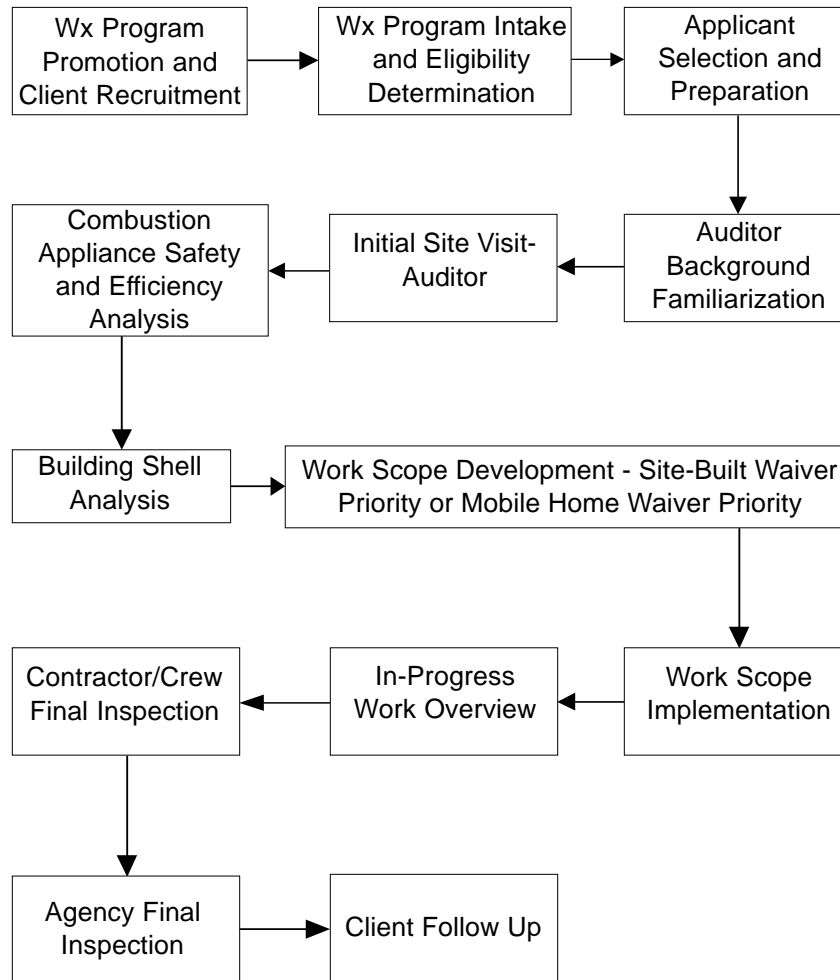


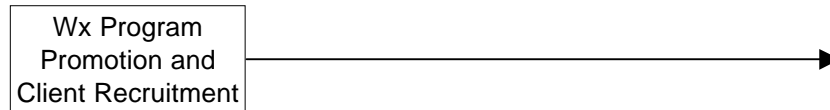
Wx PROCESS

Weatherization Assistance Program Indiana Field Guide

WEATHERIZATION PROCESS



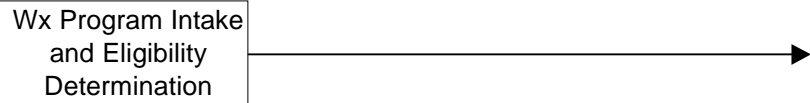
WEATHERIZATION PROCESS



Weatherization Program Promotion and Client Recruitment

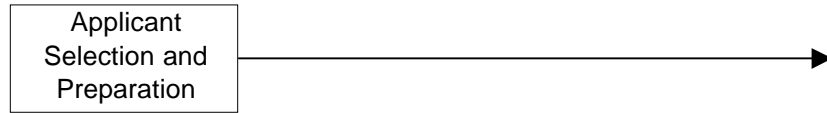
- Market Weatherization Program to the community and potential clients.
- Network with other social service providers, educating them on program availability, goals and target population.
- Develop and distribute client education materials to other social service providers and potential clients.
- Establish working relationship with Energy Assistance Program for the sharing of client data.
- Establish working relationship with local utility companies for the sharing of customer data.

