

**Georgia Environmental Facilities Authority
Weatherization Assistance Program
Peer to Peer Training Manual**

Georgia Environmental Facilities Authority
Weatherization Assistance Program
Peer to Peer Training

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Overview

Training and on-site monitoring is a key component of Georgia's Weatherization Assistance Program. The Peer Training Module offers two basic training tracks: new hire training track and continuous training track. The new hire training track include courses that are mandatory for all new hires within 90 days of their hire date. These courses contain the basics necessary to implement Georgia's Whole House Weatherization approach in a safe manner.

The continuous improvement training track includes courses that allow for more seasoned workers to refine their skills in the areas used in Whole House Weatherization. These courses are generally more specialized and advanced.

This training catalog provides a brief description of each of the weatherization courses offered by Georgia Environmental Facilities Authority(GEFA). The courses described are offered primarily to ensure the technical skills necessary to meet the weatherization program goals of reduced energy consumption, health, safety, and comfort for home occupants.

All courses are open to the Georgia weatherization staff with no registration fees. Each course session will be conducted by GEFA approved peer trainers. Training manuals, tools and lab materials relevant to specific assignments are provided. Each course contains specific competency requirements. Certificates of completion are awarded to students based upon participation, successful completion of written and oral exams and lab exercises. Participants who attend special seminars receive a certificate of attendance.

Continuing Education Standards

The following Continuing Education Standards will be used as the basis for the peer training protocols that will meet the GEFA requirements for core competencies of the Weatherization network in the state of Georgia:

Definitions:

- Competency Based Course – a course where a student must demonstrate specific types of written and hands-on skill through testing protocols established by GEFA.
- Passing Grade – a measure of success whereby a student achieves a minimum grade of 80% in a written test and 80% in a lab test, where applicable.
- Prerequisite Course – a course that must be completed prior to taking another as published by GEFA.
- Course Completion – a student has achieved the following:
 - A minimum passing grade of 80% in both written and lab tests, where applicable
 - 100% attendance for the duration of the course

Certificates:

The three categories of certificates currently offered by GEFA are as follows:

- Course Completion – A certificate awarded based on successful completion of a GEFA competency based course. **Note:** A student may make up missed portions of a course but will not be issued a certificate until the entire course has been completed.
- Workshop Completion: A certificate awarded based upon attendance in a non-competency based GEFA sponsored workshop or seminar.
- Testing Out of a Course: A certificate awarded based on successful completion of a course exam. **Note:** The option of testing out of a course is intended for those individuals who have a considerable amount of field experience in Whole House Weatherization as verified by a sponsoring weatherization sub-grantee.

Notifications:

At the conclusion of a course, workshop or exam GEFA will forward relevant student competencies, grades and certificates to the sub-grantee, who should then distribute them to their participating staff of subcontractors.

Course Prerequisites:

The following GEFA courses for which a certificate of course completion is awarded include topic areas where specific types of competencies must be demonstrated by the student:

New Crew Basics	no required prerequisites
Whole House Weatherization	must have completed New Crew Basics
Lead Safe Weatherization Practices	must have completed New Crew Basics
Mechanical Systems	must have completed Whole House Weatherization
Mobile Home Weatherization	must have completed Whole House Weatherization
House Diagnostics & Inspections	Must have completed Whole House Weatherization

Workshops/Seminars

The following are examples of training sessions developed by GEFA where no testing is involved and a certificate of attendance is awarded:

- In Field Training
- Strategic Planning
- Client Education

Required Courses:

The following courses are required for the weatherization personnel listed below:

New Crew Basics	New Weatherization Crew Workers & Program Coordinators
Lead Safe Work Practices (required by DOE and GEFA)	All crew workers, Auditors & Wx Coordinators
Whole House Weatherization	All Crew Workers, Coordinators and Auditors
Mobile Home Weatherization	All Crew Workers, Coordinators and Auditors
Dense Pack Sidewall Insulation	All Crew Workers
Attic Insulation	All Crew Workers
Client Education	All auditors, Coordinators
Weatherization Assessment	All auditors, Coordinators
Combustion Appliance Safety and Efficiency	All auditors
Mechanical Systems	All auditors
House Diagnostics & Inspections	All crew Workers, auditors, coordinators

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Competency Based Courses

Weatherization Assistance Program Peer Training

Course Title: **New Crew Basics**

Course Description:

This two-day training will provide the participant with an overview of basic building science principles including Weatherization basics, principles of applied building science, pressure diagnostics, and thermal performance. In addition, participants will be taught how to use the Minneapolis Blower Door diagnostics equipment, and the pressure pan. Participants will learn the basic of weatherization practices that will equip them with the skills to fulfill job responsibilities and implement Whole House Weatherization. The training will include a pre- and post-test, classroom instruction, and hands-on work.

