

2009 National Weatherization Training Conference Priority Lists – Experiences and Impacts Nick Milano



The Energy Audit

- Except for materials to eliminate H&S hazards all weatherization materials installed must be cost effective.
- The materials must result in energy cost savings over their life, discounted to present value, that equal or exceed the cost of the materials. SIR = 1 or higher.
- The energy audit must assign priorities among individual wx measures in descending order of their cost effectiveness.



- Adjust for interaction between measures to decrease the estimated fuel cost savings for lower priority measures.
- Eliminate measures that are no longer cost effective as adjusted for interaction.
- Compute the cost of fuel saved per year.
- Be approved by DOE



Priority Lists

- For similar dwelling units without unusual energy consuming characteristics, energy audits may be accomplished by using a priority list developed by conducting site specific energy audits of a representative subset of these dwelling units.
- States also must provide the input data and list of wx measures recommended by the audit software or manual methods for several dwelling units from the subset.

For DOE approval States must:

- Describe how the priority list was developed
- How the subset of similar homes was determined
- Circumstances that will require site specific audits

States must resubmit their energy audit procedures / priority lists to DOE for approval every five years.



Ohio Building Types

- TYPE A Wood Frame Home with Full Basement and Open Joist Attic
- TYPE B Wood Frame Home with Crawl Space and Open Joist Attic
- TYPE C Wood Frame Home with Combination Crawl Space/Basement and Open Joist Attic
- TYPE D Wood Frame Home with Slab Foundation and Open Joist Attic
- TYPE E Wood Frame Home with Full Basement and Kneewall Attic
- TYPE F Wood Frame Home with Post Foundation and Open Joist Attic
- TYPE G Block, Concrete, or Log Home (Solid Wall) with Slab Foundation and Open Joist Attic
- TYPE H Mobile Home with Post Foundation
- TYPE I Block, Concrete, or Log Home (Solid Wall) with Basement and/or Crawl Space and Open Joist Attic



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REQUIRED MEASURES LIST FOR 1 - 4 UNIT BUILDINGS

- Uniform Measures [1]
- Uninsulated Ceilings with less than an effective R-19, insulate to R-38
- Uninsulated Walls to R-15
- Uninsulated Floors to R-19 [3] or perimeter insulation to R-11 in crawl spaces, basements
- [1] Includes measures presumed cost effective as identified in Ohio's waiver audit approval request:
 - Air Leakage (as determined by required blower door testing)
 - Water Heater Insulation (always installed unless a technical or safety problem exists which is beyond the scope of WAP to correct)
 - Furnace Tune-up (as determined by diagnostic equipment and required inspection procedures)
 - Duct Insulation in non-conditioned areas
 - Duct Sealing
 - Low-flow Showerhead (as determined by inspector and client)
 - Electrical Baseload measures that are determined to be cost-effective
 - Incidental energy - related repairs that do not exceed \$600.00.
 - Energy - related Health and Safety measures.



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OPTIONAL MEASURES LIST FOR 1 - 4 UNIT BUILDINGS

- Partially Insulated Attics with existing insulation equal to or greater than an effective R-19
- Storm Windows over single pane windows
- Thermal Vent Damper
- Electric Vent Damper
- Intermittent Ignition Device (IID)
- Electric Vent Damper plus IID
- Flame Retention Burner
- Replacement Heating System (for efficiency improvements)
- High Efficiency Furnace (for efficiency improvements)
- Optional measures are measures that are to be selected by NEAT, but cannot be installed unless achieving a SIR of 1 or greater, as described in Ohio's waiver audit approval request.



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REQUIRED MEASURES LIST FOR MANUFACTURED UNITS (Mobile Homes)

Shell Measures (Based upon DOE's approval of Ohio's priority list from MHEA)

Type- Bowstring Roof with Longitudinal Floor Joists

- Natural Gas Heating Fuel
- Add more insulation if:
 - The existing ceiling insulation is less than an effective R-9
 - The existing wall insulation is less than an effective R-5
 - The existing floor insulation is less than an effective R-5
- All Other Heating Fuel Types
 - Add more insulation if:
 - The existing ceiling insulation is less than an effective R-11
 - The existing wall insulation is less than an effective R-5
 - The existing floor insulation is less than an effective R-7

Mobile Homes (cont.)