Wx Program Intake
and Eligibility
Determination



Weatherization Program Intake and Eligibility Determination

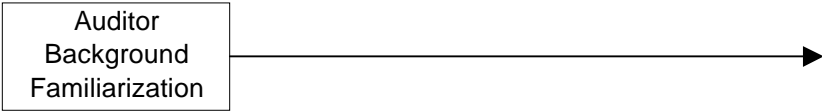
- Application for Wx services are taken and eligibility is determined.
- Once approved for services, clients are prioritized using a variety of criteria established by DOE.
- For specifics regarding this process and procedures, refer to the Indiana Weatherization Administration Manual.
- Begin client education process by giving client approved client education materials.



Applicant Selection and Preparation

- Review application for services.
- Eligible applicants should be prioritized based on elderly, handicapped, at-risk households and annual fuel consumption .
- If dwelling is a rental:
 - Notify owner of application for services
 - Secure necessary authorizations from owner
 - Follow agency guidelines for Wx of rentals
- Requesting consumption data from utility company for pre-Wx analysis is crucial.
- Be aware of the documentation that each case file is expected to contain and assess for completeness.
- Notify applicant of client expectations and anticipated start date.
- Send applicant appropriate client education materials if not given out during intake process (mail-in applicants).
- Be available to answer questions client may have concerning Wx.

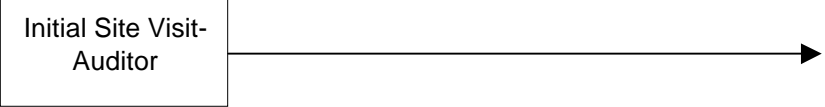
Auditor
Background
Familiarization



Background Familiarization— Auditor

- Review application for services.
 - Confirm necessary signatures and authorization.
 - Analyze priority criteria applied in this case file.
 - Analyze and apply pre-weatherization consumption data. Running PRISM for pre-weatherization analysis will provide additional insight.
- Contact occupant and begin soliciting information.
 - Listen carefully.
 - List items of importance to the occupant.
 - Continue client education.
 - Explain Wx process and what your function is.
 - Determine convenient time for initial site visit and set appointment.
 - Get directions.

Initial Site Visit-
Auditor



Initial Site Visit—Auditor

- May be combined with combustion Safety & Efficiency Analysis and Building Shell analysis if appropriate.
- Determine if building is viable to weatherize.
 - Is structure eligible to weatherize?
 - Are the living (working) conditions acceptable?
 - If no, list items needing attention.
- “Walk through” inspection to survey special problems.
 - Communicate obvious problems to client.
- Continue client education.
 - Clearly explain client responsibilities and agency responsibilities.
 - Make sure client knows what agency’s process is and who to expect next and what they will be doing.

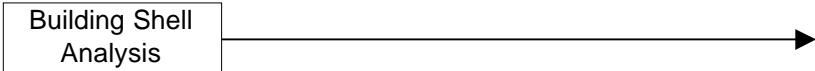
Combustion
Appliance Safety
and Efficiency
Analysis



Combustion Appliance Safety & Efficiency Analysis—Auditor, Crew or Contractor

- For specific procedures, refer to Chapter 4: Heating. All combustion appliance issues must be completed prior to shell work beginning.
- Perform appropriate Heating System Inspection Procedure on heating system and water heater, which includes “Worst Case” Draft Test.
- Perform initial Cook Stove Procedure.
- Determine if appliances or air delivery system require modification.
 - Determine if modification is feasible.
 - Follow “best practice” theory in creating specifications that result in safety, reliability and efficiency.
 - Follow agency policies and procedures for modification of all furnaces, water heaters and cook stoves.
 - Once corrections are complete, inspect and determine whether additional modifications are necessary.
- Determine if appliances require replacement.
 - Determine if replacement is allowable and affordable.
 - Follow agency policies and procedures for replacement of all furnaces, water heaters and cook stoves.
 - If furnace is to be replaced,
 - Follow agency procurement policy.
 - Size according to Manual J.
 - Replace with most appropriately sized unit.
 - Inspect using “New Furnace Installation Inspection Form” in Chapter 4 on new furnace or water heater to ensure proper installation.
 - Accept or reject replacement.
 - Modifications if necessary.
- Continue client education.


