, Jeremiah Williams, and Michael Reiner. "Evaluating Building Energy Code Compliance and Savings Potential through Large-Scale Simulation with Models Inferred by Field Data." Energies 13, no. 9 (January 2020): 2321. Accessed May 16, 2022. https://doi.org/10.3390/en13092321

Materials Provided by the Companies

The companies provided many documents to review. We provide a listing of the documents we reviewed in the tables below. We provide more detailed information of the reviewed materials in Appendix G - Catalog of program materials_reviewed.xlsx. In addition to the documents we reviewed, we also obtained program updates from meetings with the companies:

- Program updates shared at the March 2021 and May 2021 EEB meetings
- Program updates shared on specific program initiatives, including
    - Community Partnerships for Energy Efficiency Engagement: Draft Community Partnerships for Energy Engagement Initiative Round 1 Application
    - Customer Engagement Platform: Residential Customer Engagement presentation for the 6/26/13, Energy Savings Plan Training (2021), Energy Savings Plan Log-in Customers in 2019 & 2020, Eversource – Customer Engagement presentation (2021)

The tables below outline the documents we reviewed by program and sector.

Table 1. eesmarts Program Materials Reviewed

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION OF DOCUMENT	METRICS TRACKED
Bright Kids	9/20/2019	Final report addendum	List of participating schools with summary metrics	# schools, grades, # students, # teachers, # presentations, % distressed areas
Bright Kids	2019	Lesson	Overview of Bright Kids; energy activity	
Bright Kids	2019	Lesson	Safety information: asking kids to talk to their families about what they learned	
Bright Kids	May-June 2019	Program report	Program description, administration, implementation overview, student and teacher feedback, suggestions (recommendations)	# students, # teachers, # schools, # presentations
Bright Kids	2019	Survey	11 sample student feedback activity sheets	
Bright Kids	2019	Survey	10 sample student feedback activity sheets	
Bright Kids	2019	Survey	Teacher, thank you notes and emails; evaluation summary noting lack of feedback	# reviews
Bright Kids	2020	Program report	Program description, administration, implementation overview, student and teacher feedback, suggestions (recommendations)	# students, # teachers, # schools, # presentations
Energized Guyz	Fall 2020	Final report	Overview of the 4th and 5th grade school assemblies' program, teacher evaluation summary, schedule, curriculum, feedback	# schools, teacher ratings, # students, # livestreams, # billable schools
Professional development workshops/summer institute	2019-2020	Workbook	Timeline of PD metrics	# workshops by month, target, and total attendance, # participants from distressed communities, satisfaction rates
Professional development workshops/summer institute	2019-2020	Workbook	List of territories	# attendees, # attendees from distressed communities
Lessons and Events	2019-2020	Workbook	List of lessons and events by school	# schools, # students, # adults, distressed communities' indicator, # events
Conferences	2019	Workbook	List of conferences, audience, and type of conference activity (booth/presentation)	# adults, distressed communities' indicator, # events
Virtual Mini Lessons	2020	Workbook	List of requestors for virtual mini lessons with topics	# requests, # schools, distressed community indicator
Project Learning Tree, Green LEAR Schools, Green Ribbon Schools	-	Workbook	Descriptions of programs on last tab	

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION OF DOCUMENT	METRICS TRACKED
Energized Guyz	Fall 2019	Final report	Overview of the 4th and 5th grade school assemblies' program, teacher evaluation summary, schedule, curriculum, feedback	# schools, teacher ratings, # students, # shows
Multiple	-	Data request response	break out	
Energize Connecticut Center	2019	Workbook	List of meetings, trainings, and visiting schools	# schools
Professional development workshops/summer institute	7/14/2016	Lesson	Agenda for 1-day workshop with activities and topics from Next Generation Science Standards	# instructors
Professional development workshops/summer institute	2016	Presentation	Outline of workshop to teach kids about solar, asked teachers to complete evaluations, order free materials, and receive their $100 stipend	
Professional development workshops/summer institute	7/10-7/11/2019	Lesson	Agenda for 2-day workshop with activities and topics	
Technical trade trainings, science fair education	Oct 2019-Jun 2020	Workbook	List of virtual and in person workshops	# trainers, # workshops, # high schools, # attendees
Bright Kids		Worksheet	Certificate of achievement to print out for kids	
Bright Kids		Worksheet	Teacher prep before their students attend eesmarts lessons	
Bright Kids	2020	Worksheet	Activity sheet for students with a quiz and math problems	
Bright Kids		Survey	Survey/quiz for students to fill out after attending an eesmarts presentation	
Outreach		Brochure	Informational brochure detailing materials available for teachers	
Bright Kids		Worksheet	Classroom activity outlines for teachers to do with their students before or after an eesmarts presentation	
Bright Kids		Memo	Thank you note to teachers	
Bright Kids	2020	Worksheet	Duplicate student guide; Activity sheet for students with a quiz and math problems	
Energy curriculum		Lesson	Word document with 4 links to google docs containing energy lesson plans	
Energy curriculum		Workbook	List of supplies needed for lessons and links to google docs with worksheets	
Energy curriculum		Lesson	Lesson plan outline with links to google docs with more detailed lesson plans	
Energy curriculum		Lesson	Lesson plan outline with links to google docs with more detailed lesson plans	
Energy curriculum		Workbook	List of supplies needed for lessons and links to google docs with worksheets	

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION OF DOCUMENT	METRICS TRACKED
Energy curriculum		Lesson	Word document with 4 links to google docs containing energy lesson plans	
Energy curriculum		Lesson	Word document with 4 links to google docs containing energy lesson plans	
Energy curriculum		Workbook	List of supplies needed for lessons and links to google docs with worksheets	
Energy curriculum		Lesson	Lesson plan outline with links to google docs with more detailed lesson plans	
Professional development workshops/summer institute	7/17/2019	Lesson	Agenda for 1-day workshop with activities and topics	# instructors
Energy curriculum		Worksheet	Student worksheet, responding to graphs in a solar lesson	
Professional development workshops/summer institute	Jul-Sep 2019	Survey	Teacher evaluation responses (excellent/very good questions and open responses)	# responses, survey ratings
Energy curriculum		Lesson	List of aims of the lessons	
Professional development workshops/summer institute	7/2/2019	Survey	Teacher evaluation responses (excellent/very good questions and open responses)	# responses, survey ratings
Energy curriculum		Lesson	Outline of workshop with links to slides	
Professional development workshops/summer institute	7/17/2019	Workbook	List of schools at the summer institute	# workshops, school districts, # distressed
Energy curriculum		Lesson	Lesson plan for 1st grade	
Professional development workshops/summer institute	7/2/2019	Lesson	Agenda for 1-day workshop with activities and topics	# instructors
Professional development workshops/summer institute	7/2/2019	Workbook	List of schools at the summer institute	# workshops, school districts, # distressed
Energy curriculum		Lesson	List of aims of the lessons	
Professional development workshops/summer institute	7/2/2019	Lesson	Duplicate; Agenda for 1-day workshop with activities and topics	# instructors
Energy curriculum		Presentation	Earth's timeline slideshow	
Energy curriculum		Lesson	Word document with 4 links to google docs containing energy lesson plans	
Outreach		Presentation	Presentation on the eesmarts program	
Professional development workshops/summer institute	2019	Workbook	List of schools and teachers at the summer institute	# workshops, school districts, # distressed, # attendees
Multiple		Workbook	Duplicate workbook; metrics for all programs	
Energy curriculum		Lesson	Lesson plan outline with broken links	
Professional development workshops/summer institute	-	Memo	Instructions for teachers to set up their schoolology accounts to access lessons	
Outreach		Presentation	Duplicate; Presentation on the eesmarts program	

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION OF DOCUMENT	METRICS TRACKED
Professional development workshops/summer institute	-	Presentation	Presentation with links to student handouts and lesson materials	# education instructors
Outreach	7/1/2019	Memo	Informational flyer with dates of the summer workshops	# workshops
Energy curriculum		Lesson	Outline of workshop, list of lessons and videos	
Professional development workshops/summer institute	7/1/2019	Survey	Post-workshop survey for teachers	# responses, ratings
Energy curriculum		Lesson	How sunlight affects the earth lesson plan	
Energy curriculum		Lesson	Solar power direct from the sun lesson plan	
Bright Kids		Lesson + video	Checklist for teachers and link to prerecorded bright kids presentation	
Energy curriculum		! Lesson	Links to lesson plans	
Energized Guyz		Memo	Contact information for actor educators	# actors
Energized Guyz		Worksheet	Workbook with energy information for students	
Energized Guyz		Graphic	Poster with home energy statistics	
Professional development workshops/summer institute	7/1/2019	Survey	Survey on workshop/instructor training	# responses, ratings
Energy curriculum		Presentation	Presentation with story and links to videos for kindergarten	
Energy curriculum		Presentation	Presentation on wind turbines	
Energy curriculum		Presentation	Duplicate; Presentation on wind turbines	
Professional development workshops/summer institute	-	Presentation	Presentation for teacher workshop on wind turbines	

Table 2. Green STEP Program Materials Reviewed

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION	METRICS TRACKED
CT Green LEAF Schools	2021	Memo	Creation, program description, funding structure	# schools
CT Technical High Schools/Workforce development	Feb-June 2019	Worksheet	List of schools and BSP exam results	# schools, exam success rates
E-House Initiative	2010-2020	Presentation	History of the eHouse program	# ehouses
E-House Initiative	7/31/2019	Memo	Descriptions of project progress by house	# schools, # ehouses, % completion of houses
CT Technical High Schools/Workforce development	6/1/2020	Survey	Post-workshop quiz and interest in further workshops	# responses, schools
Technical trade trainings, science fair education	Oct 2019-Jun 2020	Workbook	List of virtual and in person workshops	# trainers, # workshops, # high schools, # attendees

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION	METRICS TRACKED
CT Technical High Schools/Workforce development	6/1/2020	Survey	Post-workshop quiz and interest in further workshops	# responses, schools
CT Technical High Schools/Workforce development	6/1/2020	Survey	Post-workshop quiz and interest in further workshops	# responses, schools
CT Technical High Schools/Workforce development	May-Jun 2020	Survey	Post-workshop quiz and interest in further workshops	# responses, schools
CT Technical High Schools/Workforce development	6/1/2020	Survey	Pre-workshop quiz	# responses, schools
CT Technical High Schools/Workforce development	6/1/2020	Survey	Pre-workshop quiz	# responses, schools
CT Technical High Schools/Workforce development	May-Jun 2020	Survey	Pre-workshop quiz	# responses, schools
CT Technical High Schools/Workforce development	6/1/2020	Survey	Pre-workshop quiz	# responses, schools
CT Technical High Schools/Workforce development	May-Jun 2020	Survey	Survey re. interest in different workshops	# responses, schools
Workforce development	Jan-Jun 2020	Survey	Survey re. interest in different workshops	# responses, schools
Workforce development	3/1/2020	Survey	Survey re. interest in different workshops	# responses, schools
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development	May-Jun 2020	Survey	Pre-workshop quiz	# responses, schools
Workforce development	-	Presentation	Solar workshop lesson with activities	# education consultants
Workforce development	May-Jun 2020	Survey	Survey re. interest in different workshops	# responses, schools
Workforce development		Worksheet	Handout with questions for during a lesson	
Multiple	2019-2021 school years	Data request response	Overview of in person and online workshops by grade, plus overall participation metrics and survey results	# schools, # students, # students in construction trade, participation metrics

NAME OF ACTIVITY	RELEVANT DATES	DOCUMENT TYPE	DESCRIPTION	METRICS TRACKED
Workforce development	Oct 2019-Apr 2020	Survey	Post-workshop survey on usefulness of course	# responses, schools, rating scores
CT Science and Engineering Fair	Oct 2019-May 2020	Survey	Survey re. interest in different workshops	# responses, schools
Workforce development	May-Jun 2020	Survey	Post-workshop quiz	# responses, schools
Workforce development	Feb-Jun 2020	Survey	Post-workshop quiz	# responses, schools
Workforce development				
Workforce development		Survey	Post-workshop quiz	# responses, schools
Workforce development	May-Jun 2020	Survey	Pre-workshop quiz	# responses, schools
Workforce development		Lesson	Outline of workshop, list of lessons and videos	
Workforce development	May-Jun 2020	Survey	Survey re. interest in different workshops	# responses, schools
Outreach	-	Presentation	Presentation for teachers about the different aspects of green STEP, with links to videos	
Outreach	-	Presentation	Presentation for students about the different aspects of green STEP, with links to videos and discussion prompts	
Outreach		Presentation	Duplicate; Presentation for students about the different aspects of green STEP, with links to videos and discussion prompts	
Workforce development	Feb-Jun 2020	Survey	Survey re. interest in different workshops	# responses, schools
Workforce development	Feb-Jun 2020	Survey	Survey re. interest in different workshops	# responses, schools

Table 3. Workforce Development – Commercial and Industrial Trainings

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
SBEA CT Auditors Training CTAT	Introduction to Energy Management and Auditing	3/5/2019	Topics: Understanding state, regional and global energy issues, Developing a comprehensive "whole building" ALL FUELS energy efficiency approach, Review Data Evaluation Process, Identify types of building assessments and Energy Audits, Introduction to calculating cost / benefit analysis, Interviewing Building Operator, Delivering a completed proposal and closing the deal.	3.5		26	21
SBEA CT Auditors Training CTAT	Energy Efficient Lighting and Lighting Controls	3/7/2019	Topics: Lighting: Standards, Policies, Sources and Efficiency, Interior Lighting Fixture applications, Exterior Lighting Fixture	3.5		26	23

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
			applications, Lighting controls, Day-light Harvesting				
SBEA CT Auditors Training CTAT	Heat Loss/Gain and Building Envelope	3/19/2019	Topics / activities: 10 Question Multiple Choices Quiz (one-hour max), 2 Calculations, Heat Loss/Gain and Building Envelope: Understanding Building Science, Basic Thermal Dynamics, Demonstrate Diagnostics, Building envelope improvements	3.5		26	22
SBEA CT Auditors Training CTAT	Energy Efficient HVAC Systems and Controls	3/21/2019	Topics: Energy Efficient HVAC Systems and Controls, Trade Ally Speaker on HVAC and Controls, HVAC system configurations, Basic Building Control Equipment, Basic HVAC Control Strategies, Building Automation Systems (BAS)	3.5		26	22
SBEA CT Auditors Training CTAT	Combustion Equipment and Air Compressor	3/26/2019	Topics: Trade Ally Speaker on Air Compressors, Review Combustion Equipment related to System Performance Review AC Equipment related to System Performance, Motors Operated Equipment, Trade Ally Speaker on Ventilation Hoods	3.5		26	21
SBEA CT Auditors Training CTAT	Refrigeration Controls, Domestic Hot Water Systems, Ozone Laundry	3/28/2019	Topics: Trade Ally Speaker on Refrigeration Controls, Domestic Hot Water Systems, Operation and Maintenance Essentials, Trade Ally Speaker on Ozone Laundry Option, Begin Test Review	3.5		26	21
SBEA CT Auditors Training CTAT	Project Financing	4/2/2019	Topics: Who's CEFIA, C-PACE financing projects over $100K, Utilizing multiple funding and financing approaches, Continue Test Review	3.5		26	22
SBEA CT Auditors Training CTAT	Calculations and Final Test	4/4/2019	AM - Review of Calculations – held from 9:00 to 11:30 AM, PM – Certification Test from 12:30 to 3:30, 50 question multiple choice (50% of grade), 6 calculations with multiple answers in each (50% of grade), Course and Instructor Evaluations	3.5		26	21
CT Sales Training	CT Sales Training	4/2/2019	Join Eversource and United Illuminating for a professional development opportunity designed to help you grow your business. Learn from experts how to enhance your sales presence and solution-selling skills. This will be a day-long, interactive training with breakfast and lunch provided. The $1,000 participant cost is being defrayed to offer you a more affordable cost of $100 per participant, so your key salespeople (one to three per company) have an opportunity to attend this important	7.5		66	60

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
			training. Space is limited to the first 75 registrants.				
ENERGY STAR Portfolio Manager	ENERGY STAR Portfolio Manager Information and Training Seminar	5/21/2019	Discover how the Environmental Protection Agency's ENERGY STAR Portfolio Manager can be leveraged as a no-cost resource for ongoing management and tracking of building energy performance. Please join United Illuminating (UI) and Eversource for a free, comprehensive, and hands-on training seminar with Dr. Amy Thompson of UCONN. Learn how to create an account, enter data, view metrics, and manage your bill. Automatically import monthly usage data from your utilities to provide more accurate analysis...and more!	2	HVAC Contractors, Small Business Energy Advantage Contractors, Building and Facility Managers, Building and Field Technicians, Energy Contractors, Energy Managers, Finance Managers, Purchasing Managers,	62	27
Integration with ENERGY STAR Portfolio Manager	MISSING	6/20/2017	Presentation with software/dashboard screenshots, step by step data export instruction	-			
Integration with ENERGY STAR Portfolio Manager (for UIL employees)	MISSING	6/28/2017	Presentation with software/dashboard screenshots, step by step data export instruction	-			
GPRO	GPRO Operations & Maintenance Essentials Training Session	6/20/2019	Join us for a three-day* GPRO Operations & Maintenance Essentials Training Session! Did you know that efficiently operated and well-maintained buildings can reduce operating costs by 20-50% while improving occupancy satisfaction? This is just one of the many reasons why green operations and maintenance (O&M) practices are in high demand across the country. Led by industry experts, GPRO Operations & Maintenance Essentials provides building professionals with the critical tools to transition from conventional to sustainable operations. GPRO O&M is ideal for a wide audience, including, but not limited to, facility managers, building maintenance staff, general contractors, and a variety of individuals who have a role in the operation and maintenance of commercial, public, university, or private buildings. This 14-hour certificate professional credential course includes course manuals and certification exam.	8		17	21
GPRO	GPRO Operations & Maintenance Essentials Training Session	6/21/2019		8		17	21
GPRO	GPRO Operations & Maintenance Essentials Training Session	6/24/2019		8	Operations Managers, Building and Finance Dept. Administrators and Assistants	17	21
VRF Systems Design & Opportunities	Variable Refrigerant Flow (VRF) Systems	8/8/2019	Please join us for an in-depth introduction to energy-efficient heat pump and variable	4	Architects, engineers, energy service	78	45

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
	Design and Opportunities		refrigerant flow (VRF) technology. This heating and cooling technology is increasingly seen as an important solution to a low-carbon future in the Northeast and will transform the way we heat and cool our homes and businesses. This training will explain how these systems work, how they compare to other heating and cooling equipment, how you can identify appropriate applications, and how to access incentives toward installation costs from the Connecticut energy efficiency programs. Case studies as well as next steps for including VRF in your projects will be included.		companies, energy professionals, HVAC contractors, and building owners and managers		
Understanding Energy Systems & Energy Reduction Opportunities	Understanding Energy using Systems and their Energy Reduction Opportunities	9/5/2019	This course will be one eight hour session and will cover the following topics: Understanding energy bills Energy units, metrics and calculations The four ways for saving energy: - Conservation - Efficiency - Synergy of conservation and efficiency - Alternative “green” technologies How to identify and control energy “losses” Typical energy use systems, including: - Lighting - Compressed Air - Motors - Heating, Ventilation and Air Conditioning - Hot Water - Office equipment/Plug Load Example audits, and detailed opportunity calculations	8	People - site managers, facility managers, maintenance managers, EHS managers, Sustainability managers, energy professionals, consultants, utility staff - especially those persons newer to the overall energy field conservation and efficiency field. Functions – those who are involved energy consuming systems, and want to better understand each, and what typical energy reduction opportunities might exist with each. Sectors – industrial will have the most applicability, but also commercial and Municipalities, Universities, Schools, Hospitals.	65	45

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
Compressed Air Challenge	Compressed Air Challenge	9/10/2019	You will learn how to calculate and reduce the costs of compressed air in your facility and how to gain better control of compressed air for optimum reliability and productivity. You'll use data from your facility and complete hands-on exercises with emphasis on bottom-line results. Furthermore, you will know how to focus on getting results when you return to your plant. Call <co-host number> to register by phone or fax the enclosed form to <co-host fax number>. Please visit the CAC web site www.compressedairchallenge.org for more information. Cost is <$fee> per person for the one-day session.	8		31	19
Compressed Air Challenge	Compressed Air Challenge I (added class)	9/19/2019	You will learn how to calculate and reduce the costs of compressed air in your facility and how to gain better control of compressed air for optimum reliability and productivity. You'll use data from your facility and complete hands-on exercises with emphasis on bottom-line results. Furthermore, you will know how to focus on getting results when you return to your plant. Call <co-host number> to register by phone or fax the enclosed form to <co-host fax number>. Please visit the CAC web site www.compressedairchallenge.org for more information. Cost is <$fee> per person for the one-day session.	8		31	15
Air-Cooled HVAC Systems	Air Cooled HVAC Systems	9/17/2019	Please join us for an in-depth introduction to air-cooled direct expansion (DX) heating ventilation and air conditioning (HVAC) systems, their applications, and energy efficiency options related to these systems. These systems are the most common types of systems in use in residential, commercial, and industrial space cooling and heating applications. Much progress has been made to improve the efficiency of such systems and this training will highlight such improvement opportunities. This training at a high level will explain how these systems work, discuss different types of DX systems, their applications, how they compare to other heating and cooling equipment, how to identify retrofit or replacement type energy efficiency opportunities associated with such	4	Architects and engineers, Energy services companies, Energy professionals, HVAC contractors, Building owners and managers	72	38

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
			systems, potential energy efficiency opportunities associated with such systems and how to access incentives toward installation costs from the Connecticut energy efficiency programs. Please register promptly because space is limited.				
Best Practices/Field Inspection Techniques for Commercial Buildings	Plan Review – Best Practices and Field Inspection Techniques for Commercial Buildings	9/26/2019	This small-group interactive training explains and demonstrates best practices for energy code plan review and field inspections for commercial buildings. The course provides a detailed review of the provisions of the Connecticut Energy Code, emphasizing the mandatory information that must be provided in a comprehensive construction document set and why this information matters. Design professionals, contractors, and other stakeholders will become more familiar with Connecticut Energy Code provisions and learn how this information can be included in the CDs and specifications. Builders and trade contractors will gain familiarity with energy requirements and detailing for the building envelope, mechanical systems, and lighting. Course participants will also learn how field verification of energy code provisions should be implemented and will understand field commissioning and verification provisions required by the code. The course will be delivered in a small group setting and provide opportunity for hands-on plan review experience.	4	Building operators, facility managers, contractors, auditors, architects, code officials, engineers, and students	35	29
Understanding, Making & Using Energy Metrics	Understanding, Making and Using Energy Metrics	9/30/2019	This session will provide you with the understanding of how to measure energy use and energy progress. It will discuss and develop simple to very complex energy metric systems, providing real world examples of successful energy metric programs. We will define and simplify the inputs and outputs of each separate metric. We will also illustrate what the energy data itself can say, if it is organized and analyzed correctly. This will also include some interactive portions, to cement the ideas by actually doing some metrics calculations.	4	People - site managers, facility managers, maintenance managers, EHS managers, Sustainability managers, energy professionals, consultants, utility staff - especially those persons involved with aspects of SEM or	70	49

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
					ISO 50001. Functions – those who are involved with making, using, and reporting on energy metrics at all levels for any sector. Sectors – industrial, commercial, Municipalities, Universities, Schools, Hospitals.		
Natural Gas Efficiency	How to Maximize the Efficiency of Gas Using Equipment in C&I Facilities	10/8/2019	Please join us for a training focused on discussing various gas using equipment in typical commercial and industrial facilities, and new construction and retrofit energy efficiency options related to the applications such systems. The training will cover operations/applications of typical boiler systems (steam/hot water), gas fired furnaces, gas fired RTUs, make up air units and kitchen appliances and discuss how to identify energy efficiency opportunities associated with these systems. The training will also provide details on various incentive programs that can assist with deploying gas efficiency	4	Architects and engineers, Energy services companies, Energy professionals, HVAC contractors, Building owners and managers	48	29
Network Lighting Controls	Network Lighting Controls Training - internal attendees	10/21/2019	Unfamiliarity with how to design, install, and commission networked lighting controls is a key barrier that prevents widespread adoption and increases the cost of the technology. To address this barrier, the DLC has developed a training program for the design and installation of networked lighting controls. After taking this course, participants will be able to explain to their customers the features and benefits that ALCS offer and how to configure them to maximize the benefit for any given situation. The course begins with an overview of the different types of ALCS, from traditional to new and innovative. The instructor will compare the complexity and wiring requirements of each type while providing new tools for selecting the right system for a given customer and application. Finally, participants will work in small groups to wire a new wireless control	8	Utility staff	17	12

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
			system and use their laptops and smartphones to commission it.				
Network Lighting Controls	Network Lighting Controls Training - external attendees	10/22/2019	Unfamiliarity with how to design, install, and commission networked lighting controls is a key barrier that prevents widespread adoption and increases the cost of the technology. To address this barrier, the DLC has developed a training program for the design and installation of networked lighting controls. After taking this course, participants will be able to explain to their customers the features and benefits that ALCS offer and how to configure them to maximize the benefit for any given situation. The course begins with an overview of the different types of ALCS, from traditional to new and innovative. The instructor will compare the complexity and wiring requirements of each type while providing new tools for selecting the right system for a given customer and application. Finally, participants will work in small groups to wire a new wireless control system and use their laptops and smartphones to commission it.	8	Electric contractors, Distributors, Lighting Designers, Energy Experts	43	34
Energy Storage Systems	Are you Ready for Identifying Opportunities Associated with Energy Storage Systems?	11/5/2019	Please join us for a training focused on discussing the applications of various types of energy storage systems. With increasing focus on the electric grid's peak demand, higher penetration of renewable generation and variable energy pricing, various types of energy storage systems and solutions are being introduced at a rapid rate in the recent years. This training will discuss the different types of energy storage systems, their specific applications and benefits and discuss examples of such systems in deployment in the northeast and in the US. This training will also discuss in-depth, battery energy storage systems and thermal energy storage systems. The training will also provide details on various incentive programs that can assist with deploying gas efficiency opportunities.	4	Who Should Attend: Architects and engineers, Energy services companies, Energy professionals, HVAC contractors, Building owners and managers	45	25
Energy Reduction Using EUAs, Six Sigma, Kaizen, 5S,	Energy Reduction Using Energy Utilization Assessment Six	11/7/2019	This four (4) hour training seminar is designed to provide you with an understanding of the Six Sigma, 5 S, Kaizen, and Behavioral Energy Change programs, and explain how to apply	4	People - Quality managers, process managers, Lean managers,	36	28

