Course Descriptions

The Illinois Weatherization Training and Certification Program

Weatherization Basics - 24 Hours
This five-day course provides the basic foundations and principles for the Illinois Home Weatherization Assistance Program (IHWAP). Class details will include the history and origin of the Weatherization program, funding streams and budgets, federal/state rules and guidance, work standards, and the future of Weatherization. An extensive overview will be given of each of the Training and Certification Program (TCP) classes. The role of the Assessor/Energy Auditor, Final Inspector, Weatherization Coordinator, and State and Federal monitors will be examined in detail. This introductory TCP class will set the stage for the other classes that that will follow in the next few weeks and months. A variety of interactive exercises, quizzes, role playing, and a final examination will take place during the class.

Heat Transfer - 24 Hours
This five-day course provides the basic principles and characteristics of energy and the way energy is used. The course focus is on the variety of ways heat transfers through the building envelope in the residential setting. Heat transfer course provides the underlying principles used to determine how and where energy can be used more efficiently in buildings. Strategies to pinpoint energy conservation are outlined in this course.

Building Fundamentals - 24 Hours
This five-day course concentrates on fundamentals of building construction. Explanations of building components such as window, door, roof, walls, attic, floor, and foundation systems are provided. Basic construction measuring and estimating methods are taught. Heat transfer through the various elements of the building to define the thermal envelope and pressure plane is explained. Opportunities for saving energy are identified.

Introduction to Building Diagnostics - 24 Hours
This five-day course explains the use of building diagnostic tools such as the blower door and manometer to determine the leakiness of residential buildings. The dynamics of how the building components interact such as the furnace and attic systems are defined. The information gained from the diagnostics tools is used to determine the opportunities to save energy.

Infrared Thermography - 12 Hours
This two-day course explains the use of infrared thermal imagining with diagnostic tools to improve the assessment of the leakage and insulation opportunities in homes. Explanations on
how to balance air sealing with ventilation and improve the thermal performance of the building will be covered.

Mid-Course Field Session - 12 Hours
This two-day course is designed to incorporate all knowledge obtained through the previous Heat Transfer, Building Fundamentals, Building Diagnostics, and Infrared Thermography courses to place practical in field applications from knowledge learned. In field use of diagnostic tools and equipment to determine strategies to pinpoint energy conservation and opportunities for saving energy through various elements of building components and determination of the thermal envelope and pressure planes.

Introduction to Heating Systems - 24 Hours
This five-day course teaches the basic combustion principles for primary heating systems. Instructions on how to analyze the operation of each heating system are provided. Instructions on the proper installation of the gas supply system are provided. The course will include hands-on laboratory sessions dealing with different types of furnaces.

Advanced Heating Systems - 24 Hours
This five-day course builds upon the knowledge from student’s field experience and the introduction to heating systems course. Participants will be taught how to determine the effectiveness of the distribution system. Understanding how the furnace controls affect the efficiency and comfort in the home will also be taught. Using the furnace audit tools as a way to trouble shoot equipment problems is included in the course.

Air-Conditioning/Heat Pumps - 24 Hours
This five-day course will expand on newer HVAC system options including; basic operation of heat pump systems, components, and operating efficiency. Operating costs between all electric, heat pumps and other systems will be compared. Different types of heat pump systems, including split systems, mini-splits, packed units and water source heat pumps. Different types of air conditioning and efficiency thereof will be explained.

Health & Safety, Indoor Pollutants, Lead-safe Weatherization - 18 Hours
This three-day course is a basic introduction to common hazards in the home. The primary objective is to provide the participant with an understanding of these hazards and some simple strategies to mitigate pollutants. The course will cover the following topics: (a) mold and biological contaminants; (b) moisture assessment in housing; (c) combustion safety; (d) asbestos in housing; (e) volatile organic compounds (VOC’s) and other chemicals; (f) pests and pesticides; (g) review of ventilation; (h) air exchange rates; (i) Lead safe weatherization practices.

Proficiency Test - 6 Hours
Once all of the core certification classes have been successfully completed, the students will be required to complete a proficiency test that covers elements from each class. During this one-
day session, the instructors will provide an overview of the subjects, and then administer a comprehensive exam on the following courses Health & Safety, Indoor Pollutants and Lead-safe Weatherization, Building Fundamentals, Heat Transfer, Introduction to Heating Systems, Advanced Heating Systems, Optional HVAC Systems and Introduction to Diagnostics, Mid Course Field Session and Weatherization 101.

**Weatherization Building Assessment, In-Field - 18 Hours**

This three-day class is designed to provide feedback to the assessor/final inspector and weatherization coordinator who have recently been certified. The class will provide an opportunity for the student to perform a building energy audit using the Weatherworks system with the instructor individually and as a whole class. The objective of the class is to share best practices and techniques/technologies among the students from individual agencies and encourage field efficiencies in the building assessment process.

**Quality Control - 24 hours**

This five-day course is designed for participants who have successfully completed a certified Energy Auditor program. The goals for this course are to teach the basic principles and techniques of proper Weatherization Quality Control Inspections. This course will cover the Quality Control Inspection process as a check and balance system in the areas of In-Progress Inspections, and Final Quality Inspections of the Weatherization work.

**Continuing Education**

**Program Updates - 24 Hours**

This five-day course will provide assessors, final inspectors, state monitors, agency coordinators with an overview of up-to-date policies, procedures as it relates the Illinois Home Weatherization Assistance Program. Key overview content will include: Building Diagnostics, Health & Safety, and HVAC related updates and topics.

