WEATHERIZATION TRAINING TOOLKIT

Xcel Energy®

PARTNERS IN ENERGY

Collaborating to Support **Clean Energy Careers**

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Acknowledgment of Sources

The content in this Training Toolkit was adapted from the US Department of Energy (DOE) Weatherization Assistance Program Training, Energy OutWest Weatherization Field Guide, US DOE Retrofit Techniques & Technologies: Air Sealing, and the BPI Technical Standards for Building Analyst Professional, along with insights and feedback from local experts to ensure relevance for Colorado's climate and market needs.

Xcel Energy Clean Energy Careers and the Role of Toolkits

Xcel Energy is supporting organizations that are building the clean energy future with a new workforce development program in Colorado. The Clean Energy Careers program (CEC) is building the skills of job seekers and the existing workforce to better enable beneficial electrification. Launched in the spring of 2025, this program was developed to support Xcel Energy's Clean Heat Plan, which is bringing more than $400 million to Colorado to reduce greenhouse gas emissions. CEC serves Xcel Energy's communities throughout Colorado and, for certain program offerings, is focusing on areas in the High Country, Western Slope, and Southern Colorado, which have had historically less investment in the workforce. CEC offers financial and technical support to workforce development stakeholders in Colorado that are developing strategic partnerships and developing and upskilling the clean energy workforce. The program focuses on growing the occupations of home energy auditors, insulation and air sealing technicians, and clean heat pump technicians.

This toolkit was developed as part of a collaboration between Xcel Energy Clean Energy Careers and workforce development partners across the state with the goal of building a common understanding of best practices in residential weatherization.

Using This Toolkit

This document outlines what is needed to plan and conduct training for residential insulation and air sealing contractors. The training plan outlines approximately 6-8 hours of learning material. The goal of the toolkit is to promote training consistency across the state by providing guidance on:

1. How to coordinate and host a training
2. Key topics and elements that should be included in the training
3. How to collect and use participant feedback to improve future training

This toolkit is not intended to be a comprehensive collection of training materials (e.g. PowerPoint slides, posters, etc.).

Xcel Energy assumes no liability during project implementation. This toolkit is only intended to provide information and general resources to guide experienced trainers.

TRAINING COORDINATION

Training Coordination

Coordinating training involves logistical planning, targeted outreach, and strategies to motivate contractor participation. This section outlines practical steps for selecting a location, inviting participants, and organizing the event timeline.

Timeline for Preparation

Preparing for training can be time-intensive, depending on the frequency that training is offered and if the trainer has conducted similar training in the past. It is recommended to start preparation at least 10 weeks before the training date. A suggested timeline and checklists are provided in Appendix A.

Location

Location selection significantly affects participation, cost, and effectiveness of training. Some considerations when selecting a location are listed below:

- Choose a location near the service territory of your targeted trainees that is also somewhat centrally located
- Locations that are familiar to participants are preferred
- Locations that allow hands-on engagement are preferred

Outreach and Invites

To conduct outreach and send invitations, it is best to use pre-existing channels where possible. These may include a contact list from local organizations, contractor associations, unions, trade school networks, and equipment suppliers.

In the invitation, it is recommended to include a brief business case or justification for an insulation and air sealing focus, topics of the training, logistics (including location and time), and any additional perks for attending (e.g. free food, compensation, or raffle prizes).

How to Get Contractors Interested

There are two primary barriers or disincentives that prevent contractors from being interested in taking a training class. First, participating in trainings require meaningful upfront time investment from contractors. This time commitment can impinge on their time in the field completing work and earning profit. The second barrier is lack of knowledge and/or interest. To address these challenges, collateral and invite language must be crafted carefully to overcome disinterest in or skepticism of the value of the training. A sample invitation is in the Appendix B – Engagement Templates.

Making the Business Case

To help make the business case for attending your training, connect it directly to funding available to support project work. Encourage attendees to become an Xcel Energy Trade Partner and leverage incentives in business development.

Timing

Trainings that are hosted during the busiest time of the year are less likely to attract trainees. Consider scheduling training during off-peak seasons for contractors. Many companies have reported that winter is the least busy season. Be sure to have backup plans for bad weather if winter trainings are scheduled.