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
Lean Mfg. & Behavioral Change	Sigma, Kaizen, 5S, lean Manufacturing and Behavioral Energy Change		these programs in your organization for energy savings. This session will be how to use these strategies and techniques to fill any site's SEM project pipeline.		Sustainability managers, site managers, facility managers, maintenance managers, HS managers, possibly energy professionals and consultants, and utility staff. Not just industrial clients! Functions – those involved with identifying potential energy reduction projects for sites.		
CT Commercial Energy Code	Connecticut's Energy Code - What it means for existing commercial buildings	11/12/2019	This course tackles the question: how does the energy code apply to existing buildings? Specifically, this training provides details regarding the alteration, repair, addition and change of occupancy of existing buildings and structures under Connecticut's 2018 Energy Code. Compliance path options will be discussed as they pertain to existing buildings. Examples will focus on common scenarios for existing commercial buildings such as change of occupancy, roof alterations, exterior wall modifications, window, and lighting changes along with HVAC system changes. The discussion will also include the top energy improvements to consider when the energy code does affect an existing building, giving operators and facility managers a better understanding of these technologies. The audience will have a better understanding with Energy Code requirements as they relate to existing building stock and change of use.	2	Building operators, facility managers, contractors, auditors, architects, code officials, engineers, and students	47	17
CT Commercial Energy Code	Commercial Energy Code Best Practices for Field Testing / Measurement in New Construction	11/14/2019	The model energy code – the International Energy Conservation Code or "IECC" – has an increasing emphasis on the demonstrated energy performance of buildings. Connecticut's own version of this code	2	Building operators, facility managers, contractors, auditors, architects, code officials,	15	13

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
			(2018) follows this trend and includes several provisions which involve some element of field testing or verification. This training reviews the Commercial Energy Code requirements in Connecticut including the available compliance pathways and the steps involved with each pathway. The course also explores the code's testing and commissioning requirements as they apply to the building envelope, HVAC, and lighting systems, and highlights possible field tests and best practices.		engineers, and students		
Energy Management Systems	Energy Management Systems: What you Cannot Measure You Cannot Manage	11/19/2019	Please join us for a training focused on discussing the benefits of installing energy management systems (EMS) in C&I facilities. Recent innovations in EMSs offers capabilities to easily control a wide variety of energy systems in a facility from lighting, process to HVAC systems along with sophisticated operating strategies that can reduce the operating cost of the facility by reducing its peak demand or operating systems to use the lowest cost of energy. This training will focus on discussing key features/components of EMSs, typical installation costs and various control strategies. This training will cover the control strategies that are required by the current energy code. We will also discuss how to identify EMS upgrade projects, and key elements that can lead to a successful application. Case studies will be discussed and details on incentives offered by EnergizeCT for such systems will also be presented.	4	Who Should Attend: Architects and engineers, Energy services companies, Energy professionals, HVAC contractors, Building owners and managers	38	33
Retuning Small Commercial Buildings	Re-Tuning Small Commercial Buildings for energy savings and Better Performance	11/13/2019	Many existing commercial buildings are small to medium in size and have "low fruit" opportunities for energy savings and performance improvements. This course will address these opportunities and present a framework for how building operators, facility managers, and other stakeholders can identify inefficient operations and implement improvements. In addition to realizing energy and cost savings, many of the opportunities	2	Building operators, facility managers, contractors, auditors, architects, code officials, engineers, and students	37	17

NAME OF TRAINING	TRAINING TITLE	RELEVANT DATES	DESCRIPTION	HOURS	TARGET AUDIENCE	# REG	# ATTEND
			identified as part of a Re-Tuning process can also improve building performance measures such as comfort, lighting quality, etc. This course covers the purpose of Re-Tuning; the information collection process; conducting the building walk-through covering the envelope, HVAC and controls, lighting, and other systems; and implementing improvements. The course includes numerous examples, and the level of detail is geared for individuals with basic working knowledge of building operations and technologies.				
Strategy and planning - 2019- planning for 2022-2024	MISSING		Text of email from Sheri Borrelli noting the strategy of the workforce development efforts, short and long-term and how the trainings support those	-			

Table 4. Workforce Development Residential Trainings Documents

TRAINING TYPE	IN PERSON OR ON-LINE	DATE	# OF PARTICIPANTS	TRAINING MATERIALS
Advanced Duct Sealing	In person	19-Apr	50	Missing
BPI Infiltration and Duct Leakage	In person	19-Aug	66	Missing
Heat Pump Training	In person	19-Jul	75	Missing
S.E.E.: Sell Efficiency Effectively™ (L2SEETM) Training	In person	19-Sep	100	Missing
BPI Building Analyst	On-line	April - November 2020	57	Missing
BPI Building Envelope	On-line	April - November 2020	59	Missing
BPI Infiltration and Duct Leakage	On-line	April - November 2020	60	Missing
OSHA Attics and Crawl Spaces	On-line	April - November 2020	80	Missing
BPI Building Science Principles	On-line	April - November 2020	30	Missing
ResCaz 3D Combustion Appliance Safety Simulation	On-line	April - November 2020	47	Missing
Additional Health & Safety Training (Customer Contact)	On-line	June - November 2020	550	Missing
Additional Health & Safety Training (No Customer Contact)	On-line	June - November 2020	130	Missing

Appendix C. Workforce Development and Green STEP[1]

Examples of Industry Best Practices in Action

POST TRAINING DATA: MASSACHUSETTS GREEN JOBS ACADEMY

The Green Jobs Academy in Massachusetts is a great example of a program that collects post-training data and uses data to prove how it is accomplishing goals. Part of their mission is "to provide entry level skills training preparing individuals for in-demand, living wage jobs with a career ladder in the weatherization industry."[2] The director of the Green Jobs Academy provided the following statistics during an interview about the program: "To date, of our weatherization installers graduates, 171 were placed in OJT [on the job training] and 169 obtained or remained in permanent jobs." She also provided a list of numbers of attendees in certifications like ASHRAE62.2.[3] While it is unclear how Green Jobs Academy is collecting these data; they can provide concrete evidence that they are creating valuable jobs within the weatherization space. Based on the evaluation team's assessment, this is a good model for training and their mechanisms of staying in touch with participants allow them to

DIVERSITY: TVA BUILDING FUTURES

TVA has partnered with Tennessee Urban League Affiliates for two years to offer trainings to minority contractors in the state. The partnership is designed to "recruit and train interested minority contractors on improving home energy efficiency while expanding TVA's Quality Contractor Network."[4] Minority businesses who participate in the program take trainings on how to conduct energy audits for the TVA. Once the contractors take the training, they are part of the preferred contractor network. This Network Model is an effective way of adding to the workforce while also increasing diversity. By partnering with organizations that have access to more diverse contractors, TVA can reduce the structural barriers that underrepresented businesses may face when trying to join the contractor network. The contractor network will continue to diversify and become a better network for TVA customers.

COMMUNITY PARTNERSHIPS: AMEREN Illinois MDI – INTERNSHIP PROGRAM & PROGRAM ALLY NETWORK

The Ameren Illinois MDI is an energy efficiency program that, "encourages action through education and financial incentives that offset the cost of energy-saving upgrades."[5] It includes a workforce development target to increase the number of EE jobs for local and diverse contractors. The program has partnered with 39 community-based organizations to provide staffing grants, scholarships, and internships. Through community partnerships, Ameren Illinois can expand and diversify their Energy Efficiency Program Ally

[1] Findings in this section were informed by the following survey and IDI guides: Workforce Development Participant Survey, Workforce Development Follow-Up IDI guide, Green STEP Trainer IDI Guide, and Green STEP Teacher IDI guide

[2] "About," *Green Jobs Academy,* Accessed August 2021, http://greenjobsacademy.org/index.php/sample-page/.

[3] Jane Pulaski, "Green Jobs Academy (MA) Making a Difference with Weatherization Training," *Interstate Renewable Energy Council*, May 16, 2014, https://irecusa.org/blog/irec/green-jobs-academy-ma-making-a-difference-with-weatherization-training/.

[4] "TVA Donation Supports Minority Contractor Training Program," *Tennessee Valley Authority*, November 12, 2020, https://www.tva.com/newsroom/articles/tva-donation-supports-minority-contractor-training-program.

[5] "Energy Efficiency For All," *Ameren Illinois Market Development Initiative*, Accessed August 5, 2021, https://amerenillinoissavings.com/mdi/.

Network.[6] One case study found that, "these trusted and established organizations help bridge the gap between underserved customers and incentives available to them."[7]

REGIONAL NEEDS: TVA/TULA BUILDING FUTURES

TVA partnered with the Tennessee Urban League Affiliates (TULA) to create the Building Futures program, aimed at increasing minority involvement in energy efficiency and weatherization upgrades. The program provided existing contractors with business skills training, and enhanced workforce participants' soft skills through a partnership with Worldwide Interactive Network (WIN) Learning Systems. The contractor training opportunities focused on the TVA's Quality Contractors Network (QCN) standards based in Building Performance Institute certifications, weatherization, and other improvement services such as air sealing, duct sealing, and attic insulation. English language classes that cover technical or vocational English are rare - classes typically provide basic or "survival" English skills or English for academic purposes. Language is a barrier for workers to acquire the skills and credentials they need to advance into higher-wage, middle-skill energy efficiency jobs.[8] In-language training materials and investing in more technical English language courses are important. The TVA/TULA Building Futures program distributed marketing materials in Spanish and Kurdish to make the program as inclusive as possible and hired a translator for classes and material development.[9]

RECRUIT WIDELY: SOCALREN AND ACES – ENCOURAGING LA STUDENTS TO EXPLORE STEAM CAREERS

SoCal REN has hired students from the Architecture, Construction and Engineering Students (ACES) Pathway Program leading to 29 paid internships and over 300 hours of training. The ACES program encourages high school students to explore careers in science, technology, engineering, arts, and mathematics (STEAM). ACES provides college credit for trainings that are transferrable to the California State University system. They have also reduced the gender gap that has traditionally existed in STEM jobs.[10] SoCal REN, as an industry partner, can hire these students and excite them to join the utility or EE industry. The students who join the ACES program may not have otherwise been able to, or encouraged to, enter the EE field. A program like this allows for SoCal REN to bring new and diverse employees into the industry.

GOVERNMENT PARTNERSHIPS: CLEAN ENERGY WORKS OREGON

The City of Portland (the City) received a federal grant from the DOE to retrofit residential and small commercial buildings with energy efficient equipment and reduce carbon emissions while creating jobs in Portland. The City used this federal funding to develop a highly successful energy efficiency program called

[6] Mary Shoemaker, Roxana Ayala, and Dan York, "Expanding Opportunity Through Energy Efficiency Jobs: Strategies to Ensure a More Resilient, Diverse Workforce," *American Council for an Energy-Efficient Economy*, October 2020, https://www.aceee.org/sites/default/files/pdfs/u2010.pdf.

[7] "Energy Efficiency Programs," *Ameren Illinois,* Accessed August 6, 2021, https://amerenillinoissavings.com/wp-content/uploads/2021/03/PY20-DEC-2020-Illinois-Black-Chamber-of-Commerce-and-Urban-Ministries-FINAL.pdf.

[8] William M. Campbell, P. Christopher Navin, "Workforce Needs Assessment: A report from the MASSCAP Green Career Ladder Initiative," *Massachusetts Association for Community Action,* November 2009, https://www.masscap.org/wp-content/uploads/2016/10/GreenCareersRpt_11-09.pdf.

[9] "Workforce Development Opportunities and Best Practices: Literature Review," *ILLUME Advising, LLC,* January 18, 2021, https://illumeadvisors.sharepoint.com/:b:/s/ILLUMECollaboration/EcMApOzRkGJLgj0EbvhxyyoBTTBmZI96O_f0vS0NsAiZhg?e=wRH4IU.

[10] "Architecture, Construction, Engineering Students (ACES) Pathway Program," *Southern California Regional Energy Network*, Accessed August 6, 2021, https://www.socalren.org/workforce-education-and-training/ACES.

Clean Energy Works Oregon (CEWO). By using grant money from the federal government, the CEWO program had to align with federal goals. The technical report found that, "CEWO substantially elevated and helped professionalize the Home Performance with Energy Star industry in Oregon."[11] Using the healthy budget, CEWO could provide program participants with incentives for meeting specific objectives (e.g., providing health insurance, employing a diverse workforce, being or contracting with a historically underrepresented business, mentoring other contractors). These incentives took the form of awarded CEWO projects: the higher a contractor applicant scored on Community Workforce Agreement objectives; the more retrofit projects were allocated to that firm.

Case Study: New York State Energy Research and Development Authority (NYSERDA)

The NYSERDA program supports workforce development training and efforts for EE workers in the state of New York. NYSERDA has dedicated $120 million through 2025 to "change the landscape of New York's clean energy industry through workforce development and training."[12]

NYSERDA provides funding and support for stakeholders and industry partners to hold trainings for their staff. There is funding for six workforce development efforts within their portfolio: Building Operations and Maintenance, Career Pathway Training Partnerships, Energy Efficiency and Clean technology Training, On-the-Job Training, and Internships.[13] Businesses can apply to the six efforts; priority is given to businesses who meet diversity criteria (i.e., "populations and individuals from disadvantaged communities"). When businesses participate, they must provide metrics on the number of workers trained, workers certified, new workers placed in jobs, trainers trained, and, if possible, the impact of workforce training on energy use.

NYSERDA only calculates energy savings for one of the six initiatives. The Building Operations and Maintenance Partnership program estimates gross savings by modeling projected savings per project and multiplies it by the number of partners in the initiative. They developed the per project savings value by evaluating the first 41 participants in the program. NYSERDA calculated their baseline energy usage and projected savings based on their scopes of work. NYSERDA then took the average of these 41 values and applied it to future programs. They found that, "The projected savings values averaged 7% annual savings, which is within the DOE estimate of 5-20% for building operations and maintenance training."[14, 15]

NYSERDA's workforce development program incorporates five of the six best practices, as shown in Figure 1 and described below.[16]

[11] Jacob, A, and Cyr, S. Clean Energy Works Oregon Final Technical Report. United States: N. p., (2013). Clean Energy Works Oregon.

[12] NYSERDA. n.d. Clean Energy Training Services. Accessed May 2021.
https://portal.nyserda.ny.gov/CORE_Solicitation_Detail_Page?SolicitationId=a0rt000000dWTlkAAG.

[13] "Clean Energy Workforce Development Overview," *The New York State Energy Research and Development Authority*, July 2021, https://www.nyserda.ny.gov/-/media/Files/Publications/Fact-Sheets/workforce-fact-sheet.pdf.

[14] "Clean Energy Fund: Workforce Development and Training Chapter," *The New York State Energy Research and Development Authority*, May 7, 2021, https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E63E73DA-A18D-471B-819E-147D9591E641}.

[15] The program recently started to calculate these. As of August 2021, we had not seen savings values for the program. It is not clear from program documentation how double counted savings are accounted for.

[16] "Clean Energy Workforce Development Overview," *The New York State Energy Research and Development Authority*, July 2021, https://www.nyserda.ny.gov/-/media/Files/Publications/Fact-Sheets/workforce-fact-sheet.pdf.

Figure 1. NYSERDA Workforce Development Best Practices

Post Training Data: Organizations that participate in the NYSERDA program are required to report performance metrics to NYSERDA. They must provide, and thus must collect, data on the number of:

- Workers trained
- Certificates obtained
- Staff qualified to train others
- New curricula available
- Promotions or career advancement
- disadvantaged low-to-moderate income workers placed in jobs.

While not required for program participation, participants must also collect data on

- wages and changes to wages,
- rates of employment to calculate employee retention, and
- time it takes for the employer to hire new employees.

To capture savings, the Building Operations and Maintenance Partnership program tracked the per project savings value for each participating business. They collected the baseline energy usage at the project and the projected savings based on any adjustments that were made to the building.

These metrics allow for NYSERDA, and their evaluators, to prove that the program is tracking to goals and that the Building Operations and Maintenance Partnership program is saving energy.

Mersiha McClaren, Doré Mangan, and Ryan Bliss, "Clean Energy Fund Workforce Development and Training Industry Partnerships Baseline Study," *Research Into Action, Inc*., February 2019, https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-WFD-Industry-Partnerships-Mkt-Eval-03-8-19-Report.pdf.
Mary Shoemaker, Roxana Ayala, and Dan York, "Expanding Opportunity Through Energy Efficiency Jobs: Strategies to Ensure a More Resilient, Diverse Workforce," American Council for an Energy-Efficient Economy, October 2020, https://www.aceee.org/sites/default/files/pdfs/u2010.pdf.

Diversity: One of the explicit goals of the NYSERDA program is to increase the proportion of diverse community members in the workforce. The program tries to enhance the existing workforce, but also tries to encourage new employees to join the workforce. One of the program goals is to, "to support a just and equitable clean energy transition," which includes hiring and training existing and future employees who are "disadvantaged." When the program brings in new employees, it specifically focuses on creating economic opportunities for those who have been traditionally excluded from the industry, like "those residing in low and moderate-income communities, underrepresented populations including women and people of color, and disconnected youth." For programs like the Building Operations and Maintenance Partnerships, NYSERDA uses new hires from these disadvantaged communities as a scoring metric for selecting the participating organizations. More generally, NYSERDA provides participating businesses with incentives and support for hiring and training new workers from these communities.

Community Partnerships: Much like the Energize CT Develop the Workforce initiative, NYSERDA partners with the community by engaging stakeholders to learn what they need from the workforce. NYSERDA uses an "industry partnership model" by hosting ongoing conversations with industry leaders to understand the common workforce needs.[17] The program description states that, "Building Operations and Maintenance Partnerships (formerly referred to as Industry Partnerships) are intended to: help identify worker skill needs; inform investments in skills and talent development; support career pathways; and develop the training infrastructure needed to better link supply and demand in the labor market." These ongoing conversations allow for the program to grow and develop in a way that ensures the community and the workforce will be best served. In addition to having these conversations, NYSERDA actively recruits industry partners to participate in the program and encourages them to hire outside of the industry to promote energy justice.

Regional Needs: Through the Building Operations and Maintenance Partnerships, NYSERDA can understand and tailor their workforce development program to meet the needs of the state. NYSERDA invites stakeholders to provide feedback and describe the current needs of the industry. As regional and local needs change, NYSERDA can incorporate updates more nimbly into the program because of the partnerships they have. In addition, NYSERDA funds training that is implemented by participating organizations and employers. This allows for the trainings to be highly specialized to the employer's needs.

Government Partnerships: Unlike some of the other workforce development programs we reviewed that are hosted by utilities or organizations, the NYSERDA workforce development program is run by a government organization. They facilitate government partnerships as they recruit participating businesses, utilities, and organizations to work with them. The partnership ensures that the organizations and workforce development trainings follow the state-level goals and mission for EE and the workforce. Successful programs and workforce development efforts will leverage resources like government organizations and funding as well as industry expertise from utilities and contractors.

Non-Industry Workforce Development Best Practices[18]

The evaluation team reviewed literature on workforce development programs outside of the EE or utility industries. We also reviewed best practices for adult education and workforce development more broadly. This literature provides best practices for developing and conducting trainings, tracking progress through

[17] "Clean Energy Fund: Workforce Development and Training Chapter."

[18] "Workforce Development Opportunities and Best Practices: Literature Review," *ILLUME Advising, LLC,* January 18, 2021, not publicly available; Eileen Hannigan, "Workforce Development as Economic Agency," *ILLUME Advising LLC,* May 11, 2021, https://illumeadvising.com/2021/workforce-development-as-economic-agency/.

data collection, and recruiting for the programs and learning about the labor market. Generally, implementers should ensure that anyone who wants to take the training can, and will, succeed but also that the time spent in the training is worthwhile. Some of these best practices align with the more industry specific best practices. For instance, both the general literature and the industry examples recommend that workforce development programs work with the government, focus on understanding the labor market, and accurately and adequately track metrics to demonstrate progress to goals.

Training content

We found four key recommendations for creating workforce development training content:

- Make the training practically applicable
- Provide clear objectives and goals
- Offer technical and non-technical skills
- Align skills with what employers need[19]

First, the content of the training should be practically applicable and focus on skills as much as possible. For an EE training, this could mean ensuring the training content includes skills participants could use immediately after completing the training. It could include hands-on activities as well as theoretical ideas that participants can apply on the job.[20]

Next, goals and objectives of the training should be clearly communicated to participants at the onset of the training and be motivating to participants. For EE training, this could mean the training is linked to a necessary certification. Or it could mean the participants are aware of how they will be able to apply the content of the training in their jobs.

Next, there should be both technical and non-technical skills and content that goes beyond a single technology. This ensures the participants can learn more than just installing a widget. Instead, they will be able to speak about the widget, understand how it works in the context of the field, and adequately answer questions and concerns for customers.

Finally, the trainings should be highly tailored to what employers are looking for. Participants need to come out of a workforce development training with the skills to improve their current work or be more valuable to the market.[21]

Training structure

Trainings should have a flexible structure, use governmental recommendations or structures, and use post-training reinforcement.

[19]Ron Israel, "Workforce Development Program Guide," *United States Agency International Development,* Accessed August 16, 2021, http://idd.edc.org/sites/idd.edc.org/files/EQUIP3-workforce-dev-program-guide.pdf.

[20] Wirtshafter Associates, Inc., "Evaluation of the 2003 Statewide Education and Training Services Program Final Report," *Southern California Edison, Pacific Gas and Electric Company, San Diego Gas and Electric Company and Southern California Gas Company* , June 3, 2005, https://illumeadvisors.sharepoint.com/sites/ILLUMECollaboration/Shared%20Documents/Connecticut%20Education%20and%20Engagement/09_Background%20Documents/SCE_2003%20CA%20Ed%20and%20Training%20Final%20Report.pdf.

[21]Christopher Pappas, "6 Traits That All Successful Workforce Development Programs Have In Common," *eLearning Industry,* February 23, 2020, https://elearningindustry.com/successful-workforce-development-programs-essential-traits.

First, ensure equitable access to training programs. Program administrators should offer trainings with flexible schedules or classroom options (e.g., online or at night). This is especially important when considering diversity and wide recruitment. To ensure the workforce development trainings are available to all who are interested, the trainings need to be offered more flexibly and/or at times outside of the standard workday.

Second, workforce development programs should use their state's existing workforce education and training infrastructure. Similarly, workforce development programs should align the goals of training programs with the state's goals and current initiatives. Both goals allow for a more robust workforce development program and ensure the workforce development program is not duplicating work or resources.[22]

Finally, the workforce development programs should utilize post-training reinforcement of ideas to ensure the training has the maximum impact on the participant and the workforce. This can be done by offering follow-up courses, providing take-home materials, and/or working with employers to make sure employees can practice skills.

Tracking

Like the industry specific best practices, broader workforce development literature highlights the importance of tracking various metrics to understand the success of the program. The success of the training should be based on outcomes such as job placement rates, improvements in wages and benefits, and changes in productivity.[23] To do this, a baseline must be established, and follow-up activities must be conducted. Establishing a baseline can be asking participants about their current work or wages or evaluating their current skills with an assessment. As the trainings come to an end, the skills learned can be certified through testing. Once the training is complete, the participants can be compared to their baseline. This can be done through exit surveys immediately after the training, interviews with future or current employers, and follow-up surveys or interviews with participants. This type of information gathering can be tailored to the program's specific goals. But it is important to gather this data.

Recruitment

First, programs should be clear about the outcomes of the trainings and the value they will provide for participants' careers (e.g., skills taught, possible financial benefits). To do this, the programs need to have accurately and deliberately calculated metrics and examples of how the program has benefited participants in the past.

Similarly, programs should be transparent in how they describe the benefits of the trainings. The description of the trainings should be clear about the skills needed for different jobs and career pathways and how the training aligns with those needs.

Finally, programs should be as accessible as possible for anyone who wants to develop professionally. Programs should remove income as a barrier to training by offering financing, loans, scholarships, or work-

[22]Sarah White, Laura Dresser, and Joel Rogers, "Greener Skills: How Credentials Create Value in the Clean Energy Economy," *Center on Wisconsin Strategy,* 2010, https://cows.org/wp-content/uploads/sites/1368/2020/05/2010-Greener-Skills-How-Credentials-Create-Value-in-the-Clean-Energy-Economy.pdf.

[23]Ali Jaffer and Mona Mourshed, "A Better Metric for the Value of a Worker Training Program," *Harvard Business Review,* February 14, 2017, https://hbr.org/2017/02/a-better-metric-for-the-value-of-a-worker-training-program.

study/internships. This will ensure all who want to take the course can without being hindered by financial barriers.[24]

Labor market

Finally, it is highly important to learn about the labor market before implementing a program; the program should be a response to actual labor market demand.[25] Program administrators can learn about what the labor market needs by working closely with industry leaders. The Energize CT and NYSERDA workforce development programs embody this best practice by convening with industry leaders to understand which trainings to offer. Administrators should map regional labor markets by skills, jobs, and careers to further learn about what is needed. Not mentioned in the literature, but an important facet of the labor market to keep in mind, is understanding the demand and needs of the community. If there is not a market for a skill, administrators may not want to focus on that.