Building Shell
Analysis



Building Shell Analysis— Auditor

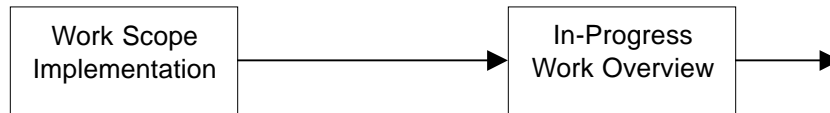
- Following the Lead Safe Work Practices Policy for Indiana Wx Programs, an auditor must determine that Wx services should be provided for a client in one of two ways (for pre-1978 homes).
 - Either presume the paint is lead-based paint or...
 - Perform a lead inspection and test the paint to determine it is or is not lead-based paint by using the state-provided Niton XRF device.
- Perform initial building diagnostics.
 - Worst-case depressurization draft test and determine if appropriate to begin shell work.
 - Blower door test and determine initial CFM50.
 - **Determine Minimum Ventilation Rate.**
 - Perform Pressure Pan test on the ducts.
 - Perform zone-to-zone pressure diagnostics.
- Visually inspect crawl space and attic.
- Carefully measure and diagram the structure.
 - Note special problems.
- Determine pressure boundary and thermal boundary.
 - If incomplete, develop strategy to complete.
 - If misaligned, develop strategy to align.
 - Locate bypasses and identify location on diagram.
- Continue client education.

Work Scope Development - Site-Built Waiver
Priority or Mobile Home Waiver Priority



Work Scope Development

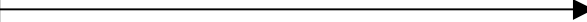
- Develop Work Scope using one of the following Waiver Audit Protocols that are based on NEAT & MHEA depending on housing type and fuel type. Priority order detailed in Chapter 2: Building Model.
 - Site Built Waiver Audit
 - Mobile Home Waiver Audit
- Develop work scope using NEAT or MHEA.
 - DOE's NEAT & MHEA Software will be used to determine alternative measures and their order for any house where items 4 through 11 in the Site Built House Waiver Audit Priority List or items 4 through 7 in the Mobile Home Waiver Audit Priority List would not be appropriate.



Work Scope Implementation

- Match work scope with capabilities of contractor/crew.
- Discuss work scope and pre-consumption data with contractor/crew prior to shell work beginning.
- **Stress importance of Daily Safety Test Out procedures.**
- Discuss flexibility for contractor/crew and make adjustments as necessary.
- Be available as a technical resource for contractor/crew while house is in progress.
- Continue client education by letting client know what to expect.
- If contractor/crew disturbs a painted surface not specified on the original workscope, lead safe work practices must be used when disturbing painted surfaces not previously tested with the Niton XRF or have the surface tested.

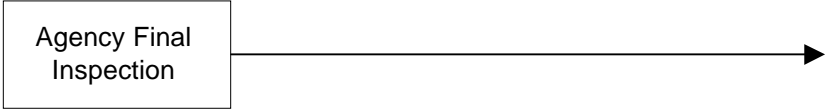
Contractor/Crew
Final Inspection



Contractor/Crew Final Inspection

- Perform exit worst case depressurization draft testing procedure.
- Perform final blower door & pressure pan tests.
- Visually inspect completed work.
 - Perform adjustments as necessary.
 - Perform additional work as necessary.
- Review completed work with client.
 - Explain future responsibilities of the contractor/crew and the client.
 - Discuss/demonstrate any maintenance procedures that may be necessary (furnace filter, etc.)
- Secure all necessary signatures.
- Post insulation certificate in appropriate location.
- Leave appropriate paperwork with client.
- Submit appropriate paperwork to agency.

Agency Final
Inspection



Agency Final Inspection

• Make Final Site Visit

- Perform inspection column of Heating System Inspection Form which includes final worst-case depressurization draft test.
- Perform final blower door & pressure pan tests.
- Visually inspect completed work.
 - Specify adjustments as necessary.
 - Specify additional work as necessary.
- Perform clearance lead testing if required.
- Review completed work with client.
 - Explain future responsibilities of the agency and the client.
 - Discuss/demonstrate any maintenance procedures that may be necessary (furnace filter, etc.)
- Client written response.
- Secure all necessary signatures.
- Leave appropriate paperwork with client.
- Wrap up client education. Discuss any warranties that may exist.

Client Follow Up



Client Follow Up/Post Work Analysis

- These options can provide valuable feedback to the agency on how well the weatherization measures are holding up as well as measure their relative effectiveness:
 - Survey client after specified time frame for quality assurance.
 - PRISM Analysis: If client has a single, metered heating fuel, 15 months after final inspection secure consumption data from utility company and run PRISM.
 - Submit appropriate meter files to INCAA.

**INCAA TRAINING FACILITY
1845 WEST 18TH STREET INDIANAPOLIS, IN
PHONE: (317) 638-4232**

The Indiana Community Action Association, Inc. (INCAA) has provided a wide range of training and technical support for weatherization professionals since 1978. INCAA's services are available to all members of the building performance industry.

