



toll free: 800.315.0459
www.nrglogic.com



ENERGY STAR V3 FROM A RATER'S PERSPECTIVE

RESNET February 27, 2013

Top 10 List

1. Thoughts from a Rater
2. Communication
3. Thoughts from a Builder
4. Grade 1 Insulation
5. Thoughts from HVAC Contractors
6. Total Duct leakage
7. Slab Edge Insulation
8. Bath fan Measured Flow
9. Thermal Bridging
10. HVAC Checklists



Understanding: it's Still Complicated



- ENERGY STAR Qualified Homes National Program Requirements, Version 3.0
- ENERGY STAR Qualified Homes, Version 3 (Rev. 01) National Program Requirements
- ENERGY STAR Qualified Homes, Version 3 (Rev. 02) National Program Requirements
- ENERGY STAR Qualified Homes, Version 3 (Rev. 03) National Program Requirements
- ENERGY STAR Qualified Homes, Version 3 (Rev. 04) National Program Requirements
- ENERGY STAR Qualified Homes, Version 3 (Rev. 05) National Program Requirements
- ENERGY STAR Qualified Homes, Version 3 (Rev. 06) National Program Requirements

Fundamental Questions

Is It There?

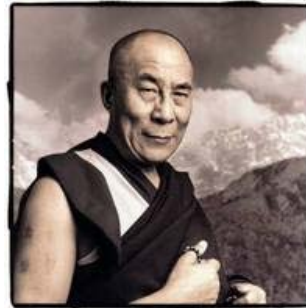


Does It Work?



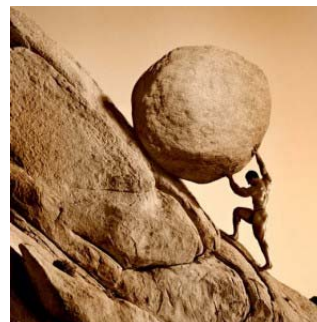
“Learn the rules so you know how to break them properly”

- Author: Dalai Lama
Date: Feb 25, 2008



We are Raters

- Prescriptive vs. Performance
 - No compelling reason to utilize the prescriptive path
- Less Flexibility More Onerous
 - Window U-values and WFA rule
 - Energy Star qualified appliances and fans
 - Lighting 80% bulbs and fixtures Energy Star



Communication



- Maintaining your role as the expert
 - Stay connected
 - Get the word out first
 - Continually tell the story
- “They were lost but they will be found”



Builder News Letter

***** Builder REBATES and TAX CREDITS *****

February 2013 Happy New Year to you all!

In This Issue
[Builder Rebates and Tax Credits](#)
[Insulation on Full Frames](#)
[ESv3 2013](#)
[Changes in Energy Star 3.0](#)
[Free Energy Star Webinars](#)

We have not skipped a beat as January seemed to fly right by us all. All indications are that this will be the best year for new home construction since the downturn, and we are gearing up to be able to meet your inspection needs. Shortly, you will see us in the field training a couple new Raters we've recently hired. It usually takes us 2-3 months to get a new Rater up to speed so that we are confident (rater included) that they can be successful working independently in the field. It is a long process but it ensures that our skills are strong and that consistency across our company is maintained.

The biggest enhancement we are working on in 2013 to better service our builder clients is a restructuring of our Builder Services Division:

Charlie Stevens has moved into a management role. He now directly supervises our Field Raters and is the primary contact person for all Builder Field Superintendents and energy related contractors. So if a Rater can't answer your field related questions Charlie is your next contact. He can be reached at 720-339-1781 or charlie@enrglogic.com

Peter Oberhammer will continue to be your primary resource for plans analysis and code compliance submittal reporting. He can be reached at 970-556-0446 or peter@enrglogic.com

Our scheduling department is still one of your best resources for information about the status of inspections. Remember, it

Energy Star Version 3: Revision 6 and Phased-in Changes coming in 2013

On September 12, 2012, Energy Star posted Revision 6 of the ESv3 guidelines on their website. EnergyLogic has the newest revised checklists available on our website: Latest Energy Star Checklists. These checklists are fillable PDFs and have been modified to allow us to track data on the checklists, so we recommend that you download these and begin using them ASAP if you have not.