Workforce Development Training Participant Survey Frequencies

The evaluation team surveyed 2019-2020 attendees of the Workforce Development Trainings. Below, you'll find the frequencies for each question of the survey. Response options with no respondents were removed from this output. We have filtered the respondents to be those who responded about trainings other than the health and safety trainings. Additionally, we filtered to only include those who claimed to *not* work for a utility in question C3. Note that we filtered our sample to exclude those with a utility email address, but respondents still said they work for a utility.

Table 5. Workforce Development Attendee Survey Responses

TRAINING	RESPONDENT
Health & Safety Guidelines	70
Elements of Virtual Presence	17
Understanding, Making and Using Energy Metrics	13
CT Sales Training	12
Green Training USA	12
BPI Infiltration and Duct Leakage	9
Variable Refrigerant	9
Understanding Energy	7
SEETM	5
CT Energy Code Existing Buildings	4

[24] "Workforce Development as Economic Agency."

[25] Jen Giovannitti and Dr. Elizabeth Weigensberg, "Metrics for Success: Critical Elements for Workforce Development Programs," *The Federal Reserve Bank of Atlanta's Economic Development Podcast Series*, November 2012, https://www.atlantafed.org/podcasts/transcripts/economic-development/121114-critical-elements-for-workforce-development-programs.

TRAINING	RESPONDENT
Energy Management Systems by ERS	4
GPRO Trainings	4
Air Cooled HVAC Systems Training by ERS	3
Energy Start	3
Re-Tuning Small Commercial Buildings	3
SBEA	3
Compressed Air Challenge	3
Energy Reduction Using Energy Utilization	2
Gas Efficiency Training by ERS	2
LinkedIn Training	2
Plan Review	2
ALCS Training for External Invitees	1
BOC Online Trainings	1
Energy Code Best Practices New Construction	1
Energy Storage Systems Training by ERS	1

A1_1. According to our records, you took the following **training 1 in CT data** in the last 3 years. Is that correct? - [Field-training_1]	
	(n=52)
1 Yes, that is correct	83%
2 No, I did not attend this training	2%
3 I can't remember this training	15%

A1_2. According to our records, you took the following **training 2 in CT data** in the last 3 years. Is that correct? - [Field-training_2]	
	(n=44)
1 Yes, that is correct	64%
2 No, I did not attend this training	11%
3 I can't remember this training	16%
99 Prefer not to say	9%

A1_3. According to our records, you took the following **training 3 in CT data** in the last 3 years. Is that correct? - [Field-training_3]	
	(n=39)
1 Yes, that is correct	49%
2 No, I did not attend this training	18%
3 I can't remember this training	23%
99 Prefer not to say	10%

A1_4. According to our records, you took the following **other, please specify training** in the last 3 years. Is that correct? - Other Energize CT training, please specify

	(n=52)
1 Yes, that is correct	44%
2 No, I did not attend this training	23%
3 I can't remember this training	25%
99 Prefer not to say	8%
Training specified in A1_4	
	(n=200)
Did not answer	75%
All Energize CT Lighting Trainings	4%
BPI	2%
C&I Comprehensive Program	2%
Eversource Business Partner Rollout	2%
lead safety	2%
N/A	2%
New energy tool	2%
New Incentive Forms	2%
not sure	2%
Passive House Workshops 1-4	2%
Sbea	2%
Yes, don't remember all the programs	2%
A2. Which of the following trainings were most valuable?	
	(n=38)
Did not answer	26%
Training in A1_1	34%
Training in A1_2	16%
Training in A1_3	13%
Training specified in A1_4	11%
A2. Which of the following trainings were most valuable?	
CT Sales Training	5
All Energize CT Lighting Trainings	2
Elements of Virtual Presence	2
Green Training USA	2
Understanding, Making and Using Energy Metrics	2
Variable Refrigerant	2
BOC Online Trainings	1
Energy Storage Systems Training by ERS	1
Eversource Business Partner Rollout	1
GPRO O&M Essentials Training	1
SBEA	1
A3. Which of the following trainings were least valuable?	
	(n=35)
Did not answer	29%
Training in A1_1	26%
Training in A1_2	29%

Training in A1_3	6%
Training specified in A1_4	11%
A3. Which of the following trainings were least valuable?	
Compressed Air Challenge	1
Elements of Virtual Presence	1
Energy Code Best Practices New Construction	1
Energy Start	1
GPRO Training	1
lead safety	1
Re-Tuning Small Commercial Buildings	1
Understanding, Making and Using Energy Metrics	1
B1_1. Why did you take this training? - Selected Choice Certification required to participate in utility program	
	(n=52)
Did not answer	81%
1 Certification required to participate in utility program	19%
B1_2. Why did you take this training? - Selected Choice Maintain a license or certification	
	(n=52)
Did not answer	92%
1 Maintain a license or certification	8%
B1_6. Why did you take this training? - Selected Choice Your employer recommended it	
	(n=52)
Did not answer	69%
1 Your employer recommended it	31%
B1_7. Why did you take this training? - Selected Choice Job/career advancement	
	(n=52)
Did not answer	67%
1 Job/career advancement	33%
B1_8. Why did you take this training? - Selected Choice To meet specific needs indicated by a client or customer	
	(n=52)
Did not answer	81%
1 To meet specific needs indicated by a client or customer	19%
B1_9. Why did you take this training? - Selected Choice Personal interest	
	(n=52)
Did not answer	58%
1 Personal interest	42%
B1_13. Why did you take this training? - Selected Choice Other, please specify	
	(n=52)
Did not answer	94%
1 Other, please specify	6%
B1_13_TEXT. Why did you take this training? - Other, please specify - Text	
	(n=52)
Did not answer	94%
Be more informed in dealing with my customers	2%

Possible new business opportunity	2%
Stay up to date on current programs and offerings for our customers	2%
B2_1. What did you hope to get out of this training? - Selected Choice Learn new skills	
	(n=52)
Did not answer	19%
1 Learn new skills	81%
B2_2. What did you hope to get out of this training? - Selected Choice Improve skills to get a raise or a promotion	
	(n=52)
Did not answer	79%
1 Improve skills to get a raise or a promotion	21%
B2_4. What did you hope to get out of this training? - Selected Choice Get a job	
	(n=52)
Did not answer	98%
1 Get a job	2%
B2_5. What did you hope to get out of this training? - Selected Choice Other, please specify	
	(n=52)
Did not answer	83%
1 Other, please specify	17%
B2_5_TEXT. What did you hope to get out of this training? - Other, please specify - Text	
	(n=200)
Did not answer	83%
Be better informed	2%
deeper energy savings	2%
Find out about code requirements	2%
Gain insight and knowledge around available programs and offerings	2%
Help close projects	2%
improve skills in this area	2%
Knowledge	2%
Provide my customers with the most benefits possible.	2%
To continue holding my certifications	2%
B3_1. What, if anything, did you get out of the training? Learn new skills	
	(n=42)
Did not answer	38%
1 Learn new skills	62%
B3_2. What, if anything, did you get out of the training? Improve skills to get a raise or a promotion	
	(n=11)
Did not answer	45%
1 Improve skills to get a raise or a promotion	55%
C1. Since taking **respondent input training has your employment changed? - Selected Choice**	
	(n=200)
1 I was previously unemployed or underemployed and found a job	2%
3 I received a promotion at my job	2%
4 I switched companies in the same field	4%

5 I switched companies into a new field	2%
6 I switched fields in the same company	6%
7 I retired	2%
11 I am on temporary leave	2%
12 None of the above	58%
13 Other, please specify	2%
14 My employment has not changed	21%
C1_12_TEXT. Since taking **respondent input training** has your employment changed? - None of the above - Text	
	(n=52)
None	2%
Did not answer	88%
I became more valuable to my clients	2%
No same position	2%
None of the above	2%
Nothing changes	2%
Personal interest	2%
C1_13_TEXT. Since taking **respondent input training** has your employment changed? - Other, please specify - Text	
	(n=52)
Did not answer	98%
Added new clients	2%
C2. How long after the training did your employment change?	
	(n=11)
1 0-6 months	45%
2 7 months to 1 year	45%
3 2-3 years	9%
C3_1. Which of the following industries do you currently work in? - Selected Choice Insulation	
	(n=9)
Did not answer	89%
1 Insulation	11%
C3_3. Which of the following industries do you currently work in? - Selected Choice Home improvement	
	(n=9)
Did not answer	78%
1 Home improvement	22%
C3_7. Which of the following industries do you currently work in? - Selected Choice Other, please specify	
	(n=9)
Did not answer	33%
1 Other, please specify	67%
C3_7_TEXT. Which of the following industries do you currently work in? - Other, please specify - Text	
	(n=52)
	83%
Did not answer	8%
Energy efficiency	2%

I work with a registered Contractor in the SBEA Program	2%
Lighting	4%
Lighting and controls	2%
C4_3. Which of the following industries did you previously work in? - Selected Choice Home improvement	
	(n=9)
Did not answer	78%
1 Home improvement	22%
C4_4. Which of the following industries did you previously work in? - Selected Choice General construction	
	(n=9)
Did not answer	78%
1 General construction	22%
C4_5. Which of the following industries did you previously work in? - Selected Choice Building automation	
	(n=9)
Did not answer	100%
C4_6. Which of the following industries did you previously work in? - Selected Choice Utility	
	(n=9)
Did not answer	78%
1 Utility	22%
C4_7. Which of the following industries did you previously work in? - Selected Choice Other, please specify	
	(n=9)
Did not answer	56%
1 Other, please specify	44%
C4_7_TEXT. Which of the following industries did you previously work in? - Other, please specify - Text	
	(n=52)
	83%
Did not answer	10%
Energy efficiency	2%
Lighting	2%
Manufacturing	2%
Sales	2%
C5_2. Please briefly describe your current role in the **respondent input job** industry. - Selected Choice Technician	
	(n=9)
Did not answer	78%
1 Technician	22%
C5_4. Please briefly describe your current role in the **respondent input job** industry. - Selected Choice Sales	
	(n=9)
Did not answer	78%
1 Sales	22%
C5_7. Please briefly describe your current role in the **respondent input job** industry. - Selected Choice Other, please specify	
	(n=9)
Did not answer	33%

1 Other, please specify	67%
C5_7_TEXT. Please briefly describe your current role in the **respondent input job** industry. - Other, please specify - Text	
	(n=52)
	83%
Did not answer	10%
Administrative - Billing	2%
and evaluations	2%
Consultant	2%
Engineer	2%
C6_2. Please briefly describe your previous role in the **respondent input job** industry. - Selected Choice Technician	
	(n=9)
Did not answer	89%
1 Technician	11%
C6_4. Please briefly describe your previous role in the **respondent input job** industry. - Selected Choice Sales	
	(n=9)
Did not answer	78%
1 Sales	22%
C6_5. Please briefly describe your previous role in the **respondent input job** industry. - Selected Choice Contractor	
	(n=9)
Did not answer	89%
1 Contractor	11%
C6_7. Please briefly describe your previous role in the **respondent input job** industry. - Selected Choice Other, please specify	
	(n=9)
Did not answer	44%
1 Other, please specify	56%
C6_7_TEXT. Please briefly describe your previous role in the **respondent input job** industry. - Other, please specify - Text	
	(n=52)
	83%
Did not answer	8%
Administrative - Sales	2%
carpenter	2%
Consultant	2%
Engineer	2%
General Contractor	2%
C7. How important was the **respondent input training** training offered by Energize CT in making this employment change?	
	(n=9)
1 Very important	33%
2 Important	22%

5 Not important	44%
C8. How important were the other trainings you took offered by Energize CT in making this employment change?	
	(n=3)
2 Important	67%
5 Not important	33%
C9_1. Please describe how the **respondent input training** training helped you get the new job or position? - Selected Choice I learned a new skill	
	(n=9)
Did not answer	89%
1 I learned a new skill	11%
C9_2. Please describe how the **respondent input training** training helped you get the new job or position? - Selected Choice I refined skills I already had	
	(n=9)
Did not answer	78%
1 I refined skills I already had	22%
C9_3. Please describe how the **respondent input training** training helped you get the new job or position? - Selected Choice I received an introduction to person or company that landed me the job	
	(n=9)
Did not answer	100%

C9_4. Please describe how the **respondent input training** training helped you get the new job or position? - Selected Choice I learned to sell what I was already doing in a different way	
	(n=9)
Did not answer	78%
1 I learned to sell what I was already doing in a different way	22%
C9_5. Please describe how the **respondent input training** training helped you get the new job or position? - Selected Choice I got a certification that I needed	
	(n=9)
Did not answer	67%
1 I got a certification that I needed	33%
C11. As a result of the training did you receive an increase in pay?	
	(n=19)
1 Yes	11%
2 No	89%
D1. Did **respondent input training** have an impact on the way you do your work?	
	(n=52)
1 Yes	52%
2 No	48%
D2_1. Which of the following aspects of your job did the training impact, if at all? - Selected Choice The products you recommend or install	
	(n=52)
Did not answer	69%
1 The products you recommend or install	31%

D2_2. Which of the following aspects of your job did the training impact, if at all? - Selected Choice The way you install or maintain the products you work with	
	(n=52)
Did not answer	87%
1 The way you install or maintain the products you work with	13%

D2_3. Which of the following aspects of your job did the training impact, if at all? - Selected Choice The way you sell those products	
	(n=52)
Did not answer	77%
1 The way you sell those products	23%

D2_4. Which of the following aspects of your job did the training impact, if at all? - Selected Choice The way you inspect work	
	(n=52)
Did not answer	87%
1 The way you inspect work	13%

D2_5. Which of the following aspects of your job did the training impact, if at all? - Selected Choice Nothing	
	(n=52)
Did not answer	73%
1 Nothing	27%

D2_6. Which of the following aspects of your job did the training impact, if at all? - Selected Choice Other, please specify	
	(n=52)
Did not answer	83%
1 Other, please specify	17%

D2_6_TEXT. Which of the following aspects of your job did the training impact, if at all? - Other, please specify - Text	
	(n=200)
Did not answer	87%
design, specifying materials	2%
enhanced data analysis skills	2%
How I manage virtual meetings.	2%
Improve understanding of process	2%
Negatively impacted my opinion	2%
Staying connected to clients	2%
Virtual Meetings	2%

D3. Can you describe your answer in a bit more detail?	
	(n=200)
No	2%
Did not answer	35%
Being more aware of energy efficient products.	2%
During Covid we could not visit clients in person. Instead, we connect with clients virtually to maintain our relationships and discuss opportunities for business.	2%

Each piece of knowledge helps me guide customers on the most effective manner to deal with heating/cooling issues at the most value related cost	2%
Had to learn a new way to enter projects in the SBEA program	2%
Helped to educate me on designing and specifying materials for lower energy buildings that we need to start building now to avoid the worst effects of climate change	2%
How other perceive	2%
How to place new fixtures	2%
I found the training to be quite surface level. All the tips about improving my LinkedIn profile for visibility and network, I'd already known and updated prior to the training.	2%
I took the course to understand other energy savings measures. However, it was very convoluted and not exactly what I was looking for	2%
I took to learn additional skills/become familiar with	2%
I try to implement all the items discussed in the virtual training. Most importantly being Present and remember that my eye contact is with the camera not with the eyes of other participants.	2%
Improved air seal skills	2%
Increased knowledge about efficiency products	2%
It doesn't apply to the program I work in	2%
It was helpful information, but it did not impact my role.	2%
It was just some additional knowledge.	2%
Learning another perspective is always valuable when selling.	2%
Learning different and better ways to work virtually	2%
Less emphasis on pricing.	2%
looking for ways to measure and verify compressed air energy savings.	2%
Make sure to recommend solutions for customers that will maximize utility-recognized savings and incentives.	2%
Never had the opportunity to use the information learnt	2%
New technology	2%
No material impact	2%
Our Energy Solutions Group requires knowledge in a wide array of disciplines	2%
Specifying the correct lighting equipment and controls	2%
The overall approach to presenting & selling measures	2%
The training helped me to better address duct leakage in homes	2%
The training provided a new holistic perspective on the products recommended to clients based on the energy metrics.	2%
The trainings assist us with giving guidance to our sales force on the CT Save incentive program. It does not affect our business other than how we participate with the program and the changes that occur with the program.	2%

The trainings have provided information to help us improve our CTSAVE sales and better our understanding of the program and the changes that occur periodically. It allows me to help relay to our salespeople the necessary information they need regarding CTSAVE.	2%
They did not know the code requirements for the product and stated that the code did not apply to the product. They said that since the product supported carbon neutrality the energy code did not apply.	2%
work was inside not in the field	2%

E1. Considering your employment goals and experience, how appropriate was the level of training?	
	(n=52)
1 Far too low – I was too experienced for this course	6%
2 Somewhat too low – I already was familiar with most concepts	23%
3 Appropriate for my level of experience	67%
4 Somewhat too high – I needed more background knowledge or support during the class	2%
5 Far too high – I should have had more preparation or experience before taking this course	2%

E2. Based on what you expected to learn and achieve, would you say that the **respondent input training** training:	
	(n=52)
Did not answer	2%
1 Far exceeded your expectations	4%
2 Somewhat exceeded your expectations	10%
3 Met your expectations	75%
4 Fell somewhat short of your expectations	8%
5 Fell far short of your expectations	2%

E3_1. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Trainer's knowledge of topics	
	(n=52)
Did not answer	2%
1 1 - Very dissatisfied	10%
2 2 - Somewhat dissatisfied	2%
3 3 - Neither satisfied nor dissatisfied	10%
4 4 - Somewhat satisfied	23%
5 5 - Very satisfied	54%

E3_2. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Time available to ask questions	
	(n=52)
1 1 - Very dissatisfied	6%
2 2 - Somewhat dissatisfied	4%
3 3 - Neither satisfied nor dissatisfied	13%
4 4 - Somewhat satisfied	33%
5 5 - Very satisfied	44%

E3_3. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Pace of the presentation

	(n=52)
Did not answer	2%
1 1 - Very dissatisfied	10%
2 2 - Somewhat dissatisfied	4%
3 3 - Neither satisfied nor dissatisfied	10%
4 4 - Somewhat satisfied	40%
5 5 - Very satisfied	35%

E3_4. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Coverage of topic areas	
	(n=52)
1 1 - Very dissatisfied	10%
2 2 - Somewhat dissatisfied	2%
3 3 - Neither satisfied nor dissatisfied	12%
4 4 - Somewhat satisfied	37%
5 5 - Very satisfied	40%

E3_5. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Presentation materials	
	(n=52)
1 1 - Very dissatisfied	10%
2 2 - Somewhat dissatisfied	4%
3 3 - Neither satisfied nor dissatisfied	6%
4 4 - Somewhat satisfied	38%
5 5 - Very satisfied	42%

E3_6. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Hands on training opportunities	
	(n=52)
1 1 - Very dissatisfied	4%
2 2 - Somewhat dissatisfied	13%
3 3 - Neither satisfied nor dissatisfied	40%
4 4 - Somewhat satisfied	21%
5 5 - Very satisfied	21%

E3_7. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training? - Access to trainer/materials post training	
	(n=52)
1 1 - Very dissatisfied	8%
2 2 - Somewhat dissatisfied	2%
3 3 - Neither satisfied nor dissatisfied	27%
4 4 - Somewhat satisfied	27%
5 5 - Very satisfied	37%

E4. Finally, how satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you were with the training overall?	
	(n=52)
Did not answer	2%
1 Very dissatisfied	12%
4 Somewhat dissatisfied	8%

5 Neither satisfied nor dissatisfied	6%
6 Somewhat satisfied	40%
7 Very satisfied	33%
F1. Do you plan to attend any trainings in the future?	
	(n=52)
1 Yes	88%
2 No	12%
F2_1. In what areas would you like to see training offered by Energize CT? - Selected Choice In the field of energy efficiency (energy conservation, energy auditing, weatherization, etc.)	
	(n=46)
Did not answer	20%
1 In the field of energy efficiency (energy conservation, energy auditing, weatherization, etc.)	80%
F2_4. In what areas would you like to see training offered by Energize CT? - Selected Choice In the field of renewable energy (solar thermal, geothermal, photovoltaic (PV) installation, fuel cells, etc.)	
	(n=46)
Did not answer	43%
1 In the field of renewable energy (solar thermal, geothermal, photovoltaic (PV) installation, fuel cells, etc.)	57%
F2_5. In what areas would you like to see training offered by Energize CT? - Selected Choice In sales and marketing	
	(n=46)
Did not answer	72%
1 In sales and marketing	28%
F2_6. In what areas would you like to see training offered by Energize CT? - Selected Choice Other, please specify	
	(n=46)
Did not answer	89%
1 Other, please specify	11%
F2_6_TEXT. In what areas would you like to see training offered by Energize CT? - Other, please specify - Text	
	(n=52)
	12%
Did not answer	79%
Amblify and Tracksys	2%
Cannabis Lighting	2%
data, submetering, and equipment metering	2%
Passive House, Net Zero Energy Homes	2%
Technical trainings on advanced lighting and controls and practical approaches to optimization and specification	2%
F3_1. Thinking about the **respondent input training training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - I am better at my job because of the training**	
	(n=52)
1 1 - Completely disagree	6%

2 2 - Mostly disagree	4%
3 3 - Neither agree nor disagree	29%
4 4 - Mostly agree	44%
5 5 - Completely agree	17%
F3_2. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - I can take on more complex projects because of the training	
	(n=52)
1 1 - Completely disagree	13%
2 2 - Mostly disagree	10%
3 3 - Neither agree nor disagree	37%
4 4 - Mostly agree	27%
5 5 - Completely agree	13%
F3_3. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - I would recommend this training to friends/colleagues	
	(n=52)
1 1 - Completely disagree	6%
2 2 - Mostly disagree	6%
3 3 - Neither agree nor disagree	15%
4 4 - Mostly agree	44%
5 5 - Completely agree	29%
F3_4. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - I still use the skills learned in the training	
	(n=52)
1 1 - Completely disagree	10%
2 2 - Mostly disagree	10%
3 3 - Neither agree nor disagree	17%
4 4 - Mostly agree	35%
5 5 - Completely agree	29%
F3_5. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - I completed energy efficient project(s) using new knowledge or skills from this training	
	(n=52)
1 1 - Completely disagree	12%
2 2 - Mostly disagree	12%
3 3 - Neither agree nor disagree	21%
4 4 - Mostly agree	40%
5 5 - Completely agree	15%
F3_6. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - The training was a waste of time	
	(n=52)
1 1 - Completely disagree	52%

2 2 - Mostly disagree	19%
3 3 - Neither agree nor disagree	10%
4 4 - Mostly agree	17%
5 5 - Completely agree	2%
F3_7. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - The training was irrelevant to my job	
	(n=52)
1 1 - Completely disagree	38%
2 2 - Mostly disagree	23%
3 3 - Neither agree nor disagree	21%
4 4 - Mostly agree	13%
5 5 - Completely agree	4%
F3_8. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - There are other ways I prefer to learn new skills (e.g., on the job) than through trainings like this one	
	(n=52)
1 1 - Completely disagree	6%
2 2 - Mostly disagree	29%
3 3 - Neither agree nor disagree	40%
4 4 - Mostly agree	19%
5 5 - Completely agree	6%
F3_9. Thinking about the **respondent input training** training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree? - The training was not as interactive as I would have liked	
	(n=52)
1 1 - Completely disagree	23%
2 2 - Mostly disagree	27%
3 3 - Neither agree nor disagree	29%
4 4 - Mostly agree	21%
G1. Did you attend any Energize CT trainings online in 2020?	
	(n=25)
1 Yes	68%
2 No	32%
G2. How did the training you attended online in 2020 meet your expectations?	
	(n=17)
4 Somewhat exceeded your expectations	18%
5 Met your expectations	76%
6 Fell somewhat short of your expectations	6%
G3. Did you attend any Energize CT trainings in person in 2019?	
	(n=35)
Did not answer	3%
1 Yes	66%
2 No	31%
G4. How did the training you attended in person in 2019 meet your expectations?	