***REGULARLY OFFERED COURSES AT THE I.N.C.A.A.
TRAINING FACILITY***

Heating Systems for Building Analysts
Residential Energy Auditing for Building Analysts
Air Sealing for Building Technicians
Insulating Site Built and Mobile Homes for Building Technicians
Basic Heating Systems for Heating Technicians
Intermediate Heating Systems for Heating Systems
Advanced Heating Systems for Heating Technicians
Worst Case Draft for Building Analysts and Heating Technicians
Daily Safety Test Out Procedures
Oil Furnace Training
Boiler Inspection
Whole House Heat Load Calculations
Introduction to Infrared Thermography
Lead Safe Work Practices
Mold Awareness
Optimizing Weatherization Program Resources
Introduction to NEAT Software

DESCRIPTION OF COURSES OFFERED AT THE I.N.C.A.A. TRAINING FACILITY

HEATING SYSTEMS FOR BUILDING ANALYSTS

This course covers the inspection and testing of gas and electric heating systems. Participants will become familiar with the components and operational characteristics with the goal in mind of being competent with inspection and testing. This training is designed for Weatherization Auditors who determine which units need safety and efficiency repairs. A safety and efficiency “flow chart” is used to help facilitate thorough inspection and documentation. “Worst Case” draft and CO testing are featured in this course. This is a recommended prerequisite for the Residential Energy Auditing for Building Analysts course.

RESIDENTIAL ENERGY AUDITING FOR BUILDING ANALYSTS

This course is designed to teach the individual how to collect, evaluate and communicate the information required for an effective and appropriate work order. This course is for any employee who conducts energy audits, evaluates the quantity of materials required, or writes the work orders for heating system or shell improvements. Topics include: Whole house approach, identifying the energy needs of the house through utility consumption analysis, health and safety inspections, pressure and thermal boundary inspection and diagnostics, Indiana’s Weatherization Program requirements, appropriate retrofit materials and techniques, calculation of areas and quantities and an introduction to house-furnace interaction. We will detail the furnace sizing process, lead paint inspecting and the use of infrared as a quality control tool.

AIR SEALING FOR BUILDING TECHNICIANS

A complete analysis of the pressure boundary, including an introduction to blower door testing, duct diagnostics and repairs,

general air sealing techniques, zonal pressure testing, building tightness guidelines and setting practical goals for air sealing homes. Typical diagnostic tools as well as air sealing products will be demonstrated.

INSULATING SITE BUILT AND MOBILE HOMES FOR BUILDING TECHNICIANS

This is a complete analysis of the thermal boundary. We will demonstrate a variety of insulation products and where it may be appropriate to use them, including dense pack cellulose, two part foam and blown-in fiberglass. We will utilize infrared to identify opportunities for improving the thermal boundary and as well as a quality control tool.

BASIC HEATING SYSTEMS FOR HEATING TECHNICIANS

This course is intended to introduce the operational characteristics of basic gas and electric furnaces. This course is for the heating technician that has little or no HVAC service experience, or someone in need of reviewing the basics. Those with no HVAC service experience will need this course as a prerequisite for Intermediate Heating Systems for Heating Technicians.

INTERMEDIATE HEATING SYSTEMS FOR HEATING TECHNICIANS

This course is intended for the heating technician who may be performing repairs deemed necessary by the Weatherization Building Analyst. The participant knows the basics and is ready for a better understanding of the Weatherization inspection and testing process and the various inspection forms used in the Weatherization Program. A safety and efficiency 'flow chart' is used to help facilitate thorough inspection and documentation. We will cover the worst-case draft testing procedure and gas furnace electrical troubleshooting. The new furnace installation inspection process and form will also be covered so technicians understand what is required when installing a new furnace. We will demonstrate the use of the combustion analyzer for

efficiency and heat exchanger integrity. Those technicians with prior HVAC service experience can be admitted into this course. This course is a prerequisite for the Advanced Heating Systems course.

ADVANCED HEATING SYSTEMS FOR HEATING TECHNICIANS

This course is intended as a follow-up to the Intermediate Heating Systems for Heating Technicians course for those that are ready for an in-depth understanding of diagnosing venting issues and appropriate repair strategies. An expanded carbon monoxide mitigation sequence is offered. Air flow diagnostics and calculations are covered so heating technicians will have a better working knowledge of solving airflow related issues.