Prerequisites:

None

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NEW CREW BASICS COMPETENCY LIST

- Discuss the principles of air movement and how they relate to heat loss in houses.
- Understand some basic building types and some typical air leakage problems associated with each.
- Discuss the function of a blower door as a leak locator and measuring device
- Demonstrate the ability to set up a blower door
- Understand how to define the conditioned space and how to determine the conditioned volume.
- Prepare a building for a blower door test.
- Understand principles of moisture dynamics and indoor air quality issues.
- Demonstrate ability to find and analyze air leakage
- Demonstrate ability to take house and fan pressure readings
- Understand the factors involved in determining the minimum ventilation rate
- Understand how to prioritize an air sealing strategy
- Be aware of the various air sealing techniques and appropriate materials
- Introduce the causes of house pressure imbalances as a function of the interacting relationships of the house shell and its mechanical systems
- Be able to interpret values derived from a blower door test
- Be aware of Georgia Weatherization Field Standards and Field Guide

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NEW CREW BASICS

Day 1	1 p.m.- 1:30 p.m.	General Introduction <ul style="list-style-type: none">• Introduction to Key Personnel• Expectations of crews that are part of the GA Weatherization Team• Whole House Weatherization basics and introduction to priority list
	1:30-2:00 PM	Written Pre-test
	2:00-3:15 PM	Heat Movement <ul style="list-style-type: none">• General air and heat movement principles• Know factors that affect heat loss in buildings• Define the thermal envelope of a building• Conditioned vs. unconditioned space
	3:15-5:00 PM	Framing, Insulation, and Critical Junction Points <ul style="list-style-type: none">• Types of framing• Framing components• Insulation materials and installation techniques• R-values in insulation• Hazards involved with insulation• Critical Junction Points
Day 2	8:00-8:30 AM	Review
	8:30-10:00 AM	Venting – how, why, where (including a hands-on lab)
	10:00-10:15 AM	Break
	10:15AM-12:00 PM	Sidewalls <ul style="list-style-type: none">• inspecting and detecting• 1 hole and 2 – and why• inside or outside
	12:00-1:00 PM	Lunch

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NEW CREW BASICS

	1:00-2:45 PM	Air leakage – what it is <ul style="list-style-type: none">• Identifying primary and intermediate zones• Locating and assessing air barriers – what makes a good air barrier• Blower door testing• Closure targets and minimum ventilation rate• Basic instructions• How to use the blower door to guide weatherization measures• Supplementing the blower door with zonal pressures and pressure pan diagnostics
	2:45-3:00 PM	Break
	3:00-5:00 PM	Air leakage lab (hands-on in the modules) <ul style="list-style-type: none">• House of Pressure Demonstrations• Using the blower door• Using a pressure pan• Completing zonal pressures
Day 3	8:00-8:30 AM	Review
	8:30-10:00 AM	Safety and You <ul style="list-style-type: none">• DOE regulations on mold, lead, and other hazards – an overview.• MSDS – where to find and how to use• OSHA standards in the workplace• Activity – where are the hazards?
	10:00-10:30 AM	Tool Upkeep, Paperwork, and you <ul style="list-style-type: none">• OSHA standards on personal protective equipment• Proper use and storage of tools• Documentation requirements
	10:30-10:45 AM	Break
	10:45-12:00 PM	Post-test (hands on and written) <ul style="list-style-type: none">• Must be able to set up and run a blower door.• Must be able to correctly determine the closure target and MVR.

- Must be able to identify critical junction points in classroom setup
- Must pass written post-test.

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Course Title: **Lead Safe Work Practices**

Course Description:

This course is designed to make weatherization workers aware of the hazards of exposure to lead based paint both to themselves and their clients. Methods, techniques, personal protection, engineering controls and proper clean up procedures while working in homes that contain lead based paint will be covered.