	(n=23)
4 Somewhat exceeded your expectations	9%
5 Met your expectations	87%
6 Fell somewhat short of your expectations	4%

G5. Generally, do you prefer in person or online trainings?	
	(n=52)
1 In person	62%
2 Online	38%

G6. Why do you prefer that type of training?	
	(n=200)
Did not answer	6%
Better focus and interaction	2%
Better for me	2%
Better learning environment	2%
Better understanding	2%
Better use of my time	2%
Different setting, sitting in front of a computer for several hours is personally not my best way to learn.	2%
Easier learning	2%
EASIER TO ABSORB THE TRAINING WITH IN-PERSON INTERACTION	2%
Easier to understand	2%
Easily accessible	2%
Energy efficiency	2%
Engagement	2%
Flexibility and able to review it at a later date	2%
Flexible	2%
Had to do virtual due to covid	2%
I am generally better with in person training for some training	2%
I can attend at my convenience and save wear and tear on my automobile	2%
i can do it on my own time	2%
I like seeing others in person	2%
I love being able to maintain my regular schedule and being able to hop onto the training all at the same time. Carving out a full day to attend in person trainings can be a bit stressful in relation to upload periods for CTSAVE.	2%
I prefer online training because it is more convenient with my schedule.	2%
I retain more knowledge	2%
It is more engaging. I am a visual learner.	2%
It's a lot more interactive and personable. The energy from in-person trainings can't be replicated virtually.	2%
It's more interactive and personal	2%
Learn more	2%
less distracted.	2%
Less distractions	2%

less time for travel to event	2%
Less traveling	2%
Meet other professionals	2%
More accessible	2%
More comfortable	2%
More engaging and I think therefore more easier to recall information from the training later on.	2%
More hands on and engaging	2%
more interaction with other participants. Greater give and take from the other people	2%
more of a one on one and can read the audience	2%
More personal	2%
Networking and hands on learning.	2%
Online trainings allow me to not carve out a full day for travel to an event. As much as those events are great to see everyone in person, it's nice to be able to continue other work while sitting in on a training, whenever that's doable.	2%
Only offered that type in 2020.	2%
Side discussions and easier to discuss issues	2%
The interaction with teacher and fellow students. Harder to do that behind a computer.	2%
The opportunity to discuss the training topics with peers taking the training can be invaluable for understanding not only the material but also what I might be misunderstanding as well.	2%
The training is much more effective.	2%
There is no substitute for real life participation	2%
There is no travel involved, and I can better work the time into my schedule.	2%
Time commitment, does not require travel	2%
Zoom	2%

H1. What is the highest level of education you have completed?	
	(n=52)
4 High school graduate or equivalent	6%
5 Some college, no degree	12%
6 Technical college degree or certificate	4%
7 Two-year college degree	6%
8 Four-year college degree	54%
9 Graduate or professional degree	19%

H2. What year were you born?	
	(n=200)
Did not answer	8%
1900	2%
1948	2%
1951	2%

1952	2%
1953	2%
1954	4%
1955	2%
1956	4%
1959	6%
1960	2%
1961	4%
1964	2%
1965	2%
1967	4%
1968	2%
1969	2%
1970	2%
1971	2%
1972	2%
1975	4%
1977	2%
1978	4%
1981	2%
1986	4%
1988	4%
1990	4%
1991	2%
1992	6%
1993	4%
1994	4%
1995	2%
1996	2%
1997	2%

H3. How do you identify? - Selected Choice	
	(n=52)
Did not answer	2%
1 Man	81%
4 Woman	15%
10 Prefer to self-describe	2%

H4. Which of the following best represents your annual household income from all sources in 2020 before taxes?	
	(n=52)
Did not answer	8%
5 $35,000 to under $50,000	13%
6 $50,000 to under $75,000	17%
7 $75,000 to under $100,000	23%
8 $100,000 to under $150,000	17%

9 Over $150,000	21%
H5_5. Which categories describe you? Please select all that apply. - Selected Choice Black or African American (for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, or Somalian)	
	(n=52)
Did not answer	94%
1 Black or African American (for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, or Somalian)	6%
H5_6. Which categories describe you? Please select all that apply. - Selected Choice Hispanic, Latino, or Spanish origin (for example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadorian, Dominican, or Colombian)	
	(n=52)
Did not answer	94%
1 Hispanic, Latino, or Spanish origin (for example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadorian, Dominican, or Colombian)	6%
H5_9. Which categories describe you? Please select all that apply. - Selected Choice White (for example, German, Irish, English, Italian, Polish, or French)	
	(n=52)
Did not answer	19%
1 White (for example, German, Irish, English, Italian, Polish, or French)	81%
H5_10. Which categories describe you? Please select all that apply. - Selected Choice Some other race, ethnicity, or origin	
	(n=52)
Did not answer	98%
1 Some other race, ethnicity, or origin	2%
H5_10_TEXT. Which categories describe you? Please select all that apply. - Some other race, ethnicity, or origin - Text	
	(n=52)
Did not answer	98%
NA	2%
H6_1. What language(s) do you primarily speak at home? Please select all that apply. - Selected Choice English	
	(n=52)
Did not answer	8%
1 English	92%
H6_4. What language(s) do you primarily speak at home? Please select all that apply. - Selected Choice Spanish	
	(n=52)
Did not answer	94%
1 Spanish	6%
H6_14_TEXT. What language(s) do you primarily speak at home? Please select all that apply. - Other (please specify) - Text	
	(n=52)
Did not answer	98%
Norwegian	2%

Appendix D. eesmarts

Priority Objectives of *eesmarts*

In addition to the primary goal of facilitating student understanding, other priority objectives of the eeSmarts platform include:

- To engage municipal officials, educators, administrators, and facilities personnel to work toward more energy-efficient and sustainable schools.
- To expand outreach and ensure the equitable distribution of energy education resources statewide, especially to urban and hard-to-reach communities.
- To facilitate collaboration and connections among educators and energy and environmental advocates.
- To inspire students (K-12 and higher education) to be agents of change in their schools, colleges, universities, and communities and to promote energy efficiency and its positive effects on protecting our environment.

Student Energy Education Best Practices

We identified six best practices of successful K-12 energy education programs:

1. Integrate behavior change strategies
2. Reinforce lessons
3. Ensure consistent content delivery
4. Develop a supportive school community
5. Create a school-to-home connection
6. Plan for evaluation

Figure 2 and the subsequent descriptions summarize each best practice, followed by case studies highlighting two of the reviewed programs that successfully model the best practices.

Figure 2. Utility Energy Education Program Best Practices

Integrate Behavior Change Strategies: Successful programs integrate behavioral strategies at the classroom, building, and community levels to drive energy savings. Where possible, integrating custodial and administrative staff and leveraging current building energy management systems can increase the impact within a school. The AES PowerSave program, discussed in our case study below, quantified average program savings through school utility manager software, with savings ranging from 5 – 15% in the first year and 10 – 20% in the second year, compared to a predicted baseline use (counterfactual).

Reinforce the Lessons: Successful programs help teachers deliver interactive content relevant to learning objectives and provide follow-up activities as opportunities for students to reinforce learning. Program curriculum leverages academic standards to help improve students grades in regular courses by integrating curriculum with Common Core or Next Generation Science Standards (NGSS). Content is interactive with hands-on participation relevant to the learning objectives and age appropriate.

Ensure Consistent Content Delivery: Successful programs invest in teacher training on lesson delivery to increase consistency across teachers, classrooms, and schools. Programs may offer continuing education credits to teachers and provide support for their professional development. The Connecticut *eesmarts* program currently includes professional development for teachers.

Develop a Supportive School Community: Successful programs have a champion at the school or district level and build teams of teachers, administrators, and other school staff (energy/custodial) to encourage public commitments to savings. Collaboration between teachers, students, administration, and custodial staff (district-wide shared savings approach) has been linked to evaluable energy savings.[26]

Create a School-to-Home Connection: Programs that have a home component, such as a kit or a pledge of some kind, manage family energy savings and feedback via opt-in postcards. These contact cards allow utility evaluators to measure energy savings resulting from energy conservation as a part of the program pledge,

[26] https://www.epa.gov/sites/default/files/2015-08/documents/k-12_guide.pdf.

behavior changes that accrue to the program, or savings based on kit measures that remain installed. In this way, evaluable home energy savings are driven by promoting a school-to-home connection. Commitments and pledges go together with rewards and recognition, creating a positive feedback loop. Progress reports and other forms of data and feedback encourage program momentum.

Plan for Evaluation: The best practices above align with successful program evaluation. From the school-to-home connection, some programs retain contact information for parents and gather progress reports and other data from families to understand changes they made. Data from school energy savings are also metrics for evaluation. These practices not only encourage the behavior change to drive savings but also show evaluable energy savings.

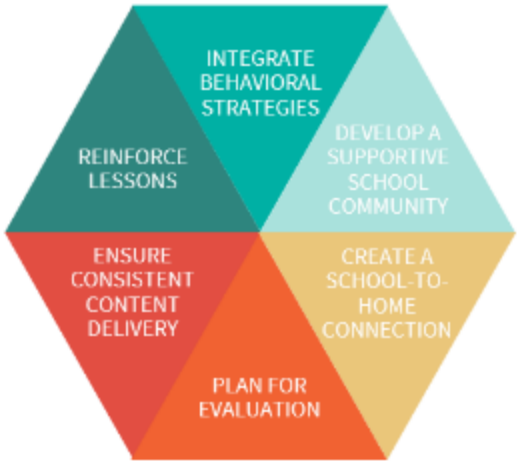
Below we provide two utility/EE case studies to highlight the practical application of these best practices. In addition, we provide a comparison of how the Energize CT Educate the Students initiative fits into the best practices. These case studies can be used as guides on how to structure the *eesmarts* program.

Case Study 1: Wisconsin K-12 Energy Education Program (KEEP)

Wisconsin's KEEP began with a focus on teacher education and has expanded over time. More than 7,300 teachers have participated in KEEP courses and workshops since 1997.[27] The program now has four components: professional development, curriculum and resources, a take home energy audit kit, and energy efficiency in the school building and facilities.

This program incorporates all six of the best practices in energy education programs, as shown in Figure 3 and described below.

Figure 3. Wisconsin KEEP Energy Education Best Practices



Integrate Behavior Change Strategies: The KEEP program integrates behavior change strategies through the activity pledge form that is sent home with students in the energy kit. This form asks families to pledge to make additional energy conservation behaviors. While the form itself is useful for subsequent evaluation efforts (see Plan for Evaluation, below), the act of sending in the form may itself reinforce the pledge to conserve energy.

[27] https://www3.uwsp.edu/cnr-ap/KEEP/Pages/default.aspx

Develop a Supportive School Community: The fourth component of the Wisconsin KEEP program, energy efficiency in school buildings and facilities links the classroom energy efficiency teachings with the building operations and building staff.

Reinforce Lessons: Based on surveys and other data gathered in evaluations, teachers became proponents of the energy curriculum, agreeing more strongly that energy should be included in the curriculum and encouraging colleagues to teach about energy. They also reported that the courses were effective in that they were confident teaching the energy curriculum. The curriculum resources include KEEP's activity guides, which align to the Common Core and NGSS standards.

Create a School-to-Home Connection: Wisconsin KEEP has a full-time school-to-home energy education specialist position. The program's school-to-home connection is the take-home energy audit kit. Within the kit, the home energy activity pledge form asks students to confirm what energy efficiency activities they might already do in their home and asks families to make pledges of additional energy conservation. A DNV KEMA evaluation of the KEEP program estimated that installation of the devices in the kits saved 45 MWh of energy. The program also led to increased participation in other utility programs such as home energy audits, rebates, and pilot rates.

Ensure Consistent Content Delivery: The program's professional development component includes ten professional development courses, which qualify for teachers' continuing education credits. Up to 70% of the tuition is subsidized by Wisconsin utilities. The 2015 – 2016 pre- and post-teacher workshop survey results revealed that teachers were using conservation behaviors they had learned in their own homes. They were also visiting their utility provider's website and Focus on Energy's website to increase their own knowledge about energy, energy efficiency, and utility sponsored EE programs.

Plan for Evaluation: The Wisconsin KEEP program has been evaluated by third-party independent evaluators. Sending a form home with students that families could fill out and return to the utility enabled the evaluators to contact families after-the-fact to assess whether devices from the kits were installed and to ask about other energy efficiency behaviors that families might have taken.

Case Study 2: Alliance to Save Energy PowerSave Schools

The objectives of the Alliance to Save Energy (ASE) PowerSave Schools program are to engage student leadership and save energy in school districts across the country. The program model is to recruit two teachers to train a team of students to do an energy audit at the school and work with administration and school staff to make behavioral changes or building upgrades. The emphasis is on hands-on projects and integrating energy efficiency into science and math lessons. Teachers are provided with classroom lessons, and students learn how to analyze data, calculate potential energy and cost savings, and present findings. Student leaders make energy efficiency recommendations that become action plans for their schools, like insulating pipes in overheated classrooms, and replacing appliances and lightbulbs.

According to the Southern California PowerSave Schools Program, in the 2011 – 2012 school year, 65 schools saved more than 3 GWh of energy, equivalent to more than $500,000.[28] The program model is to return 50% of the financial savings to the school with the other 50% returned to the district. A 2014 presentation

[28] See: https://www.ase.org/sites/ase.org/files/powersave_schools-success_book_2011-12.pdf

summarized the impacts of the program as the following: 565 schools enrolled since 2008, 40.3 million kWh saved, with an average savings per school of slightly more than $10,000 (Harrigan 2014).

However, an independent evaluation of PowerSave Schools programs in two school districts in one Northeastern state found no significant improvements in overall energy conservation. While there were significant increases in knowledge about energy in District 1, there were no significant increases in knowledge about energy in District 2. The study authors note that discrepancies in program delivery may have accounted for some of the discrepancies between the two districts in terms of knowledge about energy (DiMatteo et al 2014; see also Sussman and Chikumbo 2016).

The PowerSave Schools program also promotes community outreach events to share accomplishments with families and the wider community, as well as career activities like speaker presentations and research projects for students to explore green careers.

PowerSave Schools incorporates four of the six best practices in energy education programs, as shown in Figure 4 and described below

Figure 4. ASE PowerSave Schools Energy Education Best Practices

Integrate Behavior Change Strategies: The ASE PowerSave Schools program encourages behavior change in schools through classroom and building challenges, and in the community through community outreach events.

Develop a Supportive School Community: One of the central features of the program is around integrating students, teachers, and staff in conducting energy audits and making subsequent EE upgrades. The program model relies on a collaboration between staff, teachers, administration, and students.

Reinforce Lessons: Reinforcing classroom lessons is key to this program model, where students learn about energy efficiency in the classroom, receive training on conducting an energy audit, and then subsequently conduct an energy audit of their school. The school building itself becomes a laboratory to reinforce the classroom lessons, and students can see the relevance of what they've learned, and the impact of the measures they recommend.

Plan for Evaluation: The program supports schools in measuring energy savings and the impact of the program on energy consumption in the school building.

Based on our understanding of the program, the PowerSave Schools program does not meet two of the best practices we have identified: Ensure consistent content delivery and create a school-to-home connection. While the program does provide teachers with classroom lessons, our understanding is that there is less emphasis on ensuring a consistent delivery within the program. The evaluation cited above of two school districts in a Northeastern state did note differences between the presentation and classroom content in the two schools evaluated, suggesting that this is not a strength of the program. We also do not have evidence to suggest that the program works to connect with families and create a connection between the classroom and the home.

While it does not meet all best practices, the PowerSave School model is valuable for considering how programs targeting K-12 students have been able to deliver evaluable energy savings and create behavior change.

Papers and Programs Reviewed for Best Practices

Behavior Changes Related to Energy Savings

Too Cool for School: Engaging Students with Energy Efficiency. *Daniel Trombley, Plug Smart.* ESCOs implement energy projects which generally pay for themselves through the energy and operational savings they create. Schools also look for ways to engage students and communities around infrastructure projects to improve the community and enhance students' education experience. ESCOs, who are looking for ways to distinguish themselves, are beginning to find ways to tie their technical energy projects to classroom learning. Plug Smart style kiosks and dashboards provide feedback to students.

Youth Engagement in Energy Efficiency as a Vehicle for Behavioral Change. *Chad Bulman and Greg Ehrendreich, Midwest Energy Efficiency Alliance.* Stanford study determined that high school students taught a targeted behavior change curriculum demonstrated an almost 30% increase in energy-efficient behaviors (Cornelius, Robinson & Hoffman 2009). Lights for Learning program was designed to make energy efficiency curriculum and presentations available to students while addressing schools' need for school fundraising opportunities. Presenters are current and former educators with experience in working with students and are trained by tenured program staff. They provide supplemental materials to students and teachers to build upon the initial assembly by integrating efficiency education into the classroom. Youth raise money for their school or club through the sale of energy-efficient products. By promoting efficient lighting in their neighborhoods and through dinner-table conversation at home, the children become educators to their community on energy efficiency. No aspect of the program is considered sacred and at the end of each program year a broad assessment of program successes and challenges takes place, to adjust the program to incorporate the improvements needed to encourage program growth.

Benchmarking K-12 Schools: How the Building Energy Performance System Continues to Track and Compare Energy Data in the Northeast and Mid-Atlantic. Designed to inform the building administrator(s) about their facility's energy efficiency at any given point in time. TRC designed a common Energy Benchmarking Report format to help schools 1) understand energy consumption and cost trends for each school building, 2) gauge how each building compares to other K-12 school buildings, 3) a way to find ways to improve operations and

reduce costs, 4) ways to find technical support and funding resources, and 5) increase the school's awareness of how their energy decisions may have on the surrounding community.

Study found that a collection of 338 schools has reduced Greenhouse Gas Emissions equivalent to the annual emissions from the energy use of 2,013 homes. Up to date consumption and cost data allows for informed decisions to be made which in turn will increase the overall energy efficiency throughout all the nation's schools.

University of Wisconsin Stevens Point: Wisconsin K-12 Energy Education Program and KEEP 20-year report. Quantifying energy savings: demonstrated that KEEP activities can capture short-term energy savings and act as an entry point to connecting schools and families with EE resources and technical assistance. iCanConserve™ School to Home eval: PSC pilot had successful savings due to energy saving device installation from take-home kits, led to participation in additional utility offers. KEEP alumni survey: former KEEP teachers indicated courses helped them increase student knowledge about various energy concepts and encourage students to use energy more efficiently. Teachers were asked to report detailed personal changes they plan to make to save energy because of the course. Pre/post course surveys revealed significant positive changes in views on energy conservation and education. Results show a statistically significant increase in energy conservation behaviors and thought processes after participating in a KEEP course

USGBC Center for Green Schools: Powering Down, A TOOLKIT FOR BEHAVIOR-BASED ENERGY CONSERVATION IN K-12 SCHOOLS. This report examines five public schools that have reduced their electricity use by an astonishing 20 to 37 percent through successful behavior-based strategies. The report contains a table of kWh saved by school case studies (page 5 in report). The five schools were chosen because schools had established energy conservation initiative focusing on behavior change strategies, an ongoing practice of tracking energy data and the ability to provide clear documentation of energy data demonstrating a drop in energy consumption without confounding effects from mechanical projects, renovations, or new construction. Energy data was evaluated through quantitative and qualitative analysis and was reliably tied to behavioral change through the report of the energy manager associated with each school district as well as through interviews.

Example Programs

Wisconsin K-12 Energy Education Program (KEEP). *University of Wisconsin Stevens Point: Wisconsin K-12 Energy Education Program and School Energy Efficiency Education and Baker, A. & Martinson, D. (2015) "Wisconsin Schools Improve Energy Efficiency Gains through Education." Taking Care of Business, Wisconsin Association of School Business Officials. June 2015 p24-25.*

The Wisconsin K-12 Energy Education Program (KEEP) School Building Energy Efficiency Education programming promotes and facilitates the utilization of the school building as a learning tool for energy education, while contributing to increased energy efficiency and savings in schools.

In 2014, about a dozen teachers participated in KEEP's School Building Energy Efficiency Education course, which focuses on raising awareness of energy use in school buildings and guiding PK-12 staff towards utilizing the school building as a teaching tool. The course brings together teachers with energy professionals, including the district facility manager, who provide information tailored for classroom application of energy management practices and who emphasize sustainable behaviors which can further reduce consumption of energy and resources.

Activities planned for Energy Action Month (October), including classroom energy audits and energy saving tips for home, were carried out weekly during Monday morning school-wide assemblies where best practices were shared, and classroom behaviors rewarded. School buildings were challenged to reduce their electricity consumption by 5%. During the 2012 – 2013 school year, Colby Elementary School achieved 8.6 percent savings, in part due to energy conservation behavior changes made by staff and students.

The U.S. Green Building Council's Center for Green Schools, U.S. Department of Energy's EnergySmart Schools, and U.S. Environmental Protection Agency all recommend educating and engaging staff and students in school building facility operations and as part of energy efficiency planning processes. An untapped potential, it is widely acknowledged that engaging building occupants in behavior-based strategies can save on average 5% to 20% of energy costs each year.

By reinforcing the message that 'every little bit helps,' Colby School District buildings and grounds supervisor Dennis Wenzel says the district has saved more than $16,000 through the combined efforts of staff and students consistently improving their energy-saving behaviors like turning off the lights, closing blinds and doors, and shutting down computers when not being used.

KEEP Enrichment Pilot Activity summary and results – gamification of energy saving actions. The school building performance improvement segment of the pilot identified 48 potential energy efficiency measures across four schools that would result in savings of 1,172,964 kWh and 36,543 therms if implemented. The results of the energy-related behavior change pilot effort add up to more than 22,188 sustainable actions by 463 participants, including those that will result in energy savings. In all, new energy-saving actions that had not been taken before—mostly activities done at home—resulted in an estimated annualized impact of about 25,400 kWh and 58 therms. These figures may be conservative in that they represent only those actions recorded in the Cool Choices game.

The first round of the game emphasized actions players could take at home as well as an assortment of school building-based data collection activities associated with Green and Healthy Schools applications. (The latter actions awarded points but did not in-themselves encourage any energy-saving behaviors or practices that would result in actual kWh or therm savings). The second round of the game included a greater emphasis on impactful actions players could take at school as well as at home. We also show the estimated energy impacts from these activities. Note that therms are not shown as only a small amount (58 therms) of natural gas savings resulted from this game. Actions by kWh savings table available. Most behavioral changes are home-based, but a few were in-school.

Small Programs Analysis – School to Home program. Home energy activity pledge form: KEEP staff indicated that when they visited a Wisconsin classroom, they would ask students to confirm what energy efficiency activities they might already do in their home, and families would be asked to make a pledge to make additional energy conservation. After families returned their pledge form, if their address fell within an eligible area of an iCC community, the pledge would count towards iCC participation, and towards the appropriate Community Reward. DNV KEMA found evidence to suggest that the School to Home program led to increased participation in other iCC offers. Schools to Home participants were more likely than non-participants to receive an iCC audit in all three pilot communities. They were more likely to receive Focus on Energy rebates in Brillion and Allouez. They were also more likely to sign up for a pilot rate in Allouez or remain on a pilot rate in Plover.

USGBC Center for Green Schools. *Powering Down, A TOOLKIT FOR BEHAVIOR-BASED ENERGY CONSERVATION IN K-12 SCHOOLS*

This report examines five public schools that have reduced their electricity use by an astonishing 20 to 37 percent through successful behavior-based strategies. The study identified shared characteristics of effective programs:

- Faculty and staff leadership: one or more committed faculty and/or staff members provide leadership in implementing the initiative in each of the schools.
- Principal support: the school principal provides essential support, highlighting the initiative and signaling commitment and endorsement to the school community.
- Student engagement: faculty and/or staff leaders actively develop student participation in the initiative.
- Inclusive team: school-based custodial staff members are included as participants in the initiative (and provide primary leadership at one of the case study schools).
- Data and feedback: an energy manager or other point person at the district level provides the critical function of tracking energy data for the school and then communicating this information as feedback about progress.
- Program assistance: in most of the programs studied, the school district (or third-party partner) offers additional support beyond tracking energy data.
- Additional partners: in two of the exemplar schools, the program is supported successfully with school district resources. A third-party organization provides support in three of the exemplar schools.
- Progress reports: energy data illustrating a drop in the school's energy consumption as the program becomes established are repeatedly cited by faculty and staff as compelling and strongly motivating.
- Clear communication: cost savings associated with energy conservation are highly valued by faculty and staff and are understood as directly beneficial for educational programming.
- Awards and honors: recognition of energy conservation successes provided within the school, at the district level and by other organizations is highly valued by faculty and staff.

School-Based Kit Programs

PECO Energizing Education program. The PEEP program included workshops, curriculum and kits, and several other activities for schools to participate in throughout the year. PEEP 2.0 Programming invites educators from across the Philadelphia region to participate in energy education workshops and receive hands-on kits for their classrooms. PEEP 2.0 also encourages attendees to sign up for Energy Fairs and Educational Energy Audits for their schools. In addition, schools are invited to participate in the PECO Innovation Challenge – which will engage students in exploring energy and seeking solutions to energy challenges of today and tomorrow.

Efficiency Vermont. Energy Literacy Project (ELP): Efficiency Vermont worked in coordination with K–12 schools throughout the state to inspire lifelong commitment to energy efficiency, conservation, and environmental stewardship in Vermont's youngest generation. In 2019, Efficiency Vermont's contract implementer, Vermont Energy Education Program (VEEP), enrolled 50 schools in the ELP, held 250 workshops in 80 schools, and sent 150 energy kits to 65 schools with continued support on curriculum development and implementation. VEEP also held a summer institute on energy and climate education. No savings claimed for "education" section of offerings

CenterPoint Energy. Electric Universe is designed for educators, students, and the public to learn about electricity and other energy-related topics. While electricity powers the world, it is important to stay safe around it. The website is viewable on most mobile devices.

Alliant Energy. LivingWise: The best way for students to learn about energy efficiency is through a hands-on approach. The LivingWise program offers just that. Middle school students participate in interactive energy lessons and receive a kit with low-cost energy-saving measures, such as a low-flow showerhead, an LED bulb, and a faucet aerator. The students bring the kit home and install the measures themselves. These small changes result in immediate energy savings and encourage energy-efficient behaviors in the classroom and at home.

Southern California Gas. LivingWise School Program: This program combines classroom learning and home retrofit/audit projects completed by sixth grade students and their parents. It provides a LivingWise Activity Kit for each customer.

Information Dashboards in Schools - City of Oberlin, OH Environmental Dashboard in schools

Building Dashboard is a technology that measures electricity and water consumption in schools, businesses, public facilities, and homes and translate this into animated displays (interactive TV screens). Building Dashboards are designed to engage, educate, motivate, and empower building occupants to make informed choices that conserve resources. Separate Dashboards have been created for all four Oberlin City schools and the Langston School Board office. Each year students participate in "Ecolympics" in which students from all four public schools compete against each other to achieve the highest percentage reduction in electricity and water use. Complementary lesson plans provided on website for grades 1-12. Topics include how to understand electricity use in buildings, monitoring energy use in buildings and develop behavior strategies to reduce energy use, energy basics, community perspectives, field trip ideas, water use

Health-Related Behavior Change/Best Practices for K-12

CDC Adolescent and School Health DASH WSCC (Whole School, Whole Community, Whole Child) program
Oakland Unified School District's Healthy Teen Program

Programs that are most effective in reducing sexual health risk behaviors among teens have several common attributes, which include: Being delivered by trained instructors, being age-appropriate, including components on skill-building, support of healthy behaviors in school environments, and involving parents, youth-serving organizations, and health organizations.