WORST CASE DRAFT FOR BUILDING ANALYSTS AND HEATING TECHNICIANS

This one day class is intended for those Building Analysts and Heating Technicians seeking a deeper understanding of the house-furnace interaction issue. It will cover all aspects of the Worst Case Draft Testing procedure from set up through scenario identification and onto appliance testing procedures. We will also look deeper into 'what the numbers mean' and explore repair sequences.

DAILY SAFETY TEST OUT PROCEDURES

This one day class is intended for people who don't necessarily need the full furnace and duct diagnostic classes but need to know enough about house and furnace interaction to make sure the house is not left in a dangerous condition when the Weatherization work is done. It will cover furnace basics such as the difference between return and combustion air, the dangers of open returns and "Worst Case" draft testing. We will also look at pressures that can develop due to duct repair. The manometers to check for dangerous zonal pressures will be explained. This class is essential for crew persons, auditors and anyone else who wants an answer to the question: "How do we properly test out the door?" *Building Technician I and Building Analyst Certification components are included in this class.*

OIL FURNACE SEMINAR

This two day session covers inspection and testing of vented oil fired heating appliances. Participants will become familiar with oil heating components and operational characteristics with the goal in mind being competent inspection, testing and repair. This session is designed for either Weatherization Auditors making inspections or Technicians providing repairs. Topic areas include: components and operation, oil furnace combustion, methods of measuring combustion efficiency and the improvement of combustion efficiency. An Oil Furnace Inspection form is provided help facilitate inspection and documentation. *Heating Technician Certification components are included in this class.*

BOILER INSPECTION

This two-day seminar is designed to give WX Auditors and Heating Technicians a guide to a Health and Safety inspection of gas boilers. Topics covered will be system identification, hot water vs. steam boilers, operational characteristics, system controls, safeties and limits, inspection considerations, maintenance issues. A new Boiler Inspection Form will be introduced to help with the inspection process.

WHOLE HOUSE HEAT LOAD CALCULATIONS

This two day course covers the methods, skills and inspection techniques Building Analysts need to calculate whole house heat load. This course will detail the ACCA Manual J heat loss procedure, utilize Blower Door air leakage information to determine heat loss associated with infiltration, and determine duct loss associated with air-sealed duct systems. The information is then used to help select the most appropriate size of replacement furnace. This course includes a field day to inspect a house, gather information, complete the load calculation sheet and determine a replacement size. *Heating Technician and Building Analyst Certification components are included in this class.*

INTRODUCTION TO INFRARED THERMOGRAPHY

This one day workshop is designed to introduce weatherization staff to infrared thermography and to familiarize them with the specific equipment that INCAA has available for their use. Participants learn what infrared scanners do and how they can be utilized to evaluate weatherization work. The session involves hands-on use of the equipment as well as classroom instruction.

LEAD SAFE WORK PRACTICES

This half-day class will identify practices that workers must implement to provide lead safety in the workplace for themselves as well as the occupants of the home. This class is available at the IN-CAA training facility as well as regionally.

MOLD AWARENESS

Mold is supposedly everywhere, but where is the mold that I need to be concerned about in regards to performing Weatherization? What levels of mold are of relatively minimal concern and easily cleanable? What levels and locations are significant enough that it's best to avoid the house all together? Where do we draw the line?

The Mold Awareness class will help technicians and auditors identify the conditions that promote mold growth. We will identify treatment options for less extensive mold conditions and best Weatherization practices to prevent mold growth. We will discuss health aspects for both workers and clients. We will also identify when conditions are significant enough for a walk away policy.

OPTIMIZING WEATHERIZATION PROGRAM RESOURCES

This one-day class will look at the monies available from the three different Weatherization funding sources and explore combinations that will allow programs to utilize the available flexibility. We will analyze what are base, mechanical, capital intensive and health and safety activities and the options for utilizing each and how agencies can report completions to more than one funding source. Strategies

will be presented that will give Weatherization programs alternatives when setting production goals and how to modify those goals while production is in progress to match actual expenditures.

INTRODUCTION TO NEAT/MHEA SOFTWARE

This one-day class is intended to help Weatherization program staff get up and running with NEAT/MHEA v8.2. Indiana's Wx Measures Priority List is based on NEAT and there are many cases when it would be advantageous for an auditor to run NEAT/MHEA on individual homes. This new version of NEAT/MHEA also contains appliance data bases for refrigerators and water heaters.

NOTES

NOTES