



N A S C S P

NATIONAL ASSOCIATION FOR STATE COMMUNITY SERVICES PROGRAMS

Energy Audit Approval Procedures

Developing and Getting Approval of a Priority List

Why a Priority List

- Simplify the selection of cost effective measures
 - List of measures that are cost effective in most typical homes is very similar
- Energy Auditors productivity generally improves
 - Less time entering data - more time inspecting
 - Less possibility of manipulating audit to get what is wanted
- Effective coordination with other funding sources
 - LIHEAP funded heating system program
 - Utility energy efficiency funds

What is a Priority List

- A package of measures to be installed in typical homes
 - Measures ranked in order of cost-effectiveness
- Lists developed using DOE–approved audit on a selection of sample homes
- Subgrantees cannot pick and choose measures
 - If a priority measure is skipped for a lower priority measure there must be clear documentation why

Resources for Developing a Priority List

- Requirements outlined in WPN 13-5
 - Attachment 2 details for priority lists
- Presentations at Training Conferences (WAP TAC)
 - Priority Lists 1: Develop, Maintain and Update
 - Glen Salas: National WAP Training Conference 2011
 - Every 5 Years... The Energy Audit Approval Process
 - Cynthia Simonson, Glen Salas: Energy OutWest 2012
 - Designing a Priority List
 - Jordan Kelso: National WAP Training Conference 2009

Developing Mass. Priority Lists

- DOE approved audit for the housing type
 - NEAT for Single and Small Multi-Family
 - MHEA for Manufactured Housing
- Selection of sample housing types
 - Ranch, Cape, Garrison, Colonial, Triple-Decker, Duplex, Manufactured Housing
- Primary Heating Fuel and Type
 - Fuel Oil, Natural Gas LP, Kerosene, Wood
 - FHW, FWA, Space Heater, Steam

Developing Mass. Priority Lists

□ NEAT Audit Set-Up Library

- Make parameters worst case for cost effectiveness (weather data for warmest area, highest costs for measure installation, lowest cost for fuel)
- Information needs to be current and for maintenance, updated annually or if there are any significant changes

Developing Mass. Priority Lists

□ Relatively easy in Massachusetts

- Small state with not a lot of climate variation
 - (all wicked cold and snowy this year)
- All installation work completed by private sector contractors with consistent pricing for installed measures
- Fuel costs reasonably consistent across the state
- Alternative funding available all heating system work, electric base-load, and building shell measures

Developing Mass. Priority Lists

NEAT Audits on Sample Housing Types

- For each housing type, run several sample audits with
 - different levels of existing insulation attic, sidewalls floor/basement walls
 - primary heating fuel and type, efficiency
 - type of basement, crawlspace, slab
 - If FWA system, location of ductwork
- Use the NEAT Copy Audit function (i.e had 8-10 samples of the same ranch with different variables)

Developing Mass. Priority Lists

□ NEAT Audits on Sample Housing Types

- For determining existing insulation values used the Building Performance Institute's Chart

Effective R Values for Batt Insulation

Effective R-values for Batt Insulation*

Measured Batt Thickness (inches)	"Good" Effective R-value (2.5 per inch)	"Fair" Effective R-value (1.8 per inch)	"Poor" Effective R-value (0.7 per inch)
0	0	0	0
1	3	2	1
2	5	4	1.5
3	8	5	2
4	10	7	3
5	13	9	3.5
6	15	11	4
7	18	13	5
8	20	14	5.5
9	23	16	6
10	25	18	7
11	28	20	8
12	30	22	8.5

1. Measure the insulation thickness.
2. Determine the condition of the installation using the following criteria:
 - ✓ Good – No gaps or other imperfections
 - ✓ Fair – Gaps over 2.5% of the insulated area. (This equals 3/8 inch space along a 14.5 inch batt.)
 - ✓ Poor – Gaps over 5% of the insulated area. (This equals 3/4 inch space along a 14.5 inch batt.)
3. Look up the effective R-value of the installed insulation using the condition and measured inches.

*Derived from ASHRAE document "Heat Transmission Coefficients for Walls, Roofs, Ceilings, and Floors" 1996

Developing Mass. Priority Lists

- In addition to all other variables add audit runs with Incidental Repairs.
 - WPN 12-09 provides: *“The Incidental Repair Measure costs are not added to an individual or partial group of ECM costs. The cost of all ICMs is added to the cost of the package of weatherization measures to calculate the whole unit SIR.” “The cost of all IRMs is added to the cost of the package of WAP measures when calculating the SIR for the whole building.”*

Developing Mass. Priority Lists

- Ran the NEAT sample audits with a different levels of repairs (\$500, \$1000, \$1500 \$2000)
 - Repair costs entered into ***Itemized Cost*** Tab of NEAT and ***Include in SIR*** box checked.
 - Reviewed sample audits with repairs to determine when costs started to impact SIR (approx. \$1,500)
 - Part of submission included requirement of full energy audit required when Incidental Repairs exceed \$1,500.

Developing Mass. Priority Lists

□ Cost Effective Measures

- Blower door directed air sealing, general heat waste
- Heating system improvements (referred to alternative funding)
- Attic Insulation to R49 (existing less than effective R19)
- Dense pack side-wall insulation
- Insulate ductwork in unconditioned spaces
- Basement treatment (perimeter or overhead)
- Attic Insulation (existing greater than effective R19)
- Other minor heat waste (electric base-load measures referred)

Submitting Priority List Request

- Develop proposed lists based on housing type
 - For Massachusetts that was 4 different lists
 - Single, small multi with unfinished attic
 - Single, small multi with finished attic
 - Triple Decker or comparable small multi
 - Manufactured Housing
- NEAT and MHEA Output for sample audits
 - Approximately 60 NEAT; 10 MHEA
 - Check all outputs for consistency and accuracy

Submitting Priority List Request

- Weatherization Assistant Set-up Library
- Sample Audit Packages
 - Audit/Inspection procedures and data collection forms
- Technical Manuals-Field Guides
- Relevant Policy and Procedures
- Air Sealing guidelines (cost per 100CFM@50Pa)
 - Determine maximum cost effective cost by fuel
- Cover letter explaining everything....**

Submitting Priority List Request

- Send entire package to Project Officer
 - Large files for most email systems
 - Copied everything to a portable drive with clearly labeled folders.
 - Be prepared to be able to answer many questions from DOE and their consultants.
 - Provide as much relevant information as possible in the initial submission.
 - Check all NEAT and MHEA outputs for inconsistency
 - Much like everything in WAP, this is different than it once was. 😊

Using Priority Lists

Subgrantee training important

- Subgrantees need to know what is expected and consequences if priority measures are skipped without adequate documentation
- When a full audit is required
 - Allowable measures that are not on Priority Lists
 - Home has unusual structural needs or energy use
 - Planned repairs in excess of \$1,500
- Ongoing Subgrantee NEAT and MHEA training

Using Priority Lists

- Use of priority lists does not preclude need for detailed initial inspections to evaluate and document existing conditions with all required blower door and combustion and health and safety testing
- Regular consistent monitoring from Grantee
 - Field monitoring and file reviews at local agency
 - Desktop monitoring of Building Weatherization Reports when submitted

Using Priority Lists

□ Maintenance

- Rerun audits at least annually and notify DOE if any changes are needed
- Rerun anytime any of the parameters change significantly (installation costs or fuel costs)

□ When Web-based NEAT and MHEA are available we plan to integrate into our software system and will reconsider use of Priority Lists

Questions?

19

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Visit www.nascsp.org for
more resources and information.



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