The delivery of the OUSD sexual health education program was designed to be embedded into science and English/Language Arts classes. All the science and English/Language arts teachers received intensive training on the new curriculum and its effective delivery.

Appendix E. Educate the Public and Customer Engagement Methodology and Detailed Findings

Methodology

Initiative Review

We reviewed Connecticut's Energy Efficiency & Demand Side Management Plan (2020 Plan Update to the 2019 – 2021 Conservation & Load Management and 2019 – 2021 Conservation & Load Management Plan Update) to develop an inventory of past, current, and future activities of the Educate the Public and Customer Engagement initiatives. Our team then requested materials from the Companies related to the initiatives contained within the inventory. We included an inventory of materials provided for each initiative in this appendix. Our team conducted a survey and follow up interviews with program managers from the Companies to confirm the list of initiatives were comprehensive, determine the implementation status of the various initiatives, and understand the relative priority of each initiative. We opted to focus our evaluation efforts on the highest priority initiatives based on implementation status, budget, and prioritization shared by the Companies.

We identified a total of 11 sub-initiatives falling under the Educate the Public and Customer Engagement funding streams. Table 6 summarizes the goals, objectives, activities, target audience, target behaviors, and metrics tracked for each sub-initiative. We prioritized Community Partnerships for Energy Efficient Engagement, Eversource Customer Engagement Software: Website Widgets, and Eversource Customer Engagement Software: Monthly Insights Email based on their 2022 budget allocation, prioritization conversations with the Companies, and implementation timing, which allowed the evaluation team to provide early feedback on sub-initiative design and best practices through the literature review. Our team focused primarily on sub-initiatives launching in 2021 aiming to provide feedback that would be most useful going forward. In conversation with the Companies, we deprioritized the ongoing sub-initiatives due to lower budget allocations and lower prioritization by the Companies. Several discontinued sub-initiatives fall under the Educate the Public and Customer Engagement umbrella due to a spending freeze impacting the 2017 – 2018 program years and the COVID-19 pandemic, which forced the Companies to pause implementation of several activities in 2019 – 2020.

Table 6. Summary of Educate the Public and Community Engagement Initiatives Planned Objectives and Activities

GOALS AND OBJECTIVES	ACTIVITIES AND EFFORTS	WHO PERFORMS THE ACTIVITIES	TARGET AUDIENCE	METRICS TRACKED	TARGETED ENERGY-RELATED BEHAVIORS
Sub-Initiative: Community Partnerships for Energy Efficient Engagement					
• Drive participation in select Energize CT programs • Reach distressed communities and under-indexed groups, including customers with low to moderate incomes, customers with limited English proficiency, customers who rent single-family homes or multifamily homes with up to 4 units, residents of DECD distressed communities (as identified from 2017 onwards), and small businesses	The Companies will provide grant money to municipalities, non-profits, and community-based organizations, based on their application stating their plan to promote Energize CT programs to hard-to-reach customers	Applications are reviewed and grant money is administered by the Companies	Residential customers and small businesses, particularly in underserved and distressed communities	Program participation for: • Home Energy Solutions • Home Energy Solution – Income Eligible • CT Department of Energy and Environment Protection (DEEP) Weatherization Assistance Program • Small Business Energy Advantage	Participation in targeted Energize CT EE programs
Sub-Initiative: Mobile Museum Exhibit					
• Empower students, educators, administrators, and communities across the state • Provide knowledge and confidence as related to energy, EE, alternative and renewable energy, careers in EE and sustainability • Instill responsible energy behavior in future consumers • Target underserved and distressed communities across the state • Encourage consumers and communities to participate in energy efficiency programs • Goal to visit 40 schools and 40 communities per year with 60% of school and community	• The program implementer designs and maintains a trailer of museum grade exhibits, which can be driven around the state to be displayed at schools and community events • The program implementer provides both virtual and in-person presentation on mobile museum exhibits	The program is implemented by Mad Science	Students and community members, particularly in underserved and distressed communities	• Name and location of event • Number of school events • Number of community events • Number of events in distressed communities • Number of attendees at each event • Results from pre and post surveys • Satisfaction survey	• Adoption of energy saving behaviors recommended through exhibit • Participation in Energize CT EE programs recommended through exhibit • Students may go on to pursue green jobs or jobs in EE

GOALS AND OBJECTIVES	ACTIVITIES AND EFFORTS	WHO PERFORMS THE ACTIVITIES	TARGET AUDIENCE	METRICS TRACKED	TARGETED ENERGY-RELATED BEHAVIORS
events being in underserved and distressed communities					
Sub-Statewide/Clean Energy Communities Dashboard					
• Provide up-to-date program participation information to communities to drive engagement with EE • Provide up-to-date information to statewide stakeholders on the performance of Energize CT EE programs	• The participation data on the Communities Dashboard continues to be updated for any groups previously participating in the Clean Energy Communities program • The Statewide Dashboard is used by stakeholders to monitor the performance of energy efficiency programs; dashboards are updated when new data is available	• PC Technologies keeps the dashboards up to date • The Companies support transfer of data as needed	Groups previously involved with Clean Energy Communities and statewide stakeholders	• Energy savings and spend by sector and fuel-type • Residential loan metrics including number of loans, measures financed, fuel-type, HES loan program, number of 0% interest loads, FICO score, loan term, and conversion type • HES metrics including visits by fuel type, proposed upgrades by type, completed upgrades by type, and upgrade rates by type • Clean Energy Community Metrics, including percent of participating households by sector, percent of rebates redeemed, total energy consumption by sector, and participation in related Clean Energy Communities initiatives	• Participation in Energize CT EE programs • Participation in Clean Energy Community initiatives
Sub-Initiative: Eversource Customer Engagement Software: Website Widgets					
• Drive customer engagement with the Eversource website • Drive customer engagement with their energy usage and energy bill • Encourage customers to adopt energy-saving behaviors	• This initiative gives customers access to widgets on Eversource's website when customers are logged in to view their energy bill • These widgets contain information on how the customer's current	Eversource hired Oracle to design and implement these widgets	This initiative targets residential and commercial customers	Customer-level clicks and impressions for each widget	• Adoption of energy-saving behaviors recommended through the widgets • Participation in Energize CT EE programs recommended through the widgets

GOALS AND OBJECTIVES	ACTIVITIES AND EFFORTS	WHO PERFORMS THE ACTIVITIES	TARGET AUDIENCE	METRICS TRACKED	TARGETED ENERGY-RELATED BEHAVIORS
• Encourage customers to participate in Energize CT EE programs	energy bill compares to the previous month • Residential customers additionally receive information on their energy usage by appliance and have access to a cooling costs calculator • Commercial customers can see their previous 13 months of usage				• Details on specific behaviors and programs promoted was not provided to the evaluation team at this stage in initiative development
Sub-Initiative: Eversource Customer Engagement Software: Monthly Insights Email					
• Drive customer engagement with their energy usage and energy bill • Encourage customers to adopt energy-saving behaviors • Encourage customers to participate in Energize CT EE programs	• Customers in the treatment group for this initiative will receive monthly emails containing information on their current usage, previous month's usage, and an energy saving tip, which is rotated each month • This program is set up as a randomized control trial to allow for assessment of savings	This program is implemented in-house by Eversource	This initiative targets residential customers	• Email opens and clicks • Energy savings assessed via randomized control trial	• Adoption of energy saving behaviors recommended through the emails • Participation in Energize CT EE programs recommended through the emails • Details on specific behaviors and programs promoted was not provided to the evaluation team at this stage in initiative development
Sub-Initiative: EPA Portfolio Manager					
Empowering municipal partners to use EPA ENERGY STAR Portfolio Manager® and other tools and resources to track building energy usage, evaluate buildings for energy efficiency improvements, monitor results of technology	• EPA Portfolio Manager is offered as a free-of-charge service and can be used to help support related initiatives • The Companies are not recruiting municipalities	• The University of Connecticut, utility, and Energize CT staff develop and conduct trainings for customers on using the EPA Portfolio	Municipal and business customers	• Training date, time, purpose, and participants • Customers using the platform (customer name, site, and account information)	Implementation of energy efficient upgrades

GOALS AND OBJECTIVES	ACTIVITIES AND EFFORTS	WHO PERFORMS THE ACTIVITIES	TARGET AUDIENCE	METRICS TRACKED	TARGETED ENERGY-RELATED BEHAVIORS
upgrades, and capture energy savings to meet required reduction goals	or businesses to the platform as an independent campaign	Manager platform and provide technical support • The Companies support the automated transfer of billing data to the platform based on customer requests • EPA maintains the platform			

Community Partnerships Literature Review

We reviewed program materials, websites, and/or evaluations for five EE community partnership programs in addition to the Energize CT Community Partnerships for Energy Efficient Engagement initiative, four meta-analyses, and best practice guides for community leadership and governance. The team chose to include the community engagement and governance literature in our research to gain perspectives from outside the EE field on best practices for empowering citizens and communities to co-create solutions to problems they face at the local level. These sources focus on including historically marginalized communities in the program design and decision-making processes, with the aim of creating effective programs for these communities. We felt these perspectives would be valuable in helping the initiative meet its objective in reaching underserved communities.

Our team reviewed the following programs and research:

- EE Programs
    - Los Angeles Department of Water & Power Program Outreach and Community Partnerships Program[29] [30]
    - Energy Outreach Colorado[31]
    - Department of Energy Better Building Neighborhoods Program[32]
    - Northwest Bronx Community and Clergy Coalition Bronx Healthy Building Program[33,34,35]
    - MassSave Municipal Partnerships Program (Eversource also administers this program)[36]
- Meta-Analyses

[29] "Non-Profit Opportunities." *Los Angeles Department of Water and Power* (June 2021). https://www.ladwp.com/ladwp/faces/ladwp/commercial/c-savemoney/c-sm-rebatesandprograms/c-sm-rp-non-Profitopportunities;jsessionid=z35GhRpGGny2QhsL6vyzcffvQGpv1scJvG9n3qvyhb2CqXpNpzXd!184478703?_afrWindowId=null&_afrLoop=198938081566068&_afrWindowMode=0&_adf.ctrl-state=m1v0n3tvk_4;#%40%3F_afrWindowId%3Dnull%26_afrLoop%3D198938081566068%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dgp5msbktw_4

[30] LADWP staff communication with ILLUME, December 7, 2020.

[31] EPA. "Case Study: Energy Outreach Colorado, A nonprofit hub for energy assistance." (June 2017): 1-8 https://www.epa.gov/sites/default/files/2017-06/documents/energy_outreach_colorado_case_study_6-1-16_508.pdf

[32] Research Into Action. "Spotlight on Key Program Strategies from the Better Buildings Neighborhood Program Final Evaluation Volume 6." Research Into Action, Inc. Vol. 6 (June 2015): 1-94, https://www.energy.gov/sites/default/files/2015/08/f25/bbnp_volume_6_spotlight_072215_0.pdf.

[33] Northwest Bronx Community and Clergy Coalition. "What We Do: Energy Democracy." northwestbronx.org. Accessed June 10, 2021. https://www.northwestbronx.org/energy-democracy

[34] The Build Health Challenge. "The Bronx Healthy Buildings Program" buildhealthchallege.org. Accessed June 10, 2021. https://buildhealthchallenge.org/communities/awardee-bronx-nyc/

[35] Garcia, Edward and Mella, Katherine. "The Bronx Healthy Buildings Program." Northwest Bronx Community and Clergy Coalition and Bronx Cooperative Development Initiative. (September 2018). https://www.health.ny.gov/health_care/medicaid/redesign/sdh/summit_docs/finalist_slides_nwbronxcomm.pdf

[36] MassSave. "Massachusetts program administrators' municipal partnership 2020 application." (2020): 1-10. Accessed June 10, 2021. https://www.masssave.com/-/media/Files/PDFs/Partners/2019-0919-MS-COMM-1690075-Communities-Application_FILLABLE.pdf?la=en&hash=5413555B113178E3013DE29A548D0E5DBC3F2A49

- Bean and McRae, "Power to the People: Using Community-Based Approaches to Deliver Efficiency and Sustainability to Hard-to-Reach Populations"[37]
- Drehobl and Tanabe, "Extending the Benefits of Nonresidential Energy Efficiency to Low-Income Communities"[38]
- Denson and Hayes, "The Next Nexus: Exemplary Programs That Save Energy and Improve Health"[39]
- AESP Webinar, Take the Wheel: Driving EE Program Participation for Vulnerable Customers, April 29, 2021

- Best practices in participatory democracy
  - "The Spectrum of Community Engagement to Ownership," *Community Commons*[40]
  - "Ladder of Citizen Participation," *Organizing Engagement*[41]

Case Study: Bronx Healthy Buildings Program

The Bronx Healthy Buildings program is a leading example using community partnerships to drive energy savings while meeting community needs. This program is run by the Northwest Bronx Community and Clergy Coalition (NWBCCC), a member-led grassroots organization. Montefiore Medical Center and the New York City (NYC) Department of Health and Mental Hygiene are the co-facilitators. There are 14 other program partners in total, including the Emerald Cities Collaborative, New York Lawyers for the Public Interest, and New York City Councilman Ritchie Torres. The goal of this program is to make energy, health, and safety improvements in buildings with high incidence of asthma-related emergency room visits and hospital admissions.

The Bronx Healthy Buildings Program incorporates five of the six best practices in community engagement programs, as shown in Figure 5 and summarized below.

[37] Bean, Meghan, and Marjorie McRae. "Power to the People: Using Community-Based Approaches to Deliver Efficiency and Sustainability to Hard-to-Reach Populations." ACEEE Summer Study on Energy Efficiency in Buildings (2016): 1-12. https://www.aceee.org/files/proceedings/2016/data/papers/11_943.pdf

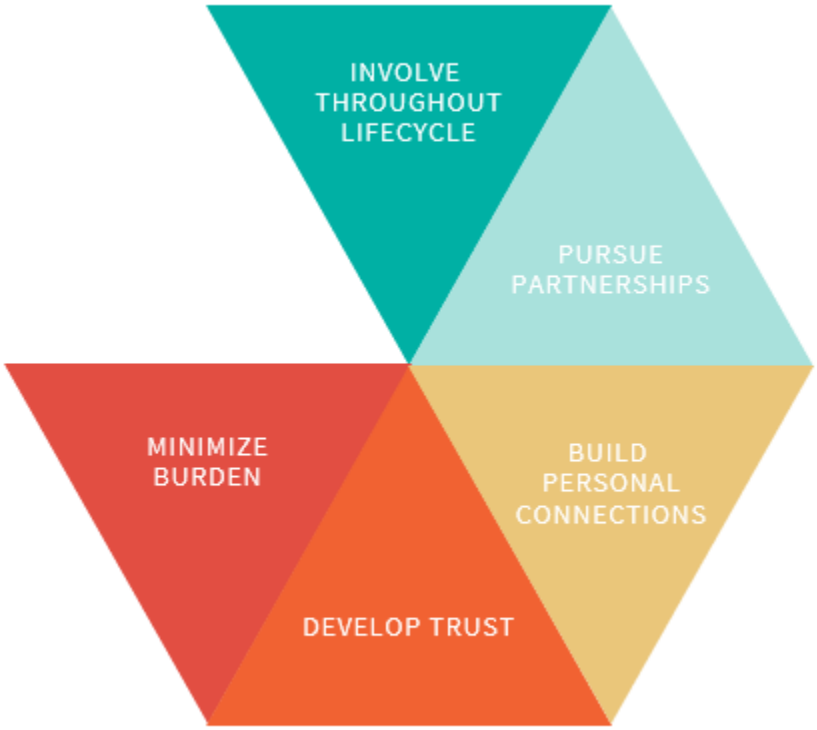
[38] Drehobl, Ariel, and Kate Tanabe. "Extending the Benefits of Nonresidential Energy Efficiency to Low-Income Communities." ACEEE report U1910 (November 2019): 1-76. https://www.michigan.gov/documents/mpsc_old/ACEEE_u1910_Nonresidential_EE_to_Low-Inocme_Communities_673398_7.pdf

[39] Denson, Ronald Jr., and Sara Hayes. "The Next Nexus: Exemplary Programs That Save Energy and Improve Health." ACEE (March 2018). https://www.aceee.org/research-report/h1802

[40] Gonzáles, Rosa. "The Spectrum of Community Engagement to Ownership" Community Commons. (2020). https://www.communitycommons.org/entities/3aec405c-6908-4bae-9230-f33bef9f40e1.

[41] "Ladder of Citizen Participation". Organizing Engagement. Accessed June 10, 2021, https://organizingengagement.org/models/ladder-of-citizen-participation/

Figure 5. Bronx Healthy Buildings Program Community Partnership Best Practices



Involve Throughout Lifecycle: The NWBCCC is a member-led grassroots organization in the Bronx, and therefore is well positioned to understand the needs of the local community in the planning stages of the program. The program involves partners across all stages, beginning with identifying high-priority buildings using asthma patient records, heat and housing violation complaints from the NYC Department of Housing Preservation and Development, and NWBCCC's list of landlords waiting to receive upgrades through their Weatherization Assistance program. The program also enlists these partners in project implementation to provide energy related as well as health and safety upgrades. Finally, the program tracks metrics which reflect the goals of the program and the individual partner organizations, including energy bill savings, avoided hospital admissions, emergency room visits, and school absenteeism related to respiratory illness

In addition to involving institutional partners, the program ensures stakeholders within participating buildings are engaged in the early stages of the project. Specifically, the program engages tenants and landlords in a collaborative decision-making process to secure buy-in for program upgrades and ensure the concerns of both groups are acknowledged and addressed in a meaningful and mutually agreeable fashion. The program also provides training to interested residents on the social determinants of health, leadership, and community organizing. These processes foster non-adversarial relationships between tenants and landlords and create a network of supportive tenants who can champion health and environment-related outcomes during and after the building's participation in the program.

Build Personal Connections: Many aspects of the Bronx Healthy Buildings program provide residents with in-person outreach and training. Once the program identifies a high priority building for participation, program staff connect with residents within the building to assess interest and engage residents in activities such as training and building non-adversarial relationships with landlords. The program also provides in-person education during the assessment in addition to connecting people with needed health resources and installing upgrades.

Pursue Partnerships: By pursuing partnerships with organizations that have health, housing, economic development, community development, and community participation focuses, the program can provide services to residents that go beyond the realm of energy efficiency alone. As noted above, the program installs both energy upgrades and health and safety upgrades not typically provided through energy efficiency programs, such as hypoallergenic pillowcases and pest elimination services. They also provide residents with resources including smoking cessation resources and informational materials on indoor air quality hazards, mold, and lead, in addition to energy and water conservation resources.

Minimize Burden: The program minimizes financial burden to participants by providing upgrades free of charge. In addition, by engaging resident champions in activities such as training and relationship building with landlords, the program creates stakeholders with unique insights into the building's needs and provides long term benefits that outlast their participation in the program.

Develop Trust: The program implementers develop trust within the community in a variety of ways. First, the NWBCCC has a long history of working in the Bronx and provides other services to the community, and therefore is a known local presence with existing relationships within the community. Second, by engaging building residents themselves at the start of a project to assess interest, the program ensures there is buy-in for participation in individual buildings. Interested residents also receive training from the program and facilitated discussions to improve dialogue with landlords, creating a direct benefit for residents who participate. Finally, by sourcing contractors from the local community, the program creates local jobs and engages contractors who may have pre-existing relationships with tenants.

Energize CT Application Review

The evaluation team reviewed the draft application for the Energize CT Community Partnerships for Energy Efficient Engagement initiative in June and July 2021. Based on this review, we developed a set of overall feedback and recommendations, which are detailed in this section. We also provided additional detailed comments on the PDF of the application (Appendix H: See separate PDF document for Appendix H). In response to this feedback and recommendations, the Companies agreed to make the recommended changes to the application and evaluation criteria.

Overall Feedback

As of June 2021, the Community Partnerships for Energy Efficient Engagement initiative was set up to be more of a municipal partnership than a community partnership. We recommend encouraging stronger partnerships and participation between municipalities and community organizations, faith-based organizations, citizen committees, chambers of commerce, and other organizations.

The application emphasized what the municipalities and community organizations will do for Energize CT more than what Energize CT will do for the communities. We recommend adding additional language to the application to clarify the benefits to municipalities and/or community organizations for participating in the initiative. To the extent that the goal of the Community Partnerships for Energy Efficient Engagement initiative is to expand the reach of the Energize CT EE programs, our assessment is that the application and surrounding materials were unlikely to persuade any organizations that are not already convinced of the value of EE and the benefits that come from participating in EE programs.

Weatherization and small business programs are not new programs in utility EE portfolios, nor are the outreach strategies suggested in the application. Our understanding is that the goal of these community partnerships is to generate new, creative, and different solutions that go beyond the typical outreach activities that the Companies and implementers are already doing. The evaluation team recommends adding in language to encourage applications that are creative, innovative, or propose new or different outreach approaches.

Finally, we note the level of requirements (including the length of the application), connection with municipalities, and the requirements around fiduciary responsibility may make it difficult for informal or less well-established organizations to participate. Well-established, larger non-profit organizations with development/grant-writing staff as well as municipalities are well-positioned to apply. However, these requirements might preclude smaller or more informal organizations from being eligible to participate.

Benefits and Responsibilities

We outline in Table 7 what we see as the key benefits and responsibilities of the communities and utilities in the Community Partnerships for Energy Efficient Engagement initiative. We recommend adding the community benefits into the application to highlight why communities might want to participate in such an initiative.

Table 7. Key Benefits and Responsibilities for Utilities and Communities in the Community Partnerships for Energy Efficient Engagement Initiative

	UTILITY	COMMUNITY
Benefits	• Increased program awareness • Increased program participation • Measurable energy savings • Others as noted	Currently included in the application: • Funding for outreach activities • Collateral for programs Ideally added to the application and program descriptions (near term): • Training on energy programs / opportunities to save for community, residents, businesses money, workforce development trainings • Opportunity for greater engagement with other community groups, including chamber of commerce, advisory committees, or other partnerships • Trainings on engagement techniques / case studies • Training and access to feedback, tracking / evaluation tools and techniques for local design / tailoring (focus groups, surveys / survey monkey, other) • Networking with other communities • Potential to influence utility programs • Additional funding for trainings, meetings refreshments; survey monkey account to track participation metrics; and, if goals are met, additional funding for their own use.
Responsibilities	Currently outlined: • Funding • Program collateral Ideally added to the application and program description (near term): • Training on programs • Training on outreach techniques • Training on tracking / evaluation • Additional funding if goals are achieved	• Reporting • Activities as noted

Appendix H - Annotated Application PDF

The evaluation team reviewed the Energize CT Community Partnerships for Energy Efficient Engagement application form and provided comments to the utility in July 2021. Our comments on the application are included in the attached PDF and we have added notes where the utilities have made changes in their subsequent application.

Customer Engagement Literature Review

The team reviewed best practices in customer engagement by examining similar utility programs and best practices in digital customer engagement. The team selected these sources of information based on the two objectives of the Eversource Customer Engagement Software sub-initiatives: customer engagement (the primary objective of the website widgets) and behavior change resulting in energy savings (the primary objective of the monthly insight email). To gain insights on how to drive energy savings through behavior change, our team reviewed behavioral EE programs that provide customers with feedback and insights on their energy usage, like the design of the monthly insights email sub-initiative.

We reviewed program materials, websites, and/or evaluations for four EE programs in addition to the Eversource Customer Engagement Software sub-initiatives, two meta-analyses on behavioral EE, and seven articles and reports on best practices for digital customer engagement. Programs and sources reviewed included:

- EE Programs
    - DTE Insight Program[42,43,44]
    - Xcel MN High Bill Pilot[45]
    - ComEd Business Energy Analyzer[46]
    - Eversource New Hampshire Home Energy Report Pilot[47]
- Meta-Analyses
    - Reuven and Chikumbo, "Behavior Change Programs: Status and Impact"[48]

[42] Navigant. "DTE Insight: Energy Bridge Electric Savings" (2016): 1-7. https://www.michigan.gov/documents/mpsc/DTE_Insight_Electric_Energy_Bridge_522660_7.pdf

[43] Navigant. "DTE Insight: App Gas Savings" (2016): 1-7. https://www.michigan.gov/documents/mpsc/DTE_Insight_Gas_App_522661_7.pdf

[44] Jayaraman, Mallika and Sereen Dababneh. "Insights on Engaging Customers with Real-Time Energy Use." Navigant, DTE Energy (November 2019): 1-19. https://beccconference.org/wp-content/uploads/2019/11/jayaraman_presentation.pdf

[45] Stewart, Jim. "Can High Bill Alerts Help Utility Customers to Save Energy?" Cadmus, Xcel Energy (November 2019): 1-10. https://beccconference.org/wp-content/uploads/2019/12/stewart_presentation_reduced.pdf

[46] Higgins, Paul, Trace O'Rorke, and Derek Dinsmoor. "ComEd Business Energy Analyzer Program Impact Evaluation Report." *Navigant* (August 2018): 1-21. https://cdn2.hubspot.net/hubfs/1698209/Asset%20PDFs/ComEd%20PY9%20Agentis%20BEA%20Evaluation%20Report%202018-08-22.pdf

[47] Navigant. "Home Energy Report Pilot Program Evaluation." (February 2015): 1-90. https://www.puc.nh.gov/electric/Monitoring%20and%20Evaluation%20Reports/Eversource%20NH%20HER%20Evaluation%20Report%202016-03-24%20Final.pdf

[48] Sussman, Reuven and Maxine Chikumbo. "Behavior Change Programs: Status and Impact." *ACEEE* Report B1601 (October 2016): 1-108. https://www.aceee.org/sites/default/files/publications/researchreports/b1601.pdf

- ILLUME Advising, "Energy Efficiency Behavioral Programs: Literature Review, Benchmarking Analysis, and Evaluation Guidelines"[49]

- Best Practices in Digital Customer Engagement
  - Orfanedes, Dethman and Lalos, "Charting the Future: How to Use Customer Engagement Strategies to Ensure Energy Savings and Persistence"
  - Dodda, "Five Customer Engagement Trends That Will Continue In 2021"[50]
  - Clark, "Digital Customer Engagement: 7 Trends to Look Out For"[51]
  - Finegold, Pulido, and Perl, "The revival of customer loyalty: How regulated utilities can reshape customer engagement"[52]
  - Questline, "Accelerating Digital Customer Relationships: 2021 Energy Utility Benchmarks Report"[53]
  - Gallup, State of the American Consumers Report[54]
  - Scott, Zorfas, and Leemon, The New Science of Customer Emotions, HBR (2015)[55]

Based on the materials reviewed, the team outlined a set of best practices for digital customer engagement and a set of best practices for behavioral EE. The team also assessed the Eversource Customer Engagement Software sub-initiatives' alignment with best practices.