TRAINING TOPICS

Training Topics

To ensure all technicians have a common understanding of insulation and air-sealing best practices, the following core topics should be covered in your training. This list is intended to be a guide to help you develop your curriculum rather than be an exhaustive list. The training plan outlines approximately 6-8 hours of learning material that can be tailored to fit the experience level of your audience.

Module 1: Building Science Foundations

Learning Objective: Trainees understand how heat, air, and moisture move through homes and why cold, high-altitude conditions demand a whole-house approach to weatherization.

Estimated Time: 1-1.5 hours

Core knowledge Topics and Cold Climate Considerations

Topic	Description	Cold Climate Considerations
Heat Transfer Basics	Understand conduction, convection, and radiation in residential buildings.	Increased heat loss due to large temperature difference between indoors and outdoors.
Air Leakage	Understand stack effect, wind-driven infiltration, and pressure imbalances.	Stronger stack effect in cold climates increases attic and basement leakage.
Moisture Dynamics	Understand vapor diffusion vs. air-transported moisture.	Cold surfaces increase condensation risk in walls and attics.
Building as a System	Understand interactions between envelope, mechanicals, and occupants.	N/A
Climate Zones	Understand IECC climate zones and design implications for targeted insulation rating and air leakage rates.	Most CO mountain communities are climate zone 6 or 7.

Example Training Aids:

- Stack effect diagrams
- Thermal imaging examples (winter images)
- Smoke pencil demonstrations

Module 2: Pre-Weatherization Assessment & Diagnostics

Learning Objective: Trainees can evaluate a home; identify major health, safety and energy issues; and prioritize weatherization measures appropriately while understanding that health and safety are the highest priority.

Estimated Time: 1.5 hours

Core knowledge Topics and Cold Climate Considerations

Topic	Description	Cold Climate Considerations
Visual Home Assessment	Identify obvious air leakage, insulation gaps, moisture issues.	Be able to identify ice dams, roof staining, frost in attics as common indicators.
Blower Door Basics	Understand how blower doors quantify air leakage.	Understand why cold-weather testing improves diagnostic accuracy.
Pressure Diagnostics	Identify zone pressures and dominant leakage paths.	Describe why basements and attics are dominant drivers in mountain homes.
Combustion Safety Screening	Identify atmospheric appliances and venting risks.	Understand why tightening increases backdrafting risk at altitude.
Health & Safety Red Flags	Recognize mold, asbestos, lead, and moisture hazards. Test combustion appliances for carbon monoxide.	Snowmelt intrusion and frozen plumbing are common issues.
Measure Prioritization	Sequence work: safety first, then air sealing, then insulation, and finally ventilation.	N/A

Example Training Aids:

- Blower door videos
- Photos of common health and safety red flags
- Example of home assessment checklist

Module 3: Air Sealing Strategies & Techniques

Learning Objective: Trainees understand how to locate, prioritize, and properly seal air leakage pathways.

Estimated Time: 1.5 hours

Core knowledge Topics and Cold Climate Considerations

Topic	Description	Cold Climate Considerations
Primary Leakage Sites	Identify top, bottom, and bypass leaks using thermal imaging.	Attic penetrations and rim joists dominate losses.
Materials & Methods	Understand what applications are most appropriate for foams, caulks, gaskets, rigid blocking.	Materials used must remain flexible in cold temps.
Exterior Wall Air Sealing	Describe best practices for air sealing exterior wall penetrations including around windows and doors.	Focus on window and door drafts that the customer notes cause drafts.
Attic Air Sealing	Understand important of air sealing before insulating attic floors and how to ensure wall-to-ceiling connections and all penetrations are sealed.	Be able to describe how to prevent ice dams and attic moisture buildup.
Unconditioned Basements & Crawlspaces	Describe best practices for air sealing rim joists, sill plates, and penetrations.	Understand how cold floors and stack effect worsen leakage in cold climates.
Garage Isolation	Describe why garage isolation has increasing importance with air sealing work.	N/A
Fire Blocking & Safety	Understand how to properly air seal chimney chases while maintaining fire separation requirements.	Increased stack effect in cold climates highlights the importance of chimney sealing.
Verification	Be able to use blower door to confirm infiltration reductions.	N/A

Example Training Aids:

- Attic and basement mockups
- Air sealing detail diagrams
- Before/after blower door data
- Fire-blocking examples

Module 4: Insulation Systems & Moisture Control

Learning Objective: Trainees understand how to properly install insulation that improves comfort and durability without creating moisture problems.