Type- Factory-Built Pitched Roof with Transverse Floor Joists and 2" x 6" walls

- Natural Gas Heating Fuel
- Add more insulation if:
 - The existing ceiling insulation is less than an effective R-19
 - The existing wall insulation is less than an effective R-16
 - The existing floor insulation is less than an effective R-11
- All Other Heating Fuel Types
- Add more insulation if:
 - The existing ceiling insulation is less than an effective R-19
 - The existing wall insulation is less than an effective R-16
 - The existing floor insulation is less than an effective R-16
- A MHEA audit must be run for structures outside of these construction details

Mobile Homes (cont.)

The following are mandatory on all units:

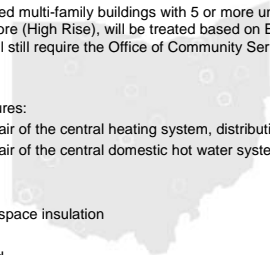
- Air Leakage (as determined by required blower door testing)
- Water Heater and hot water pipe insulation (always installed unless a technical or safety problem exists which is beyond the scope of WAP to correct)
- Furnace Tune-Up (as determined by diagnostic equipment and required inspection procedures)
- Duct Sealing (as determined by visual inspection and duct testing procedures as outlined in the Weatherization Program Standards)
- Low flow Showerhead (as determined by inspector and client)
- Electrical Baseload measures that are determined to be cost-effective
- Incidental energy related repairs that do not exceed \$600.00, including labor and materials.
- Energy related Health and Safety measures

PRIORITY LIST FOR INDIVIDUALLY-HEATED MULTI-FAMILY BUILDINGS WITH 5 OR MORE UNITS, BUT WITH 3 OR LESS STORIES ABOVE GRADE (LOW RISE)

- Subject to Priority Rating by Housing Type applicable to 1-4 unit buildings
- Uniform Measures
 - Uninsulated Ceilings with existing insulation less than R-19, insulate to R-38
 - Uninsulated Walls to R-15
 - Uninsulated Floors to R-19
 - Uninsulated Perimeters to R-11
- Other Measures
 - Electrical Baseload measures that are determined to be cost-effective
 - Incidental energy related repairs that do not exceed \$600 including labor and materials.
 - Energy - related Health and Safety measures. However, an investment on the part of the building owner is required.

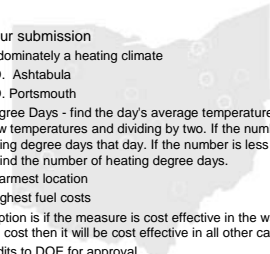
CENTRALLY HEATED MULTI-FAMILY BUILDINGS

- Centrally heated multi-family buildings with 5 or more units or buildings with 4 stories or more (High Rise), will be treated based on EA-QUIP audit results and will still require the Office of Community Service's prior written authorization.
- Typical Measures:
 - Tune up and repair of the central heating system, distribution system
 - Tune up and repair of the central domestic hot water system
 - Attic insulation
 - Wall insulation
 - Basement/Crawlspace insulation
 - Air sealing
 - Electric Baseload



How Did We Get There

- NEAT & MHEA
- The basis of our submission
 - Ohio is predominately a heating climate
 - 6398 H.D.D. Ashtabula
 - 4912 H.D.D. Portsmouth
 - Heating Degree Days - find the day's average temperature by adding the day's high and low temperatures and dividing by two. If the number is above 65, there are no heating degree days that day. If the number is less than 65, subtract it from 65 to find the number of heating degree days.
 - Used the warmest location
 - Used the highest fuel costs
 - The assumption is if the measure is cost effective in the warmest climate at the highest fuel cost then it will be cost effective in all other cases.
 - Sent 37 audits to DOE for approval
 - Ran approximately 72 audits to arrive at 37 audits



Why Ohio Uses a Priority List

- Saves Time
- Time is Money
- Simplifies the Training Effort
- Auditor has more time for other activities
- Provides Consistency
- PY 08 – 7880 homes
- PY 09 – 8052 homes
- ARRA 09-11 – 32,000 homes
 - 10,667 / year