Behavioral Energy Efficiency

In addition to customer engagement best practices, the team also reviewed best practices for behavioral EE programs using asynchronous feedback. Behavioral EE programs refer to programs that give customers information and analytics on their energy usage, either in real-time (as consumption occurs) or asynchronously (after consumption occurs). Since Eversource monthly insights emails and website widgets will provide customers with their monthly energy use information updated with the billing cycle, we consider these sub-initiatives to be most like an asynchronous feedback program (customers receive the information after their consumption occurs).

Home Energy Report (HER) programs are the most common asynchronous feedback program within the EE space. These programs are well researched and have established methodologies for evaluation. We

[49] ILLUME Advising. "Energy Efficiency Behavioral Programs: Literature Review, Benchmarking Analysis, and Evaluation Guidelines." (May 2015): 1-116. https://mn.gov/commerce-stat/pdfs/card-report-energy-efficiency-behavorial-prog.pdf

[50] Dodda, Raviteja. "Five Customer Engagement Trends That Will Continue In 2021" Forbes (February 2021). https://www.forbes.com/sites/forbesbusinesscouncil/2021/02/01/five-customer-engagement-trends-that-will-continue-in-2021/?sh=5a1baabb52d8

[51] Clark, Benedict. "Digital Customer Engagement: 7 Trends to Look Out For". Acquire (May 2021). https://acquire.io/blog/digital-customer-engagement-trends/

[52] Finegold, Aaron, Alfonso Pulido, and Scott Perl. "The revival of customer loyalty: How regulated utilities can reshape customer engagement." McKinsey & Company (May 2018). https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-revival-of-customer-loyalty#

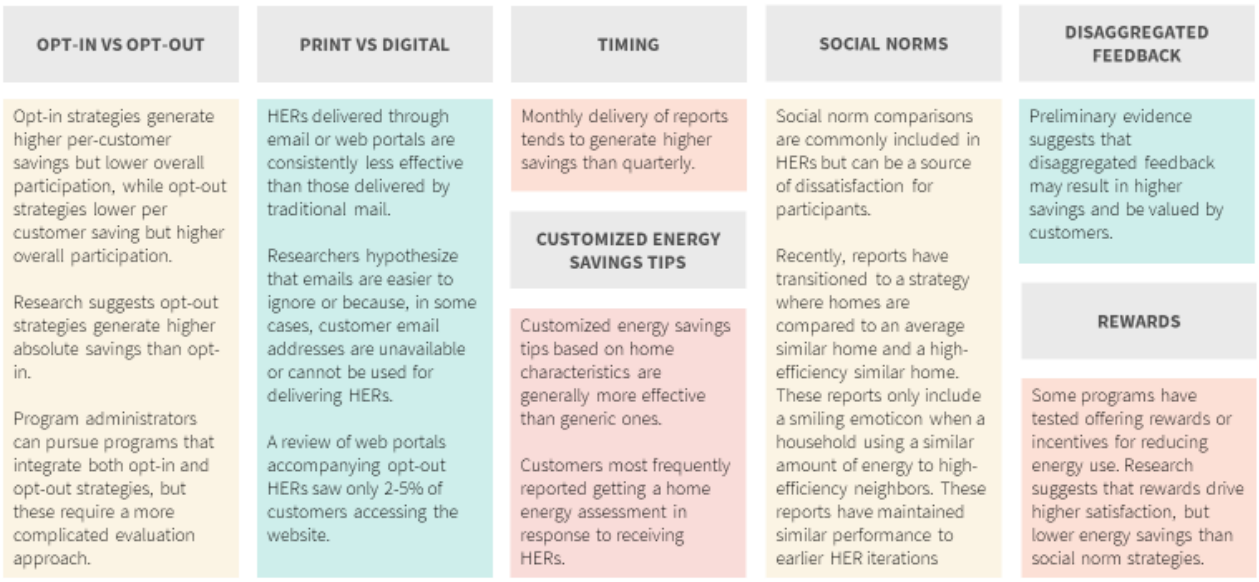
[53] Questline. "Accelerating Digital Customer Relationships: 2021 Energy Utility Benchmarks Report." (2021): 1-69. https://cdn.questline.com/asset/get/56c186ba-40d5-405d-9c37-2c2b6171baea?rand=2042591251

[54] "State of the American Consumer Report." *Gallup* (2014): 1-60. file:///Users/cassidychamillard/Downloads/State%20of%20the%20American%20Consumer%20Report%20June%202014.pdf

[55] Magids, Scott, Alan Zorfas and Daniel Leemon. "The New Science of Customer Emotions." *Harvard Business Review* (November 2015). https://hbr.org/2015/11/the-new-science-of-customer-emotions

summarize key findings from an ACEEE meta-analysis on HERs below, in Figure 6. These best practices for HER program design cover opt-in vs. opt-out enrollment strategies, method of report delivery, timing of the report, and common techniques HERs use to drive energy savings. Notably, Eversource's Customer Engagement Software sub-initiatives blend an opt-in (website widgets) and opt-out (monthly insights emails) strategy and deliver all information digitally. The sub-initiatives' plan to use customized energy savings tips and disaggregated feedback to drive energy savings.

Figure 6. Home Energy Report Best Practices



Best Practices for Museum Exhibits

The team reviewed an article with best practices for museum exhibits communicating about energy efficiency and conservation. We provide highlights of these best practices in Figure 7.

Figure 7: Best Practices for Museum Exhibits (Peters et.al. 2000)

Appendix F: Data Collection Instruments

Workforce Development Participant Survey

(See Chapter 3 in the report and Appendix C – Workforce Development Training Participant Survey Frequencies for findings from this survey.)

APRIL 27, 2021 | CT-X2022 WORKFORCE DEVELOPMENT PARTICIPANT SURVEY

TO: Bob Wirtschafter and Lisa Skumatz; Evaluation Advisors, Connecticut

FROM: ILLUME ADVISING

The Connecticut C&LM Plan details a workforce development initiative to identify and market workforce training opportunities through the EEB and Energize CT channels and broaden outreach and strategy to become a national leader in workforce development. To ensure a return on public investment, the EEB is interested in conducting a formal evaluation of workforce development activities to determine the following: (1) if it can influence behaviors, and ultimately, (2) may result in energy savings (either direct or indirect).

Research Goals

In Task 2, the ILLUME team planned to review the workforce development curricula to understand the learning objectives, outcomes, and behavior change mechanisms of the various training efforts provided. Given the structure and implementation of most of the workforce development trainings, we have determined that surveying past participants and training staff is the best way to assess the curricula. In addition, we will use the responses to learn about both the most and least popular and successful trainings to finalize the trainings on which we will focus in Task 4. We plan to speak with past participants to understand how the trainings have impacted them and if they have changed their behavior because of the training. We will survey training staff to understand the learning objectives and behavior change mechanisms they teach in the trainings themselves.

Table 8: Research Questions

OBJECTIVES	RESEARCH QUESTION	SURVEY QUESTIONS
Increasing efficacy of trainings	What are the learning objectives of current training activities?	B2, B3,
Measurement of savings and effect on the CT rate payers	What actions and behaviors are attendees taking as a result of the initiatives/programs?	C7, C8, D1, D2, D3, F1, F2, F3
	To what extent are training activities expanding the workforce?	C3, C4, C5, C6, C7, C8, C9, C10, F1, F2, F3

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OBJECTIVES	RESEARCH QUESTION	SURVEY QUESTIONS
	How many trainees get new jobs or expand services because of training?	C1, C2, C7, C8, C9, C10, C11
Improve measurement and verification strategies to account for costs and benefits of the program	What accounting/reporting/testing should be used during and after activities to improve effectiveness and document achievements?	B2, B3, E1, E2, E3, E4
Select most relevant or important trainings to use for further research		A2, A3, B1, E1, E2, E3, E4, F1, F2, F3

SAMPLE DESIGN

The sampling frame includes all training attendees with a valid email address sent in the February 25 data request. We will send the survey to a census of the respondents to gather as much information as possible. We will ask participants who attended more than one training about each of the trainings they attended.

Table 9: Workforce Development Participant Sample

	SAMPLE	TARGET RESPONSE
Training participants	1065	110

Survey Delivery and Timeline

ILLUME will administer this survey online. We will recruit via email. We will start recruiting and surveying in mid-May 2021. We will field the survey for two weeks, or until we reach our goal of 10% response rate.

Recruitment

Invite Email

Subject Line: Energize CT needs your feedback on our trainings

From name: Riana Johnson

Sender: research@illumeadvising.com

Reply-to email: riana@illumeadvising.com

Dear [CUSTOMER_NAME],

According to our records, you took <training_lang1 > provided by Energize CT. We are interested in learning about your experiences in the <training_lang2>. As a thank you for your time we will give you a $25 VISA gift card. Your feedback will help us improve future trainings.

Please click on the link below to take this short survey:

[SURVEY LINK]

The survey will take about 10 minutes to complete. If you can't complete the survey all at once or exit the survey in the middle, you can continue by clicking on the link from this email or hitting the back button in your browser. Results will not be recorded until you click the final submit button.

Don't miss out on this chance to share your experience!

If you have any questions about the legitimacy of this survey, please email research@illumeadvising.com.

Reminder Email

Subject Line: Still interested in providing feedback on an energy efficiency training you took?

From name: Riana Johnson

Sender: research@illlumeadvising.com

Reply-to email: riana@illumeadvising.com

Dear [CUSTOMER_NAME],

We recently reached out to you about taking a brief survey for Energize CT. We are interested in learning about your experiences in the <training_lang2> and about what you have done since taking the training. Your feedback will help us improve future trainings. We are hoping to get 20 more responses to the survey. Can you help?

Please click on the link below to take this short survey:

[SURVEY LINK]

The survey will take approximately 10 minutes to complete. As a thank you for your time we will give you a $25 VISA gift card. If you can't complete the survey all at once or exit the survey in the middle, you can continue by clicking on the link from this email or hitting the back button in your browser. Results will not be recorded until you click the final submit button.

Don't miss out on this chance to share your experience!

If you have any questions about the legitimacy of this survey, please email research@illumeadvising.com.

INTRODUCTION

Survey Guide

Thank you for taking this survey today! We'd like to get your feedback about <train_lang1> you've taken through Energize CT. The survey will take about 10 minutes and your answers will be used to help improve future Energize CT trainings. If you have questions about the validity of this survey, please email Riana Johnson at riana@illumeadvising.com.

EMBEDDED DATA FIELDS

- ILLUME_ID
- FIRST_NAME
- LAST_NAME
- EMAIL_1
- EMAIL_2
- EMAIL_3
- QTY
- TRAINING_1
- TRAINING_2
- TRAINING_3
- DATE_TRAINING_1
- DATE_TRAINING_2
- DATE_TRAINING_3
- TRAIN_LANG1
- TRAIN_LANG2
- TRAIN_2020
- TRAIN_2019

A. Training Level Set

[ASK ALL, REQUIRED]

A1. According to our records, you took the following <train_lang2> in the last 3 years. Is that correct?

PIPE IN TRAINING NAMES ACCORDING TO THE PARTICIPATION DATA. FOR THOSE WITH MORE THAN THREE, INLCUDE THE TRAININGS WITH THE HIGHEST NUMBER OF PARTICIPANTS.

STATEMENT	1 – YES, THAT IS CORRECT	2 – NO, I DID NOT ATTEND THIS TRAINING	3 – I CAN'T REMEMBER THIS TRAINING	99 – PREFER NOT TO SAY
a) <TRAINING_1>				
b) <TRAINING_2>				
c) <TRAINING_3>				
d) Other Energize CT training, please specify				

Termination Message

Terminate if ALL trainings in A1 !=1. If any training in A1 == 1 they can continue through the survey.

Unfortunately, based on your responses you are not eligible to participate in this survey. Thank you for your time!

[ASK IF QTY > 1; OR IF QTY == 1 AND A1D) == YES]

A2. Which of the following trainings were most valuable?

[SINGLE RESPONSE, ROTATE; PIPE IN RESPONSES FROM A1 == 1]

1. <TRAINING_1>
2. <TRAINING_2>
3. <TRAINING_3>
4. [TEXT ENTRY FROM A1d)]

[ASK IF QTY > 1 AND A1 SELECTED CHOICES > 1; OR IF QTY == 1 AND A1D) == YES]

A3. Which of the following trainings were least valuable?

[SINGLE RESPONSE, ROTATE; PIPE IN RESPONSES FROM A1 == 1 IF RESPONSE IS NOT CHOSEN IN A2]

1. <TRAINING_1>
2. <TRAINING_2>
3. <TRAINING_3>
4. [TEXT ENTRY FROM A1d)]

B. Training Motivations

[ASK IF QTY > 1]

For the next set of questions please think about the <TRAIN_SURV> training that you took.

[ASK ALL]

B1. Why did you take this training?

[MULTIPLE RESPONSE, ROTATE]

1. Certification required to participate in utility program
2. Maintain a license or certification
3. Prepare for an internship/apprenticeship
4. Your employer recommended it
5. Job/career advancement
6. To meet specific needs indicated by a client or customer
7. Personal interest
8. Other, please specify [ANCHOR]

[ASK ALL]

B2. What did you hope to get out of this training?

[MULTIPLE SELECT, ROTATE]

1. Learn new skills
2. Improve skills to get a raise or a promotion
3. Change field of employment
4. Get a job
5. Other, please specify [ANCHOR]

[ASK IF B2 ANSWERED]

B3. What, if anything, did you get out of the training?

[MULTIPLE SELECT; PIPE IN RESPONSES FROM ABOVE]

1. Learn new skills
2. Improve skills to get a raise or a promotion
3. Change field of employment
4. Get a job
5. OTHER RESPONSE PIPED IN

C. Job Creation

[ASK ALL]

C1. Since taking <TRAIN_SURV> has your employment changed?

[SINGLE RESPONSE; ROTATE]

1. I was previously unemployed or underemployed and found a job
2. I was previously a student and found a job
3. I received a promotion at my job
4. I switched companies in the same field
5. I switched companies into a new field
6. I switched fields in the same company
7. I retired
8. I became unemployed or underemployed
9. I switched to part-time
10. I switched from part-time to full-time
11. I am on temporary leave
12. None of the above [ANCHOR, TEXT BOX]
13. Other, please specify [ANCHOR, TEXT BOX]
14. My employment has not changed

[ASK IF C1 != 12 OR 14]

C2. How long after the training did your employment change?

[SINGLE RESPONSE]

1. 0-6 months
2. 7 months to 1 year
3. 2-3 years

[DISPLAY IF C1 != 7 | 8 | 11 | 12 | 14] NOTE – IF RESPONDENTS ANSWER C1 == 8, 11, 12, OR 14 THEY WILL SKIP TO SECTION D]

NOW WE HAVE A FEW QUESTIONS ABOUT THE CHANGES IN EMPLOYMENT THAT YOU MENTIONED.

[ASK IF C1 != 7 | 8 | 11 | 12 | 14]

C3. Which of the following industries do you currently work in?

[MULTIPLE RESPONSE; ROTATE]

1. Insulation
2. HVAC
3. Home improvement
4. General construction
5. Building automation
6. Utility
7. Other, please specify [ANCHOR]

[ASK IF C1 != 7 | 8 | 11 | 12 | 14]

C4. Which of the following industries did you previously work in?

[MULTIPLE RESPONSE; ROTATE]

1. Insulation
2. HVAC
3. Home improvement
4. General construction
5. Building automation
6. Utility
7. Other, please specify [ANCHOR]

[ASK IF C1 != 7 | 8 | 11 | 12 | 14 & C3 IS ANSWERED]

C5. Please briefly describe your current role in the **<PIPE IN RESPONSE FROM C3>** industry.

[MULTIPLE RESPONSE; ROTATE]

1. Installer
2. Technician
3. Cost-estimator
4. Sales
5. Contractor
6. Other, please specify [ANCHOR]

[ASK IF C1 != 7 | 8 | 11 | 12 | 14 & C4 IS ANSWERED]

C6. Please briefly describe your previous role in the **<PIPE IN RESPONSE FROM C4>** industry.

[MULTIPLE RESPONSE; ROTATE]

1. Installer
2. Technician
3. Cost-estimator
4. Sales
5. Contractor
6. Other, please specify [ANCHOR]

[ASK IF C1 != 7 | 8 | 11 | 12 | 14]

C7. How important was the <TRAIN_SURV> training offered by Energize CT in making this employment change?

[SINGLE RESPONSE]

1. Not important
2. Slightly important
3. Important
4. Moderately important
5. Very important

[ASK IF C1 != 7 | 8 | 11 | 12 | 14 & QTY >1]

C8. How important were the other trainings you took offered by Energize CT in making this employment change?

[SINGLE RESPONSE]

1. Not important
2. Slightly important
3. Important
4. Moderately important
5. Very important

[ASK IF C1 != 7 | 8 | 11 | 12 | 14]

C9. Please describe how the <TRAIN_SURV> training helped you get the new job or position?

[MULTIPLE RESPONSE; ROTATE]

1. I learned a new skill
2. I refined skills I already had
3. I received an introduction to person or company that landed me the job
4. I learned to sell what I was already doing in a different way
5. I got a certification that I needed
6. I got an internship/apprenticeship
7. Other, please specify [ANCHOR]

[ASK IF C1 == 1 | 2 & QTY >1]

C10. Which course or courses were most responsible for getting you the new job you now have?

[MULTIPLE RESPONSE]

1. <TRAINING_1>
2. <TRAINING_2>
3. <TRAINING_3>
4. [TEXT ENTRY FROM A1d)

[ASK IF C1 < 7]

C11. As a result of the training did you receive an increase in pay?

[SINGLE RESPONSE]

1. Yes
2. No

D. Change at Work

We are interested in finding out how the <train_lang2> you took with Energize CT may have affected the way you do your work.

[ASK ALL]

D1. Did <TRAIN_SURV> have an impact on the way you do your work?

[SINGLE RESPONSE]

1. Yes
2. No

[ASK ALL]

D2. Which of the following aspects of your job did the training impact, if at all?

[MULTIPLE RESPONSE; ROTATE]

1. The products you recommend or install
2. The way you install or maintain the products you work with
3. The way you sell those products
4. The way you inspect work
5. Nothing [ANCHOR, EXCLUSIVE]
6. Other, please specify [ANCHOR]

[ASK IF D2 IS ANSWERED; NO PAGE BREAK BETWEEN QUESTIONS]

D3. Can you describe your answer in a bit more detail?

E. Training and Training Satisfaction

[ASK ALL]

E1. Considering your employment goals and experience, how appropriate was the level of training?

[SINGLE RESPONSE]

1. Far too low – I was too experienced for this course
2. Somewhat too low – I already was familiar with most concepts
3. Appropriate for my level of experience
4. Somewhat too high – I needed more background knowledge or support during the class
5. Far too high – I should have had more preparation or experience before taking this course

[ASK ALL]

E2. Based on what you expected to learn and achieve, would you say that the <TRAIN_SURV> training:

[SINGLE RESPONSE]

1. Fell far short of your expectations
2. Fell somewhat short of your expectations
3. Met your expectations
4. Somewhat exceeded your expectations
5. Far exceeded your expectations

[ASK ALL]

E3. How satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you are with the following aspects of the training?

[SINGLE RESPONSE; MATRIX, ROTATE]

STATEMENT	1 – VERY DISSATISFIED	2 – SOMEWHAT DISSATISFIED	3 – NEITHER SATISFIED NOR DISSATISFIED	4 – SOMEWHAT SATISFIED	5 – VERY SATISFIED
a) Trainer's knowledge of topics					
b) Time available to ask questions					
c) Pace of the presentation					
d) Coverage of topic areas					
e) Presentation materials					
f) Hands on training opportunities					
g) Access to trainer/materials post training					

[ASK ALL]

E4. Finally, how satisfied, on a scale of 1 – 5, 1 being very dissatisfied and 5 being very satisfied, would you say you were with the training overall?

[SINGLE RESPONSE]

1. Very dissatisfied
2. Somewhat dissatisfied
3. Neither satisfied nor dissatisfied
4. Somewhat satisfied
5. Very satisfied

F. Post-Training Experience

Great, now we have some questions about what things have been like since you took the training. For the next set of questions, we'd still like you to think about the <TRAIN_SURV> training that you took.

[ASK ALL]

F1. Do you plan to attend any trainings in the future?

[SINGLE RESPONSE]

1. Yes
2. No

[ASK IF F1 == 1]

F2. In what areas would you like to see training offered by Energize CT?

[MULTIPLE RESPONSE, ROTATE]

1. In the field of energy efficiency (energy conservation, energy auditing, weatherization, etc.)
2. In the field of renewable energy (solar thermal, geothermal, photovoltaic (PV) installation, fuel cells, etc.)
3. In sales and marketing
4. Other, please specify [ANCHOR]

[ASK ALL]

F3. Thinking about the <TRAIN_SURV> training that you took, how much do you agree with the following statements on a scale of 1 – 5, 1 being completely disagree and 5 being completely agree?

[SINGLE RESPONSE; MATRIX; ROTATE]

		1 – COMPLETELY DISAGREE	2 – MOSTLY DISAGREE	3 - NEITHER AGREE NOR DISAGREE	4 – MOSTLY AGREE	5 – COMPLETELY AGREE
a)	I am better at my job because of the training					
b)	I can take on more complex projects because of the training					
c)	I would recommend this training to friends/colleagues					
d)	I still use the skills learned in the training					
e)	I completed energy efficient project(s) using new knowledge or skills from this training					
f)	The training was a waste of time					
g)	The training was irrelevant to my job					
h)	There are other ways I prefer to learn new skills (e.g., on the job) than through trainings like this one					
i)	The training was not as interactive as I would have liked					

G. COVID-19 Questions

[TRAIN_2020 == 1]

G1. Did you attend any Energize CT trainings online in 2020?

[SINGLE RESPONSE]

1. Yes
2. No

[IF G1 == 1]

G2. How did the training you attended online in 2020 meet your expectations?

[SINGLE RESPONSE]

1. Fell far short of your expectations
2. Fell somewhat short of your expectations
3. Met your expectations
4. Somewhat exceeded your expectations
5. Far exceeded your expectations

[TRAIN_2019 == 1]

G3. Did you attend any Energize CT trainings in person in 2019?

[SINGLE RESPONSE]

1. Yes
2. No

[IF G3 == 1]

G4. How did the training you attended in person in 2019 meet your expectations?

[SINGLE RESPONSE]

1. Fell far short of your expectations
2. Fell somewhat short of your expectations
3. Met your expectations
4. Somewhat exceeded your expectations
5. Far exceeded your expectations

[ASK ALL]

G5. Generally, do you prefer in person or online trainings?

[SINGLE RESPONSE]

1. In person
2. Online

[ASK IF G5 IS ANSWERED]

G6. Why do you prefer that type of training?

[OPEN END]

H. Demographics

Thank you again for your time on this survey. We just have a few more questions before we are through.

[ASK ALL]

H1. What is the highest level of education you have completed?

[SINGLE RESPONSE]

1. Some high school or less
2. High school graduate or equivalent
3. Some college, no degree
4. Technical college degree or certificate
5. Two-year college degree
6. Four-year college degree

7. Graduate or professional degree

[ASK ALL]

H2. What year were you born?

[OPEN END, NUMERIC MIN 1900; MAX 2022]

H3. How do you identify?

[SINGLE RESPONSE; ROTATE]

1. Man
2. Woman
3. Agender
4. Gender-non-conforming/gender queer
5. Non-binary
6. Trans-woman
7. Trans-man
8. Prefer to self-describe [OPEN END BOX; ANCHOR]

[ASK ALL]

H4. Which of the following best represents your annual household income from all sources in 2020 before taxes?

[SINGLE RESPONSE]

1. Under $25,000
2. $25,000 to under $35,000
3. $35,000 to under $50,000
4. $50,000 to under $75,000
5. $75,000 to under $100,000
6. $100,000 to under $150,000
7. Over $150,000

[ASK ALL]

H5. Which categories describe you? Please select all that apply.