Estimated Time: 1-1.5 hours

Core knowledge Topics and Cold Climate Considerations

Topic	Description	Cold Climate Considerations
Insulation Types	Proper applications for fiberglass, cellulose, foam, and mineral wool and the importance of continuous contact with air barrier.	Dense-pack and blown systems reduce convective loss due to higher stack effect.
R-Values & Performance	Understand nominal vs. effective R-value.	Describe how wind washing and compression performance reduction are amplified by higher stack effect.
Attic Insulation	Describe best insulation techniques for flat ceilings, cathedral ceilings, and knee walls.	Understand the increased importance for venting and air sealing before insulation to manage air flow from increased stack effect.
Wall Insulation	Dense-pack, drill-and-fill considerations.	Altitude and cold weather increase the need for moisture control with cold sheathing.
Basement Insulation	Understand when to insulate walls vs. ceilings and the importance of thermal breaks.	Be able to explain why wall insulation is often the best choice in cold climates for mitigating moisture problems and stack effect and ensure insulation doesn't extend more than 2 ft. below grade.
Moisture & Vapor Control	Understand the role of vapor retarders vs. air barriers.	Air sealing is more important than vapor barriers in very cold climates.

Example Training Aids:

- Insulation samples
- Wall assembly diagrams
- Moisture risk case studies
- Infrared imaging examples

Module 5: Ventilation, Combustion Safety & Quality Control

Learning Objective: Trainees can ensure weatherized homes are safe, healthy, and compliant with ventilation and combustion safety requirements.

Estimated Time: 1-1.5 hours

Core knowledge Topics and Cold Climate Considerations

Topic	Description	Cold Climate Considerations
Combustion Appliance Safety	Understand draft, spillage, and carbon monoxide risks.	Describe how high altitude reduces draft strength.
Mechanical Ventilation	Understand pros and cons of exhaust-only, supply, and balanced systems.	Be able to describe why heat recovery ventilators are preferred in cold climates.
ASHRAE 62.2	Understand whole-house ventilation requirements and building tightness limits.	N/A
Post-Work Testing	Be able to complete combustion safety, blower door, and ventilation verification testing.	Understand why winter testing reveals worst-case conditions.
Client Education	Explain ventilation, controls, and maintenance.	Emphasize moisture control during winter including using bath exhaust fan and avoiding dryer venting indoors.

Example Training Aids:

- Carbon monoxide (CO) monitor demonstrations
- Ventilation system diagrams
- Sample quality control checklists
- Client handout templates

Module 6: Soft Skills, Rebates & Customer Engagement

Learning Objective: Trainees can effectively communicate with customers, leverage rebate programs, and apply best practices for business growth and customer satisfaction.

Estimated Time: 30 minutes

Core knowledge Topics and Cold Climate Considerations

Topic	Description	Cold Climate Considerations
Utility Rebates	Be able to identify rebate eligibility, complete documentation accurately, and explain rebate benefits to customers. Include requirements for contractors. See Appendix C for links to rebates in your area.	N/A
State and Federal Incentives	Understand the landscape of state and federal incentives, including requirements and eligibility criteria.	N/A
Customer Messaging	Understand the most important topics in customer messaging, including the benefits, comfort, and moisture management tips.	Understand best practices in communicating comfort expectations in cold climates.
Business Development	Understand services differentiation and how to build customer trust.	Position cold-climate expertise as a differentiator in marketing.

Example Training Aids:

- Sample rebate forms – See Appendix C to find rebates in your area
- Customer-education handouts (e.g. EPA Improving Your Indoor Environment)

GATHERING FEEDBACK

Gathering Feedback

It is best practice to solicit feedback from participants after every training. This provides information on how to improve future versions of the training.

Trainee Survey

Send out an anonymous survey to every participant within one week after the training has concluded – see sample in Appendix D.

If response rate is of concern, consider incentivizing participation. Gift cards for completion are a common method to encourage participation.

To make the feedback most useful:

1. Look for overall trends rather than isolated comments. Was there a clear consensus on pacing, topic coverage, or session length?
2. Identify actionable changes. If many participants felt the training was too long, decide whether that points to reducing content, improving pace, or breaking the training into modules.
3. Document your adjustments between sessions so future trainers can see what's been tried.