The goal of the Revision is to formalize changes that have been made since Revision 5 that are currently being used, such as the change from mandating 2x6-24-inch on center framing to allowing 2x6-16-inch on center framing if the cavity is filled with R-20 or greater insulation, and to post or clarify other changes that have been made.

Energy Star's clarification of total duct leakage testing has caused a number of concerns that have been taken directly to Energy Star for consideration. Basically, Energy Star is stating that total duct leakage testing should occur at final when the duct system is in its final state. It is not saying that testing for total duct leakage at a rough stage is bad, but it does disallow it for verification purposes. This means that builders who see the value of rough duct leakage testing will have to pay for an additional test. In addition, there are many concerns about the accuracy of the testing results when testing only at a final state. EnergyLogic has been actively discussing this issue with EnergyStar and we are hopeful that Raters and Builders will be given the choice to test at either stage of construction. We will keep you posted on the results of our conversations and if and when we may be required to change our testing practices. If you are interested in commenting on this subject please send me an email with your comments and I will pass them on. (robby@enrglogic.com)

2013 ESv3 Changes

The biggest changes in the program are the next phase-in of the HVAC requirements. In essence, this change revolves around determining the heating and cooling load for each potential orientation (i.e., site-specific), rather than utilizing the worst-case orientation and configuration of the house. Loads must be determined by the options and features that are in the actual built home (e.g., number of bedrooms, sq. ft. of glass, conditioned, floor area, R-values, U-values, SHGC), not of what is stated on the plans; thus, greater coordination and communication will be needed. The same is true for room-level design air flows which must be designed for each configuration of the house (i.e., site-specific). Lastly,



All,
We are in the process of completing our first ESv3 houses and it appears that the ES2.5 transition did not do all we thought it would. There are still many questions about what is required and how to comply with the HVAC checklists, a mandatory sections of the program. EnergyLogic, therefore, is offering a HVAC training in an effort to get everyone up to speed as quickly as possible and to minimize any future road blocks. We look forward to seeing you there.



[Energy Star V3 HVAC Checklists](#) [What's required and how do you comply?](#)

Presented By: Robby Schwarz, EnergyLogic

Robby Schwarz is a principal of EnergyLogic, Colorado's leading provider of home energy efficiency and conservation services. Working in partnership with builders and homeowners, EnergyLogic has had a role in improving over 10,000 homes in Colorado.

This presentation will ensure that HVAC contractors understand what exactly is being required of them by the ESv3 HVAC Contractor and Rater Checklists.

Builders, Architects, Designers are also encouraged to attend to ensure a common understanding across the industry.



Rater Discretion



The Energy Star Team and cooperation with Raters



From the EEBA Conference

“I was amazed at the discretion ES is giving raters. ES/EPA wants to see progress and understands issues will arise. I believe EL is being consistent (sometimes to a fault) in insuring all requirements are met.”

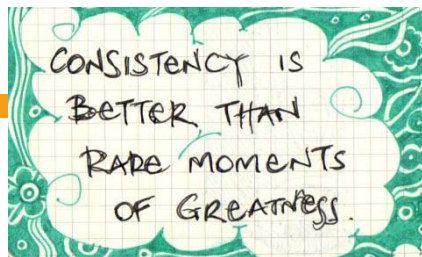
- Proper channel for communication

- One person in your organization

energystarhomes@energystar.gov



Rater Discretion



Understand that consistency is essential; nothing is achieved without it.

Consistency is a key principle as we lay the foundation of a great work in our individual lives and as we become more diligent and concerned in our homes.



ESv3 from a Contractors Perspective

“ I just got a call from XYZ contractor They are saying that Jack called them out for But Neal didn't.”

- Inconsistency hurts everyone
 - Time and Money



Things are **Changing** ... Change is **Hard** But change is **Good**



Did version 2.5 help or hinder?



“In one case recently, I saw a builder who had done ESv2.5 but not moved to ESv3 who was still advertising a home as Energy Star Qualified.”