[MULTIPLE RESPONSE; ROTATE]

1. American Indian or Alaska Native (for example, Navajo Nation, Blackfeet Tribe, Mayan, Aztec, Native Village of Barrow Inupiat Traditional Government, or Nome Eskimo Community.)
2. Asian (for example, Chinese, Filipino, Asian Indian, Vietnamese, Korean, or Japanese)
3. Black or African American (for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, or Somalian)
4. Hispanic, Latino, or Spanish origin (for example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadorian, Dominican, or Colombian)
5. Native Hawaiian or Other Pacific Islander (For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, or Marshallese)
6. Middle Eastern or North African (for example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, or Algerian)
7. White (for example, German, Irish, English, Italian, Polish, or French)
8. Some other race, ethnicity, or origin [OPEN END; ANCHOR]

[ASK ALL]

H6. What language(s) do you primarily speak at home? Please select all that apply.

[MULTIPLE RESPONSE; ROTATE]

1. English
2. Spanish
3. Mandarin
4. Cantonese
5. Vietnamese
6. Korean
7. French, Haitian, or Cajun
8. German
9. Russian, Polish, or other Slavic languages
10. Tagalog
11. Arabic
12. Other (please specify) [ANCHOR]

[ASK ALL]

H7. Thank you for your responses. We really appreciate it! As part of this study, we will be conducting interviews or surveys to learn more about the experience of Energize CT trainings. Are you willing to participate in an interview or another survey?

[SINGLE RESPONSE]

1. Yes
2. No

[IF H7 == 1]

H8. Thank you for your interest! Please confirm that the email address we have on file is correct. This is how we'll contact you for our next research task. Is your email address <EMAIL_1>?

[SINGLE RESPONSE]

1. Yes
2. No [PLEASE SPECIFY]

[ASK ALL]

H9. Is there any other feedback you'd like to give?

[OPEN END]

Thank you so much for your time. Energize CT greatly appreciates your feedback. Have a great day.

Workforce Development Follow-Up IDI guide

CT-X2022 Workforce Development: Follow-up with Trainee In-depth Interview Guide

This document is a discussion guide for researchers to use when conducting in-depth interviews for the CT-X2022 project for Bob Wirtschafter and Lisa Skumatz, Evaluation Advisors. The Connecticut C&LM Plan details a workforce development initiative to identify and market workforce training opportunities through the EEB and Energize CT channels and broaden outreach and strategy to become a national leader in workforce development. To ensure a return on public investment, the EEB is interested in conducting a formal evaluation of workforce development activities to determine the following: (1) if it can influence behaviors, and ultimately, (2) may result in energy savings (either direct or indirect).

Overview

In Task 4 we will speak to past participants of the Energize CT trainings to understand how the trainings have impacted them and if they have changed their behavior because of the training. This is a follow up activity to the survey we fielded in May 2021. We will dig deeper into questions surrounding motivation for the training, experiences in the trainings with the content and the trainers, as well as any effects the training has had on their behavior and their work. Note that as we learn more from the Trainer interviews, we will adjust questions in this guide to be more training specific.

Research Approach

ILLUME will conduct up to 10 in-depth interviews with interested respondents to the Workforce Development Trainee survey. We will administer these interviews via Zoom without video. We will ensure respondents that they are able to call in with their phones and will not need access to a computer. *Table 10* shows which sections of the guide address the primary and secondary research questions.

Table 10. Research Questions

PRIMARY RESEARCH QUESTIONS	GUIDE SECTION
What actions and behaviors are attendees taking because of the initiatives/programs?	Effect of Training, Future Trainings
How many trainees get new jobs or expand services because of training?	Employment, Effect of Training, Future Trainings
How satisfied are participants with the training? In what ways can the trainings and their implementation be improved?	Training, Effect of Training, Future Trainings, Conclusion
SECONDARY RESEARCH QUESTIONS	
What are the learning objectives of current training activities?	Overall guide; we may learn about what they were taught in the trainings and this information can be corroborated and confirmed by the trainer interviews.
To what extent are training activities expanding the workforce?	Overall guide; we will learn about those who have increased or change employment as a result of the training; we will also gather information about how the trainings can be improved which could influence how the workforce could be further developed.

Sample Design

The sampling frame includes training attendees who responded to the May 2021 survey stating they were interested in future research activities. 65 respondents said they were interested in participating in further research activities. We will send recruitment emails to all interested respondents. We will schedule 10 interviews in September 2021 with respondents and provide them with a $100 gift card as a thank you for their time.

We will recruit for the interviews based on loose quotas to ensure that we are hearing from a variety of past attendees (Table 11). Respondents will overlap in these categories. We will keep track of this

as we schedule interviews. We have designed this sample to be over-representative of groups like non-health and safety participants and demographic characteristics like age, gender, and race. Given that our recommendations, thus far, have included diversifying the participant pool, we would like to understand the experience of those who are more diverse. In addition, we will seek to interview people who took trainings with the interviewed trainers to gain more robust information about those trainings.

Table 11. Soft Quotas

DEMOGRAPHIC CHARACTERISTIC	GROUP	QUOTAS
Health and Safety Training	H&S Participant	2
	Not H&S Participant	8
Change in employment (i.e., those who were unemployed or students and got a job or those who were promoted)	Change	4
	No change	6
Born after 1990	Younger	3
	Older	7
Underrepresented (not white, speaks a language other than English)	Yes	5
	No	5
Gender	Man	7
	Woman	3
Interviewed Trainer (will have more information about the trainings for these people)	Yes	7
	No	3

Recruitment Emails

Subject Line: Help Energize CT by Providing Feedback on Your Recent Training

Alternative Subject Line: Energize CT needs your help! Provide feedback on your recent training experience

Dear [CUSTOMER_NAME],

Thank you for your interest in participating in an additional research activity about the training you took with Energize CT. We are planning to interview 10 people who took a training. We are interested in hearing more about your experience in the training and learning about any additional feedback you might have.

These interviews will take about 45 minutes and will be conducted via Zoom (don't worry, no video needed). We'll be holding the interviews the weeks of September 7 and September 13. We can be flexible in our scheduling to make it as easy as possible for you. In addition, we are offering a $100 gift card incentive for your time.

If this sounds like something you might be interested in, please take this quick scheduling survey to let us know which times you prefer.

https://survey.az1.qualtrics.com/jfe/form/SV_5arNdGqscYxBRwa

Once we have your interview time, we'll follow up to schedule it.

Thanks again,

NAME

Note on Harassment and Demeaning Conduct

ILLUME prioritizes the safety of our research team. We do not condone harassment or conduct that is demeaning or disparaging to our team[56]. Should the researcher feel unsafe or uncomfortable, or that they have been treated in a disrespectful manner, the researcher may choose to end the interview at their discretion. Should this occur, the team member can use the following script to end the conversation:

"Thanks for taking the time to speak with us today. That's all the questions we have for you."

Key and Note on this Guide

The following guide provides an outline of the conversation that the researcher will have with the program participant. This guide is not a script for the conversation, rather, it highlights the lines of questioning we anticipate exploring with participants and the topics we will delve into. When conducting in-depth interviews, ILLUME researchers reflect the language of participants and explore the areas of interest and concern to participants. In some cases, this may mean that the interview topics below are covered by the researcher in a different order than listed here. Similarly, the interviewer will use their own words in asking these questions so that they are integrated into the flow of a conversation, and where relevant, will reflect the terminology used by the participant.

In the following guide

- Plain text such as this indicates questions for the researcher to ask
- **[TEXT LIKE THIS] indicates areas to probe on or to be updated depending on the interview**
- **Notes to the researcher/reader appear in this text:**

Introduction

[Purpose of section: The initial section includes a guide for the beginning of the conversation.]

Thank you so much for your willingness to participate in this Energize CT study. Much like the survey you took in May, we are interested in learning about the training/trainings you took with Energize CT. Today, we'd like to dig a bit deeper into your experience in the training and what you have done since the training. This interview should take about 45 minutes.

[56] ILLUME's harassment policy includes the following: *ILLUME's non-harassment policy aims to protect every person in our company from harassment and discrimination, including: • Physical harassment: unwelcome physical contact such as touching, impeding, or blocking movement, or any physical interference with work. • Verbal harassment: disparaging or disrespectful comments, jokes, slurs, innuendoes, teasing, and other sexual talk such as jokes, personal inquiries, persistent and unwanted courting, and derogatory insults. • Nonverbal harassment: suggestive or insulting sounds, obscene gestures, leering, or whistling. • Visual harassment: displays of explicit or offensive calendars, circulation of derogatory content, posters, pictures, drawings, or cartoons that reflect disparagingly upon a class of persons or a particular person. • Sexual harassment: unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature*

We would like to record this interview to help with our notetaking. We will only use the recording to refresh our memories when we are writing our report. Is that ok with you?

Do you have any questions before we start?

[Wait until they consent to press record.]

[IF NO, do not record but take notes.]

[Begin recording] Just to confirm, I have your consent to record this conversation?

Do you have any questions before we begin?

Opening Questions

[Purpose of section: In this section we are warming up to the interviewee and building a rapport. We ask questions to confirm the information that we gathered in the survey, that will be used throughout the guide.]

Alright, first, I'd like to start with some general information about you and your industry. These questions are based on your responses to the survey you took a few weeks ago.

A1. I understand you took the **<TRAINING>**. Is that correct?

   a. Did you take any additional trainings?

A2. According to the survey you work in the **<INDUSTRY>** industry, is that correct? [IF NO INFORMATION ON INDUSTRY] What industry do you work in?

A3. And, are you still employed as a **<TITLE>**? [IF NO INFORMATION ON TITLE] What is your role at your company?

   a. What company do you work for?

A4. About what percent of the work you do is in Connecticut?

   a. And, where are you based out of?

Employment

[Purpose of section: In this section we are learning more about the respondent and their current employment to help us contextualize the data we gather. We will learn about their experience level, their knowledge and time devoted to energy efficiency, and their day-to-day at their job.]

Ok, now we have a few questions about your current employment and role at **<COMPANY>**.

B1. First, how many years of experience do you have working in your industry?

B2. Can you describe an average day at your job? What types of things do you do?

B3. Do you do energy efficiency work?

a. [IF NEEDED] By this I mean, do you or the company you work for build or renovate homes or commercial buildings or otherwise support improvements in energy performance of buildings or products that consume energy?

b. [IF YES]: What specific types of energy efficiency work have you done?

c. About what percent of the work you do is devoted to energy efficiency?

d. Are you a trade ally with the Energize CT program?

Training

[Purpose of section: In this section we learn more about their experiences in the training and their motivations for taking this specific training and the trainings more generally. We will gather feedback for how the trainings can be improved.]

Now I would like to ask a few questions about your experience with the training. But first, I want to learn a little bit more about what you are looking for in a training/you as a learner/trainee.

C1. What would you say is the best class or formal learning experience you've ever taken? [INCLUDING THESE TRAININGS, APPRENTICESHIPS, OR ANY CLASSES YOU'VE TAKEN BEFORE IN SCHOOL, OUTSIDE SCHOOL, ETC.]

a. What made that experience good?

Great, thank you for sharing that.

C2. [IF HEALTH AND SAFETY TRAINING == 1] Are there any other trainings, aside from the Health & Safety training, that you have taken with Energize CT?

[IF YES] We'd like to learn a bit more about the Health & Safety training, but we'd also like to learn about the other trainings you've taken. For these questions, please describe both trainings. [NOTE – FOR ALL QUESTIONS, ASK ABOUT H&S, BUT FOLLOW UP WITH ASKING THE SAME QUESTIONS FOR THE OTHER TRAININGS THEY MAY HAVE TAKEN.]

C3. How did you learn about the course you took?

C4. Why did you decide to take the training?

a. What specific objects were you looking for (skills or specific competencies)

C5. [IF NOT ANSWERED ALREADY]: Were you looking for training in energy efficiency specifically?

A. [IF SOUGHT OUT EE TRAINING] Why were you looking for EE training? [PROBES: DID SOMEONE TELL YOU EE WAS A JOB GROWTH AREA, PERSONAL/PROFESSIONAL INTEREST IN EE, SOMETHING ELSE?]

C6. Before you decided on the course you took, did you consider taking any other training instead?

a. [IF YES]: What other training did you consider? And why did you decide against it?

C7. What new information or skills did you learn in the training?

a. What were the top three things you gained from the training?

C8. What hands-on opportunities were there in the training?

a. What hands-on opportunities would you like to have seen in this training?

C9. Did you develop a plan to implement the things you learned in the course?

C10. Was there a way for you to follow up with instructor or resource materials to help you if you had a question or an issue in implementing the plan?

C11. What topics, if any, would you have liked to have been covered in the training that were not covered?

C12. Was there anything difficult about participating in the program? [PROBES: ENROLLMENT, TIMING, LOCATION, COST]

a. What would have made it easier for you to participate in the training?

Effect of Training

[Purpose of section: In this section we will dig deeper into the effect, if any, the training had on the participants. We will learn more about how the training has impacted their work and their role with energy efficiency. We will also learn more about the respondents who told us their employment changed as a result of the training.]

D1. As a result of the training, how have you changed the way you do your job?

NOTE: IF THE PERSON STATES THAT THEY HAVE NOT MADE ANY CHANGES ADJUST QUESTIONS TO FOCUS ON WHY NOT.

D2. Did the training provide you with skills to do your job better? [HOW COULD THE TRAINING HAVE BETTER PROVIDED YOU WITH SKILLS TO IMPROVE AT YOUR JOB?]

a. In what ways have you used that new information or skills in your work?

D3. Has the training changed the amount of time you spend in your job doing energy-efficiency-related work?

   A. If so, how has it changed? [PROBE FOR TYPES OF EE PROJECTS DONE, NUMBER OF PROJECTS, ETC.]

D4. How did the training affect…[IF WE LEARN MORE ABOUT THEIR POSITION ADJUST QUESTIONS/WORDING] [HOW COULD THE TRAINING HAVE BETTER PREPARED YOU TO TO….SELL/RECOMMEND, CONDUCT INSPECTIONS, INSTALL, ETC.]

   a. The products you sell or recommend? Which products do you now sell or recommend?

   b. The way you conduct inspections? What is different now?

   c. The way you sell? What is different now?

   d. The way that you install products? What is different now?

D5. In what way did this training expand the range of energy efficiency work you are capable of?

   A. What could the trainer or program do to prepare you for the work you do or would like to do? [PROBES: PROVIDE LIST OF POSSIBLE EMPLOYERS, LIST OF PLACES TO RECEIVE TRAINING, ETC.]

D6. [IF CHANGE IN EMPLOYMENT == 1] In what ways did the training help you prepare for a job? [HOW COULD THE TRAINING HAVE BETTER PREPARED YOU FOR A JOB]

   a. What kind of job skills did the training provide you?

   b. Energize CT is interested in quantifying the amount of savings produced by taking the training. How do you think the training has led to savings, if at all?

D7. FOR THOSE WHO DID NOT THINK THE TRAINING IMPACTED THEIR WORK: What recommendations do you have for the trainer to improve the training for future attendees? [PROBE FOR AMOUNT OF MATERIALS PROVIDED, PRESENTATION OF MATERIALS, LEVEL OF DIFFICULTY, LEVEL OF APPLICABILITY, CONTENT]

Future Trainings

[Purpose of section: In this section we will learn if they have pursued any additional trainings and what impact the training had on future professional development efforts.]

E1. What additional training (through EnergizeCT or any other source), if any, have you taken since you completed the training?

E2. What certification examinations, if any, have you taken since then? [PROBES: NATIONAL WORKFORCE READINESS CREDENTIAL, BOC, BUILDING PERFORMANCE INSTITUTE (BPI), ETC.]

E3. What additional training, if any, do you plan to take in the near future? [If not through Energize CT, what organization sponsors the training?]

E4. [IF PLANNING TO TAKE ADDITIONAL TRAININGS] How influential would you say the **<TRAINING>** was in your decision to take other trainings?

Conclusion

[Purpose of section: In this section we will gather feedback on whether the participants would recommend the training and how it can be improved.]

F1. Have you discussed the training with anyone else? If so, what did you say about it? How would you describe it?

F2. Is there anything else you'd like to tell us about the training?

Closing

That's all the questions I have for you. Do you have anything else you'd like to add?

Thank you so much for speaking with us today. We really appreciate you taking the time to share your valuable insights in this industry.

As I stated before we would like to give you a $100 VISA gift card as a thank you for your time. Would you like to receive that gift card by mail or email? [Interviewer record and confirm contact information for sending the incentive.]

Thank you again for your time.

Green STEP Trainer IDI Guide

(This guide informed findings in Chapters 1 and 3 in the main report as well as Appendix C. Workforce Development and Green STEP in this appendix.)

CT-X2022 Green STEP: Instructors In-depth Interview Guide

This document is a discussion guide for researchers to use when conducting in-depth interviews for the Connecticut Educational and Engagement evaluation of EnergizeCT's Education programs. As part of the evaluation of the education program efforts, ILLUME will conduct primary research with Green STEP curriculum instructors. Specifically, we will attempt to conduct up to 3 interviews with Green STEP instructors.

Through this activity we will gather information about their experiences and understand their perceptions of the curriculum content, quality of training and training materials, impacts of the curriculum on student energy saving behaviors, and potential opportunities to enhance programming. Findings from this research will inform this evaluation's recommendations to enhance the delivery of Green STEP curriculum and/or the processes in place to implement it.

OVERVIEW

ILLUME will conduct interviews with Green STEP curriculum instructors with the goal of understanding the program process from their perspective, their program experience in delivering the curriculum to students in the classroom, and any feedback they are able to provide. The interviews will highlight the firsthand experiences of the instructors, while the focus groups will highlight the separate experiences of the technical high school teachers. The goal of the focus groups with technical high school teachers is to understand the experience of the teacher throughout the Green STEP curriculum delivery process and their perspectives on student engagement and energy savings. From these two perspectives, we will have a better overall understanding of student engagement in the curriculum and how the program can further promote sustainable engagement in green career pathways.

About this Guide

The following guides provide outlines of the conversations that the researcher will have with the program instructors. The guides are not scripts for the conversations, rather, they highlight the lines of questioning we anticipate exploring with participants and the topics we will delve into. When conducting in-depth interviews, ILLUME researchers reflect the language of participants and explore the areas of interest and concern to participants. In some cases, this may mean that the interview topics below are covered by the researcher in a different order than listed here. Similarly, the interviewer will use their own words in asking these questions so that they are integrated into the flow of a conversation, and where relevant, will reflect the terminology used by the participants.

Please note that this draft guide contains more questions than can likely be addressed comprehensively in a 30-45-minute interview, the moderator may use these questions as prompts for discussion or targeted questions but may not require responses from all participants. The moderator is well-trained on the goals of the Green STEP Education program, and if time is tight, the moderator will use professional judgment in selecting questions that best address key research questions.

In the following guide:

- Plain text such as this indicates questions for the researcher to ask
- **[TEXT LIKE THIS] indicates areas to probe on or to be updated depending on the interview**
- **Notes to the researcher/reader appear in this text**

Note on Harassment and Demeaning Conduct

ILLUME prioritizes the safety of our research team. We do not condone harassment or conduct that is demeaning or disparaging to our team.[57] Should the researcher feel unsafe or uncomfortable, or that they have been treated in a disrespectful manner, the researcher may choose to end the interview at their discretion. Should this occur, the team member can use the following script to end the conversation:

"Thanks for taking the time to speak with us today. That's all the questions we have for you."

Research Approach

ILLUME will conduct up to 3 in-depth phone or online interviews with Green STEP instructors. We will start recruiting via email and anticipate completing these interviews in August 2021. Respondents will receive a $100 gift card as a reward for their participation.

The interviews will be 30-45-minute semi-structured conversations intended to guide the conversation around the topics that will be covered during the interviews. The research team will ask these questions as they are relevant to the conversation, but the team may not phrase the questions the same way during each stage of the conversation. Table 12 shows which sections of the guide address the primary research questions.

Table 12 Research Question Index

PRIMARY RESEARCH QUESTIONS	GUIDE SECTION
What does the program process look like for instructors to work with Capitol Regional Education Council, schools, and high school teachers?	Program process
What is the overall experience with the curriculum for instructors teaching Green STEP in the classroom?	Curriculum experience
What feedback do instructors have about how to engage students and the resources they need to support the program?	Student engagement

Sample

We will recruit from a census of instructors (6) via email using contact information obtained from Capitol Region Education Council (CREC). ILLUME will screen the instructors for interest, availability, confirmation that they are currently providing Green STEP classroom instruction and other activities (such as science fair), and internet/telephone connectivity (e.g., connection speed high enough for online video chat).

[57] ILLUME's harassment policy includes the following: *ILLUME's non-harassment policy aims to protect every person in our company from harassment and discrimination, including: • Physical harassment: unwelcome physical contact such as touching, impeding, or blocking movement, or any physical interference with work. • Verbal harassment: disparaging or disrespectful comments, jokes, slurs, innuendoes, teasing, and other sexual talk such as jokes, personal inquiries, persistent and unwanted courting, and derogatory insults. • Nonverbal harassment: suggestive or insulting sounds, obscene gestures, leering, or whistling. • Visual harassment: displays of explicit or offensive calendars, circulation of derogatory content, posters, pictures, drawings, or cartoons that reflect disparagingly upon a class of persons or a particular person. • Sexual harassment: unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature*

GREEN STEP INSTRUCTOR IDI GUIDE

Introduction (2 minutes)

The initial section includes a guide for the beginning of the conversation and a few initial questions to establish rapport with the participant.

Thanks so much for taking the time to speak with us today. As a reminder, we have about 45 minutes' worth of topics we'd like to discuss with you, including your Green STEP experience as an instructor and with the students. The information you provide to us will be used to help EnergizeCT make changes to the program that will improve the program for you and teachers, and better engage students in curriculum.

Also, for note taking purposes, I would like to record this interview. All recordings and notes will be kept confidential, and we will not reveal your identity in our final report or any final deliverables. Can I record this interview?

[Wait until they consent to press record.]

[IF NO, do not record but take notes.]

[Begin recording] Just to confirm, I have your consent to record this conversation?

Do you have any questions before we begin?

2.2. Please tell me about yourself and your career.

a) What are your primary job roles and responsibilities (if not exclusively a Green STEP instructor)?

b) How, if at all, has your (current or past) work experience benefited you in your role as a Green STEP instructor?

[PROBE for] …

c) What certifications do you have in the Green STEP topics?

d) What work experience helped prepare you to teach clean energy/energy efficiency concepts to high school students?

e) What work experience helped prepare you to administer certification testing?

Program Process (5 minutes)

Purpose of section: This section asks what the program process looks like for instructors to work with CREC, the technical high schools, and the high school teachers. We will ask about the coordination required for them to be instructors, their staff interactions, and any administrative requirements.

Thanks for that. I'd like to turn now specifically to your responsibilities as a Green STEP instructor.

2.2. What responsibilities/roles do you have as a Green STEP instructor? What does that position entail?

[PROBE for] …

a) How did you learn about becoming an instructor for Green STEP?

b) Which topics do you teach for Green STEP?

2.2. How do you connect to schools? To teachers? What is that process?

[Probe for detail on any steps with CREC]

2.2. Please tell me how much you interact with the following people, and what your typical interactions look like with:

[Probe for type of contact, frequency, pain points, effort, etc.]

a. CREC

b. [if relevant] Curriculum developers

c. High school teachers

d. Students

e. Anyone else?

2.2. What administrative tracking or tasks are there for you during these time periods:

a. Scheduling to teach at a school

b. Arriving at a school

c. After you teach a Green STEP lesson

2.2. Do you have any interactions with students across the four years? We understand that the curriculum is offered every year. Do you typically return to the same classrooms/schools? If so, are there ways in which you tailor the workshops based on the interests of the students in a school?

2.2. From your perspective, what are the goals of the GreenSTEP program?

a. Do you think the program is meeting those goals? Why or why not?

b. How do you know?

2.2. Can you describe your overall experience with delivering Green STEP?

a. In your opinion, what works well in the Green STEP program?

b. What about the Green STEP program could be easier for you?

c. What changes or improvements might you suggest to make the Green STEP program more effective?

Curriculum Experience (10 minutes)

Purpose of section: This section addresses the overall program experience for instructors teaching the Green STEP curriculum in the classroom. We want to understand their opinions on the curriculum itself, what they may or may not modify, and how their experiences vary across schools.

Got it – this is all very helpful. Let's switch now to talk about your experience with the Green STEP curriculum.

2.2. To the best of your knowledge, who created the Green STEP curriculum?

a. How often, if at all, does the curriculum get updated?

b. How, if it all, do instructors inform or support curriculum updates?

c. To what extent are you able to tailor the content or delivery based on the school or class you're working with?

2.2. Could you tell us a bit more about the content of the curriculum you deliver?

a. What are the learning objectives of the course(s) you teach?

b. What topics are covered?

2.2. We understand that there are workshops that take place in each grade. What activities or hands-on practice is involved?

a. How have students responded to those activities?

2.2. [If not already covered] Is Green STEP a state curriculum, meaning required by the state of Connecticut?

2.2. Were you offered any training on teaching the curriculum?

a. Did you attend the training? Why/Why not?

b. What other direction did you receive about the teaching materials you use?

c. What would make the material better for you?

d. What else would help you teach these lessons?

e. If there were additional instruction for you on delivering the curriculum, what do you think would be the most valuable area of focus?

2.2. Are there any supplemental materials you use when presenting the classes?

a. Please tell us a little more about those.

b. Are there any interactive activities involved in these materials?

c. How do your supplemental materials add to the intended curriculum?

2.2. We understand that there are science fairs and job fairs organized as part of Green STEP. Is this correct? Could you tell us a bit more about those events? What involvement do you have with them?

2.2. Could you share the curriculum with us, or screenshots of your materials? It would be very helpful in our evaluation to have a sense for the content of the materials. We understand that they are only available through the Google Classroom site, but wonder if you have access to a copy that you could share with us?

Student Engagement (8 minutes)

Purpose of section: This section asks for feedback from instructors about how to engage students as well as feedback that the instructors may have heard from students. We also ask about the resources they may need to support students in the program.

