How to Read your Audit
&
How to Get an Audit Worth Reading

presented by
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Thermal House
What Are We Talking About?

• Frame Buildings
  • Like big houses
What are We Covering Today?

• What should be in the audit
• What it means
• How to get an audit that will be useful & thorough
What the Audit is Not

• A Square-foot by square-foot analysis of your building and walls.
• A guarantee of what the results will be
• An analysis of your heating system
• A commodity
• All the same
Getting to Know the Building

• Auditor needs to talk to people about their experience with the building
• Employees, Managers & Townspeople need to be available for this
• People who use the building a lot
• Maintenance People
What to Look for in your Audit?

- You get what you ask for
- We’ll be going over what to ask for later
- Current Conditions
  - Insulation & Air Barriers
    - Current R-Values
  - Major flaws in the Thermal Enclosure
  - Moisture Issues
  - Air Flow/Air Changes per Hour
- Fuel Use Analysis – BTU/Sq Ft/Year – 40,000?
What Else?

• Electrical Use

• Infra-Red Photography
  – If conditions permit

• Recommendations
  – Specific treatment recommendations for each major area, both insulation & air sealing
  – Specific treatment recommendations for unusual findings
Current Conditions

• Audit should have all of these
  – Description of Insulation Levels with approximate R-Values for Basement Walls & Foundation, Exterior Walls, Attic
  – Air Flow expressed in ACH – Air Changes per Hour
    • Discussion of what this means, by comparison
    • Discussion of where this is happening, i.e. Where the worst leaks are
    • What’s good? Lower than .5 ACH
    • What’s really leaky? More than 1 ACH
  – Heating System & Worst Case Tests & Analysis
Moisture Issues

• Many NE buildings have moisture issues
  – Site-specific
  – It’s always been that way
  – We don’t want to make it worse
  – Need to take care of 1st before other work
Electrical Issues?

• For town buildings, many of these are fairly straightforward
• Convert to Super T-8’s from T-12 Fluorescents
• Install LED’s or CFL’s throughout
• Disable & dispose of older refrigerators (pre-1993)
• Knob & Tube wiring found in treatment areas – attic, basement, walls?
Recommendations

• Where the rubber meets the road
• You only want to do this once
• You have to make sure you are asking for thoroughness here
• You ultimately want a high-standard specification that you can use to generate bids from weatherization companies
• Without a detailed spec, you will end up with cheap bids that may cut corners
Insulation Recommendations

• Should show current to improved R-values
• Should show current to improved materials
• Should include discussion of moisture and fire barrier issues
Examples

• “Audit to include detailed description of current thermal envelope including the air barrier and insulation levels, and significant gaps therein.”

• “Audit to include thorough description of air sealing treatment needed to ensure a long-lasting, effective building performance improvement.”
Energy Analysis

• Should be broken down by treatment area
• Should include rough idea of incentives available, e.g. from Efficiency Vermont
• Should include payback analysis
• Should include non-quantifiable improvements, e.g. comfort, roof durability, reduced mold, etc.
Priorities

• Priorities should address concerns expressed by building users.
• Should tell you the truth about the building, not just what you want to hear or already think you know. It is a professional opinion.
• Should order priorities clearly.
• Should discuss the consequences of skipping high-priority items.
• Should give you rough idea of the costs of these treatments so they can be presented to voters and administration.
Auditor’s Commitment

• Specification for requesting the audit should include:

• Auditor’s availability to meet at least 3 times with town. E.g. with
  – Town Administration
  – Town Council Meeting
  – Public Meeting or Energy Committee
Might Include

- Building Science Review
- Explanation of R-Value
- Explanation of Energy Code
- Detailed Infra-Red photography
What to Specify

• BPI Certification – Building Analyst & Envelope Professional or new Energy Auditor Certifications

• Availability for Discussion – 3 hours

• Detailed description of current issues with insulation & air barrier

• Detailed description of recommended air barrier & insulation treatments
More to Specify

• Discussion of Health & Safety Issues
  – Moisture
  – Carbon Monoxide
  – Draft/Worst Case Depressurization

• Problems treatment will address

• Priorities

• Energy Cost Paybacks

• Assumptions about Energy Costs
One Last Pitch

• An Audit does no good by itself, it may just end up sitting on the shelf.

• Capital spending and operational cannot be kept separate. Building performance improvements may be capital improvements that save operating costs. Don’t fall into the trap of viewing these separately. Lead the discussion of this.