If feedback is scattered or there is no clear consensus, it is acceptable to leave the material as is and monitor feedback over time.

Trainer Self-Reflection

Immediately following the training sit down and complete a self-evaluation of the training to help guide future training adjustments. Questions to ask yourself may include:

1. What went well?
2. Where was there confusion?
3. What could be improved?

This self-reflection can be combined with participant feedback to holistically look at the training and to provide a basis for making training design improvements prior to the next training.

Appendix A – Planning Timeline/Checklist

A suggested timeline for someone new to the process, as well as preparation checklists are provided below.

Timeline

This is a typical timeline for preparing for your training. Early planning can help ensure the training goes smoothly and trade partners have adequate time to plan for attendance.

Timing	Activity	Templates Provided
10 Weeks Before	Identify target audience & service area	NA
9 Weeks Before	Develop invitee list and confirm outreach partners	NA
8 Weeks Before	Select and reserve training location	NA
7 Weeks Before	Draft and finalize outreach material (email, fliers, etc.)	Email Invite (see Appendix B)
6 to 1 Week Before	Conduct outreach and track RSVPs	Flyer (see Appendix B)
1 Week Before	Send reminder to registrants	Reminder email (see Appendix B)
Training Week	Complete training and track attendance	N/A
1 Week after	Collect feedback from attendees and review to inform future trainings	Feedback survey (see Appendix C)

Checklists

When first reviewing the checklists, ensure there is nothing missing for your training. If there are multiple people involved, label who has what responsibility.

Initial Preparation

Mark When Complete	Item	Logistics/Schedule/Notes	Responsibility
☐	Develop invitations		
☐	Develop invitation distribution list		
☐	Distribute invitations		
☐	Develop agenda		
☐	Distribute agenda (either with invitation or at workshop)		
☐	Develop presentation materials (PPT)		
☐	QC any data slides or materials		
☐	Plan any workshop activities		
☐	Plan, order food based on RSVPs		
☐	Send reminder email to registrants 1 week before training		

Training Materials

Mark When Complete	Item	Responsibility
☐	Copies of agenda(s)	
☐	Sign-in sheet	
☐	Sign-in sheet pens/markers	
☐	Name tags or tents	
☐	Building navigation signage	
☐	Masking or clear tape for signs	
☐	Handouts/activity materials	
☐	Flip chart	

Training Materials continued

Mark When Complete	Item	Responsibility
☐	Flip chart markers	
☐	Computer	
☐	Projector	
☐	Screen	
☐	Power strip/extension cord	
☐	Food and food service items	

Reminders During Training

Mark When Complete	Item	Logistics/Notes	Responsibility
☐	Remind folks to complete sign-in sheets (and collect the completed pages).		
☐	Stick to the agenda and allow everyone an opportunity to participate.		
☐	If someone is dominating the conversation, politely ask them to pause and let others participate.		
☐	Take notes to identify any points or questions that require post-training follow-up.		

Training Follow-up

Mark When Complete	Item	Logistics/Notes	Responsibility
☐	Prepare notes or reference materials.		
☐	Follow-up and respond to any questions/requests that emerged during the training that could not be answered in-person.		
☐	Distribute post-training survey, notes or reference materials, and thank you to participants.		

Training Follow-up continued

Mark When Complete	Item	Logistics/Notes	Responsibility
☐	Cross-check sign-in sheets against invitation list to determine overall participation levels and gaps.		
☐	Analyze the results of the post-training survey and make necessary changes to training materials/curriculum/ preparation steps as necessary.		
☐	Ensure that final copies of all materials (PPT, outline, etc.) are saved for future trainings		

Appendix B – Engagement Templates

The following outreach and engagement templates can be customized for your training.

Flyer

Boost Your Skills and Grow Your Business!

Join us for a hands-on Insulation and Air Sealing Training course designed for weatherization professionals. Learn proven strategies to reduce energy loss, prevent moisture problems, and improve home comfort, especially in Colorado's cold, high-altitude climate. This session covers building science fundamentals, diagnostics, air sealing techniques, insulation best practices, and rebate opportunities to help you stand out in the market. Don't miss this chance to sharpen your technical skills and increase your profitability!