2.2. In about how many schools have you taught the Green STEP curriculum?

[If >1]

a. In your experience, what differences have you noticed when you teach Green STEP in different schools?

[Probe for specific differences…]

i. In geographic region?

ii. In working with students or schools in underserved, under-resourced, historically marginalized, or distressed communities?

[If = 1]

b. In your own words, could you describe the demographics of the students at the school where you teach Green STEP?

2.2. Which lessons seem to be best received by students? How do you know this? Why do you think this is?

a. If you were training them to be more useful to employers, what would you be teaching them? Why is that?

2.2. What is your perception of the following for the students:

a. Their preparation for Green STEP?

b. Their comprehension?

c. Engagement?

d. Application of the Green STEP lessons?

b. How many Green STEP courses or events must a student attend to be considered a graduate of the Green STEP program? Are courses considered optional or required?

c. What resources or follow-up support is available to participating students? For example, is there a web portal or other personalized engagement platform where students could ask follow-up questions or access information about certifications or jobs?

2.2. What feedback, if any, can you tell us that you've heard about the program…

a. From students?

b. From teachers?

c. From schools?

d. From CREC?

2.2. Do you have any way of gathering feedback from students, teachers, or schools, such as a survey or feedback form? If so, how often do you distribute it?

Workforce Preparedness (8 minutes)

2.2. How do the courses you teach, or does the Green STEP curriculum overall, ready students to start professional careers?

a. What field or industry are Green STEP students best prepared to enter? Does this vary between students who attend some courses versus many or all courses?

2.2. What kinds of jobs might students become qualified for as a result of participating in Green STEP (i.e., entry-level, more advanced)?

2.2. What more might students need before they could qualify for a job (i.e., experience/internships, professional certifications)?

2.2. If you were responsible for curriculum development, what would you teach students to better prepare them to enter the workforce? What might help them become more attractive to potential employers?

2.2. Do you have a sense for how many students go on to complete a certification course or get a job in the efficient building industry?

a. Are there ideas you have for how the program might encourage more students to move into energy efficiency as a career?

2.2. When the students in your classes complete your coursework, what are they best prepared to do?

Overall feedback (3 minutes)

Purpose of section: This section asks for final feedback from the instructors about the program overall.

Finally, I want to ask you for your overall impressions of the program and your suggestions for improvements.

2. What is your perspective on the allocation of the resources that the program devotes to the students over the course of their 4 year high-school career? Do you think there might be better ways the program could allocate resources (e.g., by concentrating lessons closer to graduation, in a single week or month, etc.)? Why or why not?
3. If you could make any changes to the program, other than what we've discussed, what would you do?

a. In your opinion, do you think the program is achieving its overall goal of promoting green energy careers for high school students?

Closing (2 minutes)

That's all the questions I have for you. Do you have anything else you'd like to add?

Thank you so much for speaking with us today. We really appreciate you taking the time to share your valuable insights on Green STEP.

As I stated before we would like to give you a $100 gift card as a thank you for your time. Would you like to receive that gift card by mail or email? [Interviewer record and confirm contact information for sending the incentive.]

Thank you again for your time.

Interview Recruitment Email/Phone Script

INVITE EMAIL

Subject Line: Energize CT needs your feedback on Green STEP

From name: Emily Morris

Sender: research@illumeadvising.com

Reply-to email: emily@illumeadvising.com

Dear [INSTRUCTOR_NAME],

According to our records, you are an instructor in the Green STEP careers program. We are interested in learning about your experiences with Green STEP in the classroom and would like to invite you to participate in an interview with our research team. As a thank you for your time we will give you a $100 gift card. Your feedback will help us improve the program for students and teachers in the future.

Please click on the link below to let us know your availability:

[SURVEY LINK]

Don't miss out on this chance to share your experience!

If you have any questions about the legitimacy of this research, please email research@illumeadvising.com

REMINDER EMAIL

Subject Line: Still interested in providing feedback on Green STEP?

From name: Emily Morris

Sender: research@illumeadvising.com

Reply-to email: emily@illumeadvising.com

Dear [INSTRUCTOR_NAME],

We recently reached out to you about participating in an interview about the Green STEP careers program. We are interested in learning about your experiences with Green STEP in the classroom and how students engage with the curriculum. Your feedback will help us improve the program for students and teachers in the future. We are hoping to get 3 more instructors to participate. Can you help?

Please click on the link below to let us know your availability:

[SURVEY LINK]

As a thank you for your time we will give you a $100 gift card.

Don't miss out on this chance to share your experience!

If you have any questions about the legitimacy of this research, please email research@illumeadvising.com.

CONFIRMATION EMAIL

Subject Line: Confirmation of your Green STEP interview

From name: Emily Morris

Sender: research@illumeadvising.com

Reply-to email: emily@illumeadvising.com

Dear [INSTRUCTOR_NAME],

Thank you for your interest in participating and for providing your availability. We have scheduled your interview for [DATE] and [TIME]. [ILLUME researcher] will be speaking with you.

We'll be discussing the Green STEP program, and so we're interested in hearing about your experiences and feedback.

We will be using Zoom for the interview. You can access the online meeting by clicking the link below, or dialing one of the call-in numbers below.

[Call-in information]

Thank you again for agreeing to participate in this research!

Notes

This section includes space for the interviewer or note taker to reflect on the interview and provide any overarching impressions, comments or questions. In developing the guide, the team may choose to include prompts for these notes to help in the analysis process. For example, highlights, pain points, concerns, challenges, or questions that a customer experienced might be prompts for notes included in this document.

GREEN STEP TEACHER IDI GUIDE

(This guide informed findings in Chapters 1 and 3 in the main report as well as Appendix C. Workforce Development and Green STEP in this appendix.)

CT-X2022 Green STEP: Technical High School Teachers Focus Group Guide

This document is a discussion guide for researchers to use when conducting focus groups for the Connecticut Educational and Engagement evaluation of EnergyCT's Education programs. As part of the evaluation of the education program efforts, ILLUME will conduct primary research in the form of up to 2 focus groups with technical high school teachers. Through this activity we will gather information about their experiences and understand their perceptions of the curriculum content, quality of training and training materials, impacts of the curriculum on student energy saving behaviors, and potential opportunities to enhance programming. Findings from this research will inform this evaluation's recommendations to enhance the delivery of these curricula and/or the processes in place to implement them.

Overview

The goal of the focus groups with technical high school teachers is to understand the experience of the teacher throughout the Green STEP curriculum delivery process and their perspectives on student engagement and energy savings.

About this Guide

The following guide provides an outline of the conversations that the researcher will have during focus groups with high school teachers. The guide is not a script for the focus groups, rather, it highlights the lines of questioning we anticipate exploring with participants and the topics we will delve into. When conducting focus groups, ILLUME researchers reflect the language of participants and explore the areas of interest and concern to participants. In some cases, this may mean that the interview topics below are covered by the researcher in a different order than listed here. Similarly, the interviewer will use their own words in asking these questions so that they are integrated into the flow of a conversation, and where relevant, will reflect the terminology used by the participants.

In the following guide:

- Plain text such as this indicates questions for the researcher to ask
- [TEXT LIKE THIS] indicates areas to probe on or to be updated depending on the interview
- Notes to the researcher/reader appear in this text

Note on Harassment and Demeaning Conduct

ILLUME prioritizes the safety of our research team. We do not condone harassment or conduct that is demeaning or disparaging to our team[58]. Should the researcher feel unsafe or uncomfortable, or that they have been treated in a disrespectful manner, the researcher may choose to end the interview at their discretion. Should this occur, the team member can use the following script to end the conversation:

"Thanks for taking the time to speak with us today. Those are all the questions we have for you."

Research Approach

The ILLUME team will conduct up to two online focus groups with up to 12 technical high school teachers. We will administer this focus group online and recruit via email. We will start recruiting in September 2021. We will field the invitation for two weeks, or until we reach our goal of 20% response rate. Respondents will receive a $75 VISA®gift card as a reward for their participation. The goal of the focus groups will be to understand their awareness and comprehension of the program, experiences with the program, their perceptions of how students engage with the program, and their perceptions of how the program may impact students' behaviors post-graduation.[59]

Specifically, we aim to address the research questions outlined in the table below.

[58] ILLUME's harassment policy includes the following: *ILLUME's non-harassment policy aims to protect every person in our company from harassment and discrimination, including: • Physical harassment: unwelcome physical contact such as touching, impeding or blocking movement, or any physical interference with work. • Verbal harassment: disparaging or disrespectful comments, jokes, slurs, innuendoes, teasing, and other sexual talk such as jokes, personal inquiries, persistent and unwanted courting and derogatory insults. • Nonverbal harassment: suggestive or insulting sounds, obscene gestures, leering, or whistling. • Visual harassment: displays of explicit or offensive calendars, circulation of derogatory content, posters, pictures, drawings, or cartoons that reflect disparagingly upon a class of persons or a particular person. • Sexual harassment: unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature*

[59] Teachers' perceptions of post-graduation student impacts, while indirect, is the best available source for this student impacts given limitations to conducting primary research with the students themselves.

Table 13. Research questions

RESEARCH AREA	RESEARCH QUESTIONS
Teacher Awareness & Comprehension	• How do teachers learn about the program? • What motivates teachers to participate? What requirements are there? • What are teachers' experiences with curriculum training or orientation (if there is one)? • How aware are teachers of CREC or EnergizeCT's roles in why/how they host Green STEP in their classrooms?
Teacher Experiences	• How do teachers who host Green STEP in their classrooms typically experience the program? • What about the process works well and what opportunities exist for EnergizeCT to make the process easier for teachers? • How, if at all, do teacher experiences with Green STEP vary by high school? • How could the program better support teachers?
Teacher Perceptions of Student Engagement	• In what ways to do teachers facilitate student engagement in Green STEP (science fair, certification testing, workshops, etc.)? Which are required and which do students elect? • What are teachers' perceptions of how students typically experience the program? • How could the program better support the students? • Do teachers/schools offer any hands-on training for students? Is there an e-house at the high school? If there was in the past, how well did it work?
Teacher Perceptions of Students' Post-graduation Activities and Energy Savings Behaviors	• What feedback or needs do teachers hear from students related to starting a career, furthering their education, or getting more experience, if any? What other training or other education areas would be productive for students as they develop career-ready skills? • What are teachers' perceptions of how much the Green STEP curriculum influences the way students think about saving energy or take energy savings actions themselves? • How, if at all, do teachers support/keep in touch with former students? What are teachers' suggestions for how EnergizeCT might best track students' careers and continuing education after graduation?

The focus group will last 90 – 120 minutes in total (including technology orientation and intros) and allow for individual "story-telling" and responses, as well as group discussion. Please note that this draft guide contains more questions than can likely be addressed comprehensively in a 90 – 120-minute session. In some cases, the moderator may use these questions as prompts for discussion or targeted questions but may not require responses from all participants. The moderator is well-trained on the goals of the Connecticut Education program specific to Green STEP, and if time is tight, the moderator will use professional judgment in selecting questions that best address key research questions.

Sample

The sampling frame includes all Connecticut technical high school instructors with a publicly available and valid email address found on the technical high school's online faculty lists. Participants will be recruited by email from the list of teachers developed through web scraping the technical high school's publicly available faculty list. We will send the focus group invitation to the entire frame. They will be screened for interest/availability, confirmation that they are currently instructing Green STEP, and internet/telephone connectivity (e.g., connection speed high enough for online video chat). Then, depending on the response rate, we will try to make the group of focus group participants as diverse as possible in terms of representation

across all aspects of the program. Quotas may be constructed based on geography, technical subject, distressed communities, and breadth of offerings to proportionally sample across the program instructors.

The web scraping process to identify Connecticut technical high school instructors and their contact information was limited to publicly available information on the CTECS website, cttech.org. It is further limited to select CTECS programs related to building trades.

Email Outreach

Invitation Email

Subject Line: EnergizeCT needs your feedback on Green STEP

From name: [RESEARCHER NAME]

Sender: research@illumeadvising.com

Reply-to email: [RESEARCHER EMAIL]

Dear [TEACHER_NAME],

I'm reaching out to you on behalf of EnergizeCT and the Green STEP program. According to our records, you teach a class at a CTECS high school that includes one or more Green STEP presentations. We are interested in learning about teachers' experiences with Green STEP in the classroom.

We invite you to participate in an online focus group with our research team and a few other teachers to discuss your experience with all aspects of hosting Green STEP in your classroom. We expect the focus group to last about 1 hour and 45 minutes. As a thank you for your time we will give you a $75 VISA® gift card. Your feedback will help us improve the program for students and teachers in the future.

Please click on the link below to let us know your availability:

[SURVEY SCHEDULER LINK]

Don't miss out on this chance to share your experience!

If you have any questions about this study or the legitimacy of this research, please email Liz Kelley at mailto:liz@illumeadvising.com.

Reminder Email

Subject Line: Last chance to provide feedback on Green STEP

From name: [RESEARCHER NAME]

Sender: research@illumeadvising.com

Reply-to email: [RESEARCHER EMAIL]

Dear [TEACHER_NAME],

We recently reached out to you about participating in an online focus group about your experience with the Green STEP program. We are interested in learning about what it's been like for you to host Green STEP in your classroom and how your students engage with the curriculum.

We're scheduling just 2 focus groups and we'd love your input and perspective. We expect the focus group to

last about 1 hour and 45 minutes. Your feedback will help us improve the program for students and teachers in the future. We are hoping to get [NUMBER] more teachers to participate. Can you help and sign up to participate?

Please click on the link below to let us know your availability:

[SURVEY SCHEDULER LINK]

As a thank you for your time we will give you a $75 VISA gift card.

Don't miss out on this chance to share your experience!

If you have any questions about this study or the legitimacy of this research, please email Liz Kelley at mailto:liz@illumeadvising.com

Eligibility Screener and Scheduler

[The purpose of this questionnaire is to ask high school instructors if they are qualified for the focus group by understanding if they currently deliver Green STEP materials.]

Before scheduling you in a focus group, we would like to ask a few questions to make sure you qualify to be a participant in this study.

1. [Phone only] Do you have time to answer a few short questions for us?
    a. Yes [Continue]
    b. No [Ask if there is a better time to call back. If so, record preferred time. Otherwise thank and terminate.]

2. Do you currently teach, or have you taught within the last year, a course at a Connecticut Technical High School that delivers Green STEP career training?
    a. Yes [Continue]
    b. No [Thank and terminate]

3. In the last two academic years, have you had a Green STEP instructor teach an in-person or virtual lesson to your students?
    a. Yes [Continue]
    b. No [Thank and terminate]

4. Do you have a computer or phone with which you can video chat?
    a. Yes [Continue]
    b. No [Thank and terminate]

5. We are currently scheduling calls for mid-October. We have openings the evening of Wednesday, October 13, and morning of Saturday, October 16. We expect the focus group to last about 1 hour and 45 minutes. Please select the date/time options that work for you.

    Only select a time if you are available for the full session. Without this information, we cannot schedule you into a focus group and you will not be eligible for the $75 gift card.
    a. 7:00 pm to 9:00 pm ET, Wednesday, October 13, 2021
    b. 10:00 am to 12:00 pm ET, Saturday, October 16, 2021

c. None of these times work for me [Thank and terminate]

[CLOSING MESSAGE IF ELIGIBLE] Thank you for taking the time to answer our questions today. We will email you within 3 days to confirm your appointment. Should you have any questions or concerns about the nature or validity of this research please email Liz Kelley at liz@illumeadvising.com. Thank you and have a wonderful day.

[TERMINATION SCRIPT] Thank you very much for your interest in speaking with us. Based on your responses, it appears that you are not eligible at this time. Have a wonderful day.

Confirmation Email

Subject Line: Confirmation of your Green STEP focus group

From name: [RESEARCHER NAME]

Sender: research@illumeadvising.com

Reply-to email: [RESEARCHER EMAIL]

Hello, [TEACHER_NAME]!

You are signed-up to join the online Green STEP focus group for teachers. Your focus group is scheduled for [DATE] at [TIME] EST.

We will use Zoom meetings online to get together virtually. You can join the focus group by clicking the link below or dialing one of the call-in numbers below. We prefer you join with video if possible.

[ZOOM LINK]

Other researchers on my team include [Emily Morris, Kimberly Jaeger Johnson, and Liz Kelley]. You may hear from them or myself on the day of the focus group. Thank you again for agreeing to participate in this research!

[RESEARCHER NAME]

Welcome (5 minutes)

[Purpose of section: The initial section includes a guide for the beginning of the conversation and a few opening questions to establish rapport with the participant.]

Thanks so much for taking the time to speak with us today. As a reminder, the information you provide to us will be used to help EnergizeCT improve the Green STEP program. We have about 1 hour and 45 minutes' worth of topics to discuss. I'll facilitate the discussion by asking questions to the group. You can answer on your own, or I may call on you by name to hear your thoughts. If someone else is speaking, I encourage you to 'raise your hand' to let me know you have something to say as well. [If needed: Give instructions on how to 'raise your hand' in the online meeting platform.]

We have a few ground rules for our discussion:

Safe space. This focus group is a safe space to share your honest thoughts and opinions. We really value your opinion. There are no right or wrong answers.

Be aware. Engage in discussion mindfully by holding space for others' contributions as much as your own.

Be clear. Share your thoughts using clear language and with the intent of sharing information. Share all experiences you have that are relevant to discussion topics.

Be curious. When something is unclear to you, it may be unclear to others. Ask genuine questions to understand discussion topics and the experiences of others.

Also, for notetaking purposes, I would like to record this session. All recordings and notes will be kept confidential, and we will not reveal your identity in our final report or any final deliverables. Please let me know if you do not consent to recording.

[Pause for response, then if all agree, begin recording. If anyone does not consent, then utilize two notetakers.]

Does anyone have any questions before we begin?

[Pause for response, then answer questions as applicable.]

(Thanks for those questions.) Let's get started.

Background (25 minutes)

[The purpose of this section is to understand teachers' backgrounds, whether school goals for students overlap with Green STEP curriculum goals, teacher perceptions of green building and clean energy.]

Introductions

I'd like to go around and invite you to introduce yourselves.

[For all questions, call on participants by name or address questions to the group.]

Let's start with [NAME].

1. Please tell us a bit about yourself and your role at your school.
   [Prompt if needed:]
   a. What is your professional background?
   b. What interests you about being a teacher?
   c. What grades do you teach now? In the past?
   d. What trades or industries do you teach students about now? In the past?

What about you, [Name], could you tell us a bit about yourself?

School Goals

6. In your own words, what are your schools' goals for students?
   a. What does your high school want to help students achieve by the time they graduate? [Probe: skill development, expertise development, certification testing, job readiness, attainment of apprenticeships/internships, preparation for more education, etc.]
   b. [If not addressed] How are graduating students prepared for life after high school?
   c. Is the school achieving its goals?

7. What are some examples of hands-on training or activities that you do in your lessons? [Probe: shop classes, E-houses, apprenticeships, etc.]
   a. [IF NOT ADDRESSED] Is or has there ever been an e-house at the school? How important is an e-house for teaching students lessons about trade work, in your opinion? Why?
   b. [IF NOT ADDRESSED] What hands-on training or activities are currently offered through Green STEP? [Note: lesson delivery changed during the pandemic. Check for pre-pandemic activities and planned future activities if different from current.]

To the group, what thoughts do you have about your school's goals for students?

[If needed] [NAME], we haven't heard from you. What are your thoughts?

Trade Perceptions: Green Building and Clean Energy

We'd like to understand more about the current landscape of the trades and industries you teach students about.

[If needed at any point] I want to acknowledge that there can be a lot of different views about this, and that is ok. Remember that this is a safe space – be aware, be clear, be curious.

8. How has the trade industry you specialize in changed in the last few years?

9. What changes do you foresee coming up in the next few years?
10. How, if at all, has energy efficiency and/or efficient heating and cooling technologies affected <u>your trade/industry</u>?

11. [If not addressed] What are <u>your thoughts</u> on energy efficiency and/or efficient heating and cooling technologies in your trade/industry?

Class Curriculum

12. How, if at all, have energy efficiency and/or efficient heating and cooling technologies affected the lessons you teach in your classroom?
    a. [If not addressed] How much of your existing curriculum involves energy efficiency and/or efficient heating and cooling technologies?

13. Can you describe how you teach energy efficiency and/or efficient heating and cooling technologies currently? [Probe: resources available to teach the topics of weatherization, HVAC, etc.]

14. What resources for teaching energy efficiency and/or efficient heating and cooling technologies would you like to have? For example, if there were no limitations to the tools you could have to teach, what would you like to have? Examples might be better tools to measure heat loss, better ways to demonstrate good insulation practices or how to properly apply foam insulation, etc.

15. How could the Green STEP program better support you in teaching energy efficiency and efficient heating and cooling technologies?

Green STEP Integration Experiences (25 minutes)

[The purpose of this section is to understand how teachers implement the Green STEP program and what feedback teachers have in terms of what works well for them and how working with the program could be easier.]

Teacher participation

16. How do you decide whether to participate in any component of the program? For example, classroom workshops, the science fair, student certification testing (for example, BPI certificate), etc. [Probe: Requirement? Choice?]
    a. [If not addressed] What components of the Green STEP program do you participate in or support?

Integration

Let's discuss how you bring Green STEP into your classroom.

17. Please tell us about how Green STEP fits into your class curriculum.
    a. How do the Green STEP workshops complement other lessons you teach?
    b. [If Green STEP fits into their class curriculum] How do you incorporate Green STEP workshops into your lesson planning?
    c. [If Green STEP does NOT fit into their class curriculum] How do you incorporate Green STEP workshops into your lesson planning?

18. [All] How could Green STEP better integrate with your class curriculum?
    a. What is needed to for Green STEP to integrate well?

Touchpoints

19. How do you work with the Green STEP instructors? The Green STEP consultants from CTECs?

20. How do you talk about Green STEP workshops with your students? What information do you share?
    a. When do you talk about them with your students? Before a workshop? After? Throughout the year?
    b. How do students respond? [Probe: interest level, comments/feedback, etc.]

21. What are the student touchpoints of Green STEP workshops in your classroom? How are you involved in each?
    [Probe for:]
    a. How/when do they learn about it?
    b. What information do they receive and when?
    c. How do they communicate with the Green STEP instructor and when?
    d. What happens after a workshop, if anything?

22. What happens if a student is absent during one of the Green STEP workshops?
    a. Are there any repercussions to the student? To the teacher? To the school?
    b. Do students get a chance to make up the material? Does the school require them to make it up?

Teacher Reflections

23. In your opinion, what are the benefits of the Green STEP program? [Probe: benefits to teachers? Students? Schools? Others?]
    a. What are the drawbacks?

24. What is it like to balance this program with your other responsibilities as a teacher?
    a. What about incorporating Green STEP into your lessons works well?
    b. What could be easier?

25. If you could make any changes to the Green STEP program to make your work as a teacher easier, what would you change?

Student Experiences (10 minutes)

[The purpose of this section is to extract what information we can from the teachers about how the students engage with the Green STEP curriculum compared to standard curriculum. This information can provide some insight into student experiences if we are unable to survey students who participated in the program.]

We've heard a lot of great information about how you engage with the program so far, thank you. Now I'd like hear about your experiences with student engagement in the classroom.

26. In your opinion does Green STEP keep students engaged? Why? [Probe: attention span, lesson comprehension, interaction, responsiveness, interest, completion of assignments, etc.]
27. How does student engagement differ with Green STEP from their engagement with regular classroom lessons, if at all? Why? [Probe: attention span, lesson comprehension, interaction, responsiveness, interest, completion of assignments, etc.]
28. What feedback have you heard from students related to Green STEP?
    a. Does feedback vary between different student groups (age, year, trade interest, other)?

29. How could the Green STEP program better support students, in your opinion?

Post-Graduation Student Impacts (10 minutes)

[The purpose of this section is to understand if there is an impact from the Green STEP program on student career choices or energy savings behaviors. This information will inform quantifiability of the program impact and recommendations on how to quantify the impact in future evaluations.]

We're interested in your thoughts on ways that the education and experience students gain in high school are carried into their lives and/or careers after graduation.

30. How important is Green STEP program in preparing students for a career in in weatherization or HVAC? [Probe for knowledge and experience with green building techniques, clean energy science, and energy efficiency.]

31. What other training or other education areas would be productive for students as they develop career-ready skills? Why is that?

32. What job placement activities does your school help students with?
    a. How successful are these activities? Why?
    b. What other career services would be helpful to students? Who would provide these services?
    c. Have you personally helped connect a student to a job or internship? What was that process like? Who did you work with?

One way to measure the effectiveness of school programs is to keep in touch with graduates and ask how they are using what they learned.

33. In your opinion, what might be the best way for the Green STEP program to keep in touch with students after graduation?

Overall feedback (5 minutes)

1. [This section asks for final feedback from the teachers about the program overall.]

Finally, I want to ask you all for your overall impressions of the program and your suggestions for improvements.

34. [If time allows] How did you first learn about Green STEP?

35. What other thoughts do you have about the Green STEP program?

36. How can the Green STEP program improve, in your opinion?

Closing (5 minutes)

Those are all the questions I have for you. Does anyone have anything else to add?

As I stated before we would like to give you a $75 VISA® gift card as a thank you for your time. You should receive the card electronically by email within the next 3 weeks. For each of you, would you like us to send the card to the same email we used to schedule this call? [If not, record name and preferred email]

Name1: Email1:

Name2: Email2:

Name3: Email3:

Name4: Email4:

Name5: Email5:

Name6: Email6:

If you have any questions about the gift card, or if something about the Green STEP program comes to mind for you later that you'd like to share, you can email me at [interviewer email].

Thank you for your time today. This discussion has been extremely helpful, and I have truly enjoyed getting to know all of you. Have a great day!