**ASHRAE 62.2 - 12 Hours**

This two-day course introduces the attendee to ASHRAE Standard 62.2 on ventilation. It includes a history of ventilation standards, discusses contaminants of interest, why air sealing and ventilation is important, and how to implement the requirements of the standard including determining flow requirements and other specifications. Implementation options are explored. Combustion safety is also emphasized.

**Workshops:**

**Housing types and air sealing - 6 Hours**

The audience for this course is assessors, final inspectors and contractors. This one-day workshop will provide a hands-on approach to air sealing using weatherization diagnostics tools (blower door, manometer, and pressure pans). Typical Energy Profiles” will be used to
identify building faults in construction, e.g., the workshop will demonstrate a variety of methods and techniques for air sealing. Demonstrations on the appropriate air sealing materials to provide the most efficient installation for a variety of building sections will be provided.

**Basic Introduction to Electricity for Weatherization - 12 Hours**
The audience for this 2-day course is assessors and final inspectors. This workshop will provide the basic for understanding electricity in residential housing and is an introductory class to electricity. The course will provide participants with fundamentals of electricity and an introduction in how to recognize questionable and dangerous systems or system elements in low-income housing stock. The course will describe the basics of how electricity works and the types of systems that are deployed (e.g., knob and tube wiring, etc.).

**Mechanical Systems Troubleshooting and Installing 90% Furnaces - 12 Hours**
The intended audience for this two-day workshop is the Weatherization HVAC contractors/field technicians and/or local agency assessors. The workshop will emphasize the proper method for installing 90% Efficiency Furnaces and troubleshooting. The following topics will be covered: installing condensate pumps, venting and vent termination requirements – distances and the one pipe bazooka, blower operation, air distribution fundamentals, energy saving strategies, furnace sizing, furnace installation do’s and don’ts, furnace tune-up requirements for 90% furnaces, combustion efficiency testing and electrical requirements and for new furnace installations. Participants will also receive hands-on training in a state-of-the-art Mobile HVAC Training Classroom. The workshops are one-day sessions held throughout the state at sites convenient to bring staff from three to four agencies to the mobile training facility. This workshop is a program mandatory requirement.

**Lead-Safe Weatherization - 6 Hours**
This one-day course provides the participants with a primer on the hazards of lead-based paint. The audience for this workshop is for all staff working in the weatherization program that has not been trained in Lead-safe Weatherization. While the Weatherization Program is not a renovation or remodeling program, there are instances where painted surfaces are disturbed in the course of providing appropriate Weatherization retrofits. When proper work procedures are performed in a safe manner those procedures will limit and minimize the creation of dust when a painted surface is disturbed. The course will present these techniques and strategies. Course materials are based on NETA’s (National Environmental Training Association) Lead-Based Paint Maintenance Training course, HUD’s Lead-based Paint Training Program for Remodelers and Renovators and on previous lead-based paint courses prepared by Indoor Climate Research & Training.

**Mobile Home Weatherization - 6 Hours**
This one-day course provides participants with a working knowledge of mobile and modular home building dynamics. The audience for this workshop is contractor’s staff and Local Indoor Climate Research & Training  Training Prog App-IREC ISPQ Accred  Section 6.1.7c att
Administering Agency Assessor and Final Inspector staff. The course will provide a better understanding of mobile/modular home building components, effective retrofits and weatherization measure with the best savings to investment ratio’s to reduce the energy burden for weatherization clientele.

**Contractor Training**

**Architectural Certification Training - 32 Hours**
This five-day course covers the following topics: weatherization program overview and process, residential energy use and energy measurements, basic heat transfer and heat loss, construction fundamentals of typical building types in Illinois, diagnostics for residential energy savings and safety testing, basic HVAC systems, energy savings and health, indoor air quality, ventilation strategies, weatherization performance – the house as a system, air sealing, insulation, architectural elements – window, door, roofing, wall, HVAC, basement, crawlspace systems, and weatherization standards.

**HVAC Certification Training - 32 Hours**
This five-day course covers the following topics: weatherization program overview and process, residential energy use and energy measurements, basic heat loss and heat transfer, weatherization safety testing procedures and protocols, basic and advanced heating systems standards, optional heating and air conditioning systems, and venting standards.

**Insulation Best Practices and Certification, In Field - 8 Hours**
The audience for this one-day course is experienced assessors, final inspectors and contractors. This workshop will provide instructions on the proper methods for installing insulation in sidewalls and attics using best practices that have become the industry standard. The hallmark of some of these best practices is targeted air sealing in attic spaces before insulating, ensuring air barriers and pressure boundaries are lined up together, insulating & sealing key junctures in spaces such as open cantilevered porches, and ensuring that insulation blowers are properly maintained so blowing pressures are correct. In addition, instructions on proper techniques for removing siding in order to blow sidewalls with dense pact cellulose insulation will be demonstrated.

**Insulation Certification Testing - 4 Hours**
The in-field assessment and evaluation process has been developed to measure program insulation, contractors’ ability to deliver residential building shell insulation and air sealing improvement measures within the Illinois Home Weatherization Standards. The in-field assessment is a half-day on-site evaluation, using an existing single family program home. The contractor is expected to satisfactorily demonstrate proficiency in the following areas: Overall comprehension of the Illinois Home Weatherization-Standards relating to proper set up and use of the blower door; air sealing building shell penetrations; insulating attics and knee-walls;
insulating exterior sidewalls; and job site safety and clean-up practices. At the on-site location, the designated insulation contractor (site assigned crew) will be graded/scored on those areas. The contractor (crew) will have to score a minimum 70% overall grade in order to be classified as “certified”.