Class Details:

Where:

When:

Time:

Instructor:

Cost:

Class Outline:

1. Building Science Foundations
2. Pre-Weatherization Assessment & Diagnostics
3. Air Sealing Strategies & Techniques
4. Insulation Systems & Moisture Control
5. Ventilation, Combustion Safety & Quality Control
6. Soft Skills, Rebates & Customer Engagement

Register At: <website or email>

Email Invitation

The following is sample language you may customize to send as an invite to the training.

Subject: Stay Current with Customer Demand and Attend Weatherization Training with <Organization>

The <X organization> is hosting a <FREE-include if relevant> insulation and air sealing training on <X date> at <X location> <for only $XX – include if not free> and would like to invite you to attend. Please see the attached flyer for more information and reach out with any questions. Feel free to forward this invitation to anyone for whom it may be appropriate. We look forward to seeing you there!

Email Follow-Up

The following is sample language you may customize to send after the training.

Thank you for taking the time to attend our training. We hope you found it valuable. If you have not already, be sure to sign your company up as an Xcel Energy Trade Partner. To help us improve this training moving forward, please take 5-10 minutes to complete this short survey: <link to survey>. Feel free to reach out with any further questions.

Appendix C – Utility Rebate Programs

The information below can be used to identify key community partners with weatherization rebates that should be shared with your class to highlight the business case for home weatherization. Use the map in Figure 3 to identify the electric utility serving the area where your training is located, then use Table 1 to look up relevant utility rebate programs to share with your trainees. Your contractors can use utility rebate programs to lower cost of services and drive business.