Prerequisites:

None

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**LEAD SAFE WORK PRACTICES
COMPETENCY LIST**

- Become aware of the history of lead based paint
- Be aware of the health effects of lead exposure
- Be aware of Lead based Paint Regulations.
- Know how to implement Lead Safe Weatherization Practices for a variety of Weatherization activities
- Know what kinds of controls need to be in place before weatherization work may begin.
- Be aware of clearance test protocols.
- Become familiar with personal protection requirements.
- Know what kinds of tools are acceptable and recommended.
- Know how to contain lead dust on the work site.
- Be aware of proper clean up and disposal techniques.

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LEAD SAFE WORK PRACTICES

AGENDA

- Day 1** 8:00 a.m. Registration and Introductions
- 8:15 a.m. Video -
- 8:30 a.m. Module 1: Why should I Be Concerned About Lead-Contaminated Dust?
- 9:45 a.m. **Break**
- 10:00 a.m. Module 2: Talking to Clients & Planning Work
- 11:00 a.m. Module 3: Set-up Your Work Space to Contain Lead-Dust
- 12:00 p.m. **Lunch**
- 1:00 p.m. Module 4: Safe Work Practices
- 2:30 p.m. Module 5: Clean-up and Check Your Work
- 3:30 p.m. **Break**
- 3:45 p.m. Review
- 4:15 p.m. Exam and Evaluation

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Course Title: **Assessment Training**

Course Description

This training will introduce the participant to inspection and documentation procedures in both site-built and manufactured housing (mobile homes). Major emphasis is directed to the importance of proper bypass sealing and effective insulation techniques. Heat and moisture movement and pressures affecting a house will be thoroughly explained. The course incorporates the use of diagnostic tools and techniques to emphasize a “whole house” approach to weatherization measures. Prospective attendees need to have appropriate math background, and a general understanding of the goals of the Weatherization Assistance Program.

Prerequisites

In order to participate in this training, a crew member must have math ability to calculate perimeter, area, and volume measurements; to convert square inches to square feet. Blower Door Use.

Course Objectives

- At the conclusion of training, the participant will be able to demonstrate proficiency in inspection procedures by:
 - Exhibiting a working knowledge of heat and moisture movement theory.
 - Demonstrating a knowledge of heat and moisture movement theory.
 - Identifying and describing appropriate retrofit procedures as identified in Georgia’s Priority List.
 - Completing a work order in a controlled environment, with special emphasis on thorough bypass sealing, proper preparation and insulation techniques.
 - Completing the initial inspection portion of a Data Collection Form in a controlled environment.
 - Setting up, operating and gathering information efficiently using diagnostic equipment.
 - Analyzing and utilizing information collected with diagnostic equipment.
 - Following proper health and safety procedures.

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ASSESSMENT TRAINING

AGENDA

Day One

8:30 a.m.—9:00 a.m.	Introduction, Pre-Test
9:00 a.m.—9:30 a.m.	Heat Transfer, Moisture, Air Pressure Effects
9:30 a.m.—10:15 a.m.	Walk Thru-Visual Inspection
10:15 a.m.—11:00 a.m.	Health & Safety Inspection
11:00 a.m.—12:00 p.m.	Digital Gauge Usage
12:00 p.m.—1:00 p.m.	Lunch
1:00 p.m.—1:30 p.m.	Measurements/CFM Target/Volume Calculation
1:30 p.m.—5:00 p.m.	Infield— <i>(form small groups)</i> Demonstration of Inspection Tools and Procedure <i>(Blower Door Test, Worst Case Draft, Zone Diagnostics, Pressure Pan Testing, Exhaust Flow Metering)</i>

Day Two

8:30 a.m.— 9:00 a.m.	Pre-Test Review, Q & A
9:00 a.m. — 9:30 a.m.	Georgia Weatherization Priority List
9:30 a.m.— 11:30 a.m.	Data Collection Form Overview
11:30 a.m.—12:30 p.m.	Lunch
12:30 p.m.—5:00 p.m.	Infield—Data Collection Form with Participant Visual Inspection and Diagnostic Testing (graded, small groups, real house).

Day Three

8:30 a.m.—9:45 a.m.	Review, Q & A
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9:45 a.m.—11:45 a.m.	Data Collection Post-test (Information Supplied)
11:45 a.m.—12:30 p.m.	Lunch
12:30 p.m.—2:00 p.m.	Inspection Tools & Procedure Post Test

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Course Title: **Mobile Home Weatherization**

Course Description:

Participants will learn theory and application of weatherization principles applied to mobile homes. Areas covered include Heating Systems, Duct Systems, Air Sealing, Insulation, ventilation, specific mobile home construction details, Tools and Equipment. The course will include hands-on training at a Mobile Home in which participants can practice techniques learned in the classroom. There will be a written pretest and a written/hands on post test.

