

Multifamily Curricula Outline

WEATHERIZATION ENERGY AUDITOR MULTIFAMILY

Introduction to Multifamily

- Mission and regulations of the WAP
- Applicability of single family priority list to small multifamily buildings
- Determining eligibility of buildings (including WPN 10-15(A))
- Defining the client and the relationship of the client, building owner and subgrantee
- How the client benefits from Weatherization improvements

Pre-Audit Preparation and Walk-Through

- Goals and agenda of pre-audit kick-off meeting
- Utility and other building data collection
- Building assessment (exterior/interior), includes assessment of:
 - Building shell (exterior/interior)
 - Foundation
 - Windows/doors
 - Lighting (exterior/common areas/units)
 - Base loads
 - HVAC and DHW system identification
 - Moisture or other H&S issues
- Interviewing clients/building managers to better determine health, safety, and energy needs

Testing and Diagnostics

- Air leakage testing, including sampling protocols for low-rise
- Duct leakage testing
- MVR and Zone Pressure Diagnostics
- Approved Audit Tools and characteristics
- Pressure and thermal boundary identification
- IR Scanning
- Voltage drop testing and general electrical issues
- Air sealing
- Using data to determine the most cost-effective retrofit strategies

Evaluation

- Should weatherization proceed
- Appropriate audit software
- Bill analysis
- Audit tool basics and characteristics
- Modeled energy use
- Evaluating base load savings
- Recommendation examples
- Developing a scope of work

MECHANICAL SYSTEMS - MULTIFAMILY

Building as a System

Fuel Bill Analysis

Thermodynamics and Heat Transfer

Combustion

- Safety & efficiency
- Firing Rates
- Combustion appliance safety testing and diagnostics

Venting

- Combustion venting safety and code requirements

Hydronics

- Hydronics basics
- Boilers – Identification, insulation, cleaning, and boiler plants
- Pumps & distribution
- Controls
- Retrofit options and strategies

Domestic Hot Water (DHW)

- Identification and retrofit options
- Recirculating and non-recirculating options
- Mixing valves
- Apartment water usage

Steam Heating

- Fundamentals and system identification
- Near boiler piping
- Distribution system
- Operations & Maintenance (O&M)
- Steam boiler safety and controls
- Retrofit strategies and recommendations

Furnaces

- Fundamentals and system identification
- Distribution system
- Retrofit options
- Troubleshooting

Heat Pumps

- Fundamentals, system identification and limitations
- Distribution system
- Basic maintenance
- Retrofit options

Other Heating Systems (Electric)

- Furnaces
- Baseboard heaters
- Room heaters