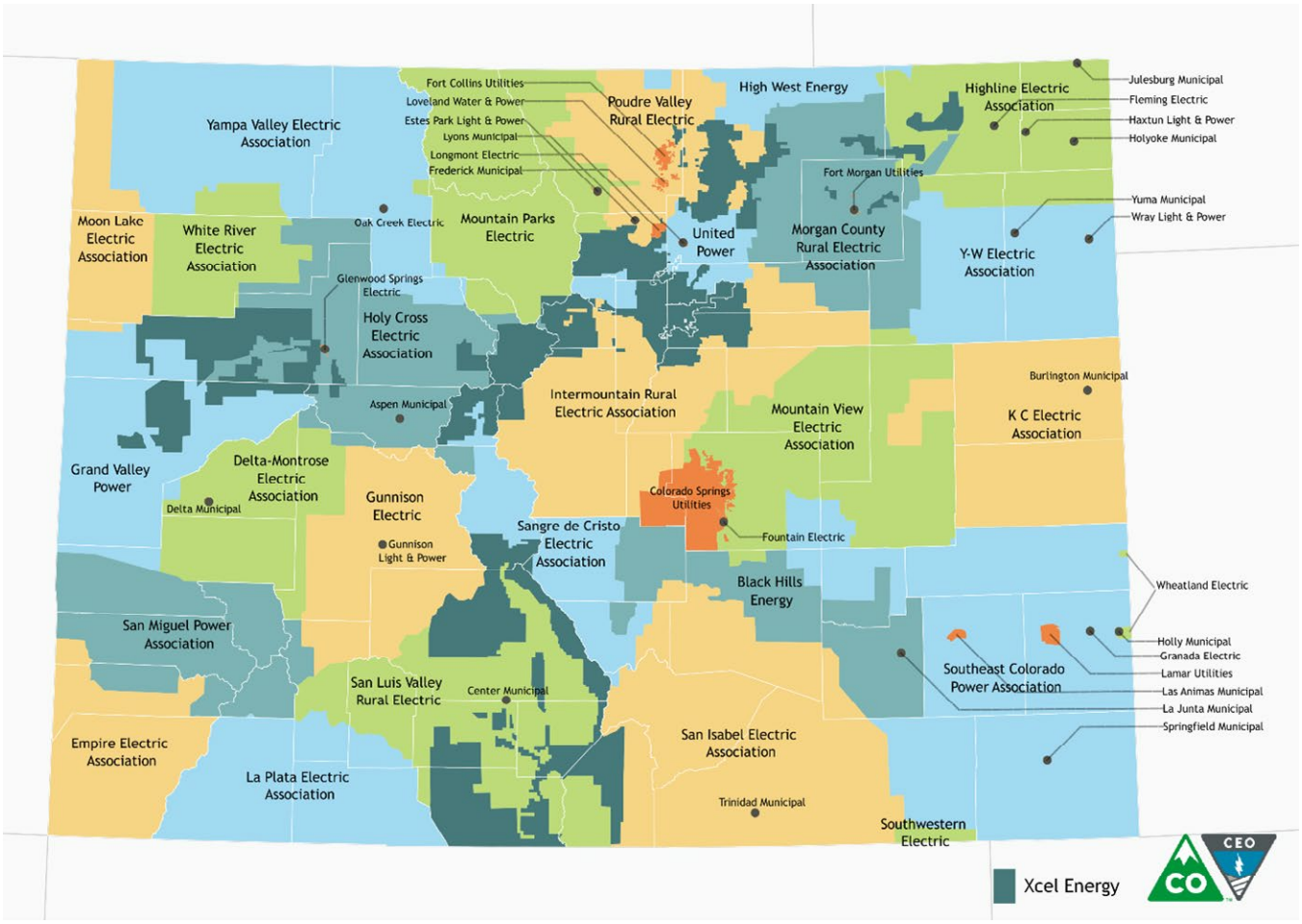

Figure 3: Electric utility service territory in Colorado

Table 1: Utility Weatherization Rebates

Utility Name	Sector	Link to Rebates
Xcel Energy	Residential	https://co.my.xcelenergy.com/s/residential/home-rebates/insulation-air-sealing
Xcel Energy Mountain Energy Project	Grand, Lake, Eagle, & Summit Counties	https://co.my.xcelenergy.com/s/residential/home-rebates/mep-rebates
Colorado Springs Utilities	Residential	https://www.csu.org/rebates-incentives/residential-insulation-air-sealing
Colorado Springs Utilities	Commercial	https://www.csu.org/rebates-incentives/business-insulation
Glenwood Springs Electric	Residential	https://garfieldcleanenergy.org/gwse-rebates/
Gunnison County Electric Association	Residential/ Small Business	https://www.gcea.coop/weatherization-rebates/
City of Gunnison Electric	Residential	https://www.gunnisonco.gov/departments/finance/utility_billing.php
Holy Cross Energy	Residential	https://www.holycross.com/member-programs/energy-efficiency-and-rebates/residential-rebates-2026
Holy Cross Energy	Commercial	https://www.holycross.com/member-programs/energy-efficiency-and-rebates/commercial-multifamily-housing-rebates
Mountain Parks Electric	All	https://mpei.com/rebates
San Isabel Electric	Residential	https://siea.com/rebates/

Appendix D – Sample Feedback Survey

This draft survey can be created in Microsoft Forms or other survey software for easy distribution or a physical copy can be shared during the training.

Thank you for participating in our training. Your feedback will help us shape future trainings and should take no more than 5 minutes.

1. **Overall, how relevant was this training to your work?**
   - ☐ Not relevant ☐ Somewhat ☐ Neutral ☐ Relevant ☐ Very relevant
2. **Do you feel that the training added value to your skillset?**
   - ☐ Yes ☐ No
   - Please explain
3. **Do you feel that the time you invested in the training will increase your ability to make profit** (i.e. was it a worthwhile investment of your time)?
   - ☐ Yes ☐ No
   - Please explain
4. **The topics covered matched my current skill level and experience.**
   - ☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree
5. **Which topics did you find most valuable?** (Check all that apply)
   - ☐ System Design & Sizing …<List all major topics covered in the training>
6. **Were there any topics that were missing or needed more detail?**
   - (Open-ended)
7. **The instructor(s) explained technical topics clearly and effectively.**
   - ☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree
8. **Rate the balance between lecture and hands-on demonstrations.**
   - ☐ Too much lecture ☐ About right ☐ Too much hands-on
9. **How would you rate the pace of the training?**
   - ☐ Too slow ☐ Just right ☐ Too fast
10. **How satisfied were you with the overall logistics (location, timing, materials, registration)?** Rank each on a scale of 1 (least satisfied) to 10 (most satisfied).
    - (ranked list, where each of location, timing, materials, registration is its own row)
11. **How confident are you in applying what you learned on the job?**
    - ☐ Very confident ☐ Confident ☐ Neutral ☐ Somewhat confident ☐ Not confident
12. **Would you recommend this training to other weatherization professionals?**
    - ☐ Yes ☐ No ☐ Maybe
13. **Overall, how satisfied are you with this training?**
    - ☐ Very satisfied ☐ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Very dissatisfied
14. **Any additional comments or suggestions for improvement?**
    - (Open-ended)

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