Prerequisites: Whole House Weatherization

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**MOBILE HOME WEATHERIZATION
COURSE COMPETENCY LIST**

- Understand the basic construction of a mobile home
- Understand the basics of mobile home heating systems
- Demonstrate an understanding of mobile home duct sealing
- Demonstrate an understanding of air sealing techniques for mobile homes
- Demonstrate an understanding of belly repair techniques for mobile homes
- Demonstrate an understanding of insulation techniques for mobile homes
- Demonstrate an understanding of blower door and pressure diagnostics for mobile homes

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MOBILE HOME WEATHERIZATION

AGENDA

Day 1	9:00-9:45 AM	Introduction and overview of training. Goals for training during the week. Pre-test
	9:45-10:30	Mobile Home Basics: Mobile Home Construction Types of Mobile Home Framing Priority List for Mobile Homes
	10:30-10:45	Break
	10:45-12:00	Mobile Home Assessments: Health and Safety Testing Blower Door Testing Pressure Pan Testing Heating System Diagnostics MHEA
	12:00-1:00 PM	Lunch (provided)
	1:00-2:30	Air Leakage, Driving Forces, Air Sealing in Mobile Homes
	2:30-2:45	Break
	2:45-4:45	Mobile Home Measures and Techniques: Ceilings/Bellies/Walls
	4:45-5:00	Review
	5:00	Dinner (on your own)

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MOBILE HOME WEATHERIZATION

AGENDA

Day 2	8:00-10:00	Travel to Training Area Assessment/Visual Inspection/MHEA Input for Mobile Home
	10:00-10:15	Break
	1:00-2:15	Group 1: Infiltration Reduction and Air Sealing the Building Shell Group 2: Duct sealing and house pressure reduction activities
	12:15-2:30	Break
	2:30-4:30	Furnace tune-up and cleaning. Baseline electricity reduction/Water heating package.
	4:30-5:00 PM	Review Clean up and travel to hotel.
	5:00 PM	Dinner (on your own)

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MOBILE HOME WEATHERIZATION

AGENDA

Day 3	8:00-10:00	Travel to Training Area Group 1: Floor insulation and associated air sealing Group 2: Roof Cavity Insulation (from side)
	10:00-10:15	Break
	10:15-12:00	Group 1: Roof Cavity Insulation (from side) Group 2: Floor Cavity Insulation
	12:00-1:00	Lunch (Provided)
	1:00-2:15	Group 1: Roof Cavity Insulation (from top) Group 2: Roof Cavity Insulation (peel back top)
	2:15-2:30	Break
	2:30-4:30	Group 1: Roof Cavity Insulation (peel back top) Group 2: Roof Cavity Insulation (from top)
	4:30-5:00 PM	Review Clean up and travel to hotel.
	5:00 PM	Dinner (on your own)

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MOBILE HOME WEATHERIZATION

AGENDA

Day 4	9:00-9:30 AM	Review of Work
	9:30-10:30	Post-test/Departure

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Course Title: **Whole House Weatherization**

Course Description:

This course is designed as a refresher for weatherization coordinators and crew members who participated in the Spring, 2005 Hot Climate Training. The course will cover the current testing and weatherization techniques, such as basic Pressure Diagnostics, to include the use of digital monometers with blower doors, zonal pressure, combustion appliance zones and worst-case draft. Instruction will be conducted through classroom and hands-on in field work situations pertaining to the Georgia Weatherization Program. There will be a written/hands on post test.

Prerequisites: New Crew Basics

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WHOLE HOUSE WEATHERIZATION COMPETENCY LIST

General

- Heat Movement
- Air Leakage
- Driving Forces
- Priority Measures
- Baseload Measures
- Client Education

Diagnostics and Inspections

- Field Assessments
- Heating System Inspection
- Cook Stove Inspection
- Water Heater Inspection
- Blower Door testing
- Pressure Diagnostics
- Refrigerator Testing
- Gas Leaks, A/C, Sidewall and Crawlspace Inspection
- NEAT
- Assessment Form and Process

Attic

- Insulation Equipment
- Attic Preparation
- Creating Attic Access
- Bypass Sealing
- Attic Insulation

Sidewall and Home

- Insulation Equipment
- Dense Pack Sidewall Insulation
- Install Gas Heater
- Kitchen & Bath Exhaust
- Windows

Crawlspace/Basement

- Air sealing
- Bypass Sealing
- Water Heater Wrap

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Whole House Weatherization

Day 1	1:00-1:30pm	Introduction and Overview of Training Whole House Approach to weatherization
	1:30-4:00	Heating Systems Inspection (Diagnostic) Cook Stove Inspection Water Heater Inspection Pressure Diagnostics/Zone Pressures, Critical Junction Points and Pressure Pan CO & Draft Testing Demonstration
	4:00pm	Hotel Check-in
Day 2	8:00-9:00	Georgia Priority List
	9:00-10:15	Heat Movement, Air Leakage, Driving Forces Blower Door testing
	10:15-10:30	Break
	10:30-11:00	Blower Door & Pressure Pan Demonstration
	11:00-12:00	Air Sealing-Crawl Space
	12:00-1:00	Lunch (Provided)
	1:00-2:00	Attic Insulation
	2:00-2:15	Break
	2:15-2:45	Demonstration (Crawl Space & Attic Bypass Sealing/2-Part foam)
	2:45-3:45	Dense Pack Sidewall Insulation
3:45-4:00	Demonstration (Sidewall prop; Insulation Equipment-operation/maintenance)	

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Whole House Weatherization

Day 3	8:00-8:15	Load up and travel to training house	
	8:30-9:30	Field Assessment (In-Field)	
	9:30-10:30	Blower Door Diagnostic	
	10:30-12:00	Group 1	Attic Inspection
		Group 2	Water Heater and Cook Stove
		Group 3	Gas Leaks, Heating System, A/C
		Group 4	Sidewall and Crawlspace Inspection (equipment setup, siding removal, inside/outside blows)
		Reverse groups and Review Assessment Form as go	
		Finish up Group inspections/testing from morning	
		Drill sidewall holes: Sidewall Demonstration	
12:00-1:00	Lunch (On-Site)		
1:00-5:00	Begin Sidewall, Attic Door, Air Conditioner, Water Heater		
Day 4	8:00-8:30	Review	
	9:00-12:00	Sidewall Insulation, Attic Prep, Bypass Sealing, Attic Insulation, Kitchen and Bath Exhaust, Windows A/C's etc.	
	12:00-12:30	Lunch (On-Site)	
	12:30-5:00	Continue Working on House, Test out, Cleanup	

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Whole House Weatherization

Day 5	8:00-12:00	Review work done at house, test results NEAT, Priority Measures, Baseload and Client Education, Finish and Test out House if still needed Post-test & Wrap UP
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Course Title: **Dense-pack Sidewall Insulation**

Course Description:

This course will expose weatherization workers to high density sidewall procedures using this method, as well as demonstrating methods for removing and re-installing various types of siding. This course is mostly hands-on activities which will allow the participants the maximum exposure to the techniques in a short amount of time. An introductory morning session to that familiarizes the participant with program standards, and includes a demonstration of techniques used, safety, and tool requirements

Prerequisites:

Whole House Weatherization

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**DENSE-PACK SIDEWALL INSULATION
COURSE COMPETENCY LIST**

- Identify the types and properties of insulation
- Determine if and when ventilation should be added
- Working with asbestos;
- Insulation health and safety issues;
- Insulating knee walls, and other difficult areas;
- Identify water pipes and electrical wiring

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DENSE-PACK SIDEWALL INSULATION

AGENDA

Day 1 9:00 a.m.

Introduction
Goals, Objectives

Insulation Principles

- R-Value as a function of density
- Open Blow vs. Closed Blow
- Importance of Air Sealing
- Coverage Charts

Principles of Dense Pack (closed cavity fill) Insulation

- Housing types
- Major building components
- Defining the thermal envelope
- Initial Assessment
 - Existing Insulation
 - Moisture Problems
 - Structural Considerations
 - HVAC
 - Potential Spill Locations

Access

- Siding removal
- Interior access
- Special Situations

Overview of techniques

- Exterior 2 hole method
- Exterior 1 hole tube full method
- Interior tube fill and finishing

12:00 p.m.

Lunch

1:00 p.m.

Estimating Material
Quality control

Safety

- Worker safety
- Electrical hazards
- Dust and lead hazards

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DENSE PACK SIDEWALL INSULATION

AGENDA

Insulation Demonstration

- Specialized Tools
- Insulation machines and maintenance
- Siding removal
- Lab demonstration of sidewall insulation

4:00 p.m.

Questions/Answers and End