- Builders and Trade Partners tended to do only what was required
- They did not look forward and prepare for V3
- Lead to second round of transitions



ESv3 from a Builders Perspective

“I like Energy Star, but I hate Energy Star ... I like the overarching concept, but So many little details that I see no value in.”



- Frustration
- Cost
- Program flexibility
- Program inflexibility
- Marketing assistance
- Some Builders have stepped up
- Boomerang effect



Data Overload



“ Builders just get overwhelmed with the number of small details they have to get right”

- Intent vs. 100% compliance
- Severity of the none compliance
- Tips for success
 - Engaged these concerns and be true consultants
 - Not every builder is going to stick with the program
 - Guide them through the process
 - Training Training Training



ESv3 Misconceptions

“ When we talk one on one with builders that are on the fence about ESv3, the reasons they have for not participating are not insurmountable. They usually have some misconceptions...”



- Every bath fan must be ES certified
- They have to use raised-heel trusses, go 24" OC, or use foam sheathing
- Water Management System Checklist is much more rigorous than code
- How to engage and work through these concerns?



The Energy Star Home Report

	Normalized, Modified End-Use Loads (MMBtu/year)	
	ENERGY STAR	As Designed
Heating:	32.4	50.4
Cooling:	13.1	9.6
Water heating:	11.0	10.9
Lighting & Appliances:	11.7	89.6
Total:	98.2	134.5
HERS Index of Reference Design Home	65	90
HERS Index Target (SAF Adjusted)	65	90
Size Adjustment Factor:	1.00	
		HERS Index w/o PV
		HERS Index

HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

- Mandatory Requirements for All ENERGY STAR Version 2.5 Qualified Homes**
- Duct leakage to outside < 6 CFM25 per 100 sq.ft. of conditioned floor area.
 - Envelope insulation levels meet or exceed 2009 IECC levels. (Not Required for Version 2.5!)
 - Slab on Grade Insulation > R-5 at IECC 2009 Depth, Climate Zones 4 & above. (Not Required for Version 2.5!)
 - Insulation achieves RESNET Grade I installation or Grade II for walls. (Not Required for Version 2.5!)
 - Windows meet the 2009 IECC Requirements - Table 402.1.1. (Not Required for Version 2.5!)
 - Duct insulation meets the EPA minimum requirements of R-6. (Not Required for Version 2.5!)
 - Mechanical ventilation rate is within 100-120% of ASHRAE 62.2-2007 values. (Not Required for Version 2.5!)
 - ENERGY STAR Checklists verified and complete. (Not Required for Version 2.5!)

This home **DOES NOT MEET** the energy efficiency requirements for designation as an EPA ENERGY STAR Version 2.5 Qualified Home.



In This Case

Version 3

- 80 ▪ Move from supply ventilation to exhaust -10 HERS Index point
- 72 ▪ Add foundation insulation -8 HERS Index points
- 69 ▪ Infiltration from .28 to .20 NACH -3 HERS Index points
- 64 ▪ 100% CFL's -5 HERS Index points
- Version 3 add thermal Bridging requirement

House Specs

- Foundation R-11
- Slab R-0
- Floor Blown R-43
- Rim R-19
- Walls blown R-23
- Windows U-35/SHGC.36
- Doors R-5/ R-2.2
- Attic R-38
- Furnace 92.1 AFUE w/ 100 CFM LTO
- Water Heater 62 EF
- AC 13 Seer
- 0.20 NACH & Ventilation
- Default appliances 100% CFL



What does Grade 1 insulation mean?

“An Insulation contractors told me the other day that some Raters say Batts can never get a grade 1.”

- Can Batts be used and can they meet the 2009 IECC insulation levels?

“Some Insulators are telling Builders that batts rarely get grade 1 and upsell them to a blown in product. They know how difficult it is to install batts. I still think batts need to be a viable option for builders.”

- Quote form a QAD:

“I have seen Raters make very different judgment calls about insulation grading than I would have. Again I’m not sure how you would handle this one since it is inherently somewhat subjective, but it may be worth a review.”



RESNET Standards Grade 1 Insulation Installation

- Installed according to manufacturer's instructions
- Fills each cavity side-to-side and top-to-bottom
- No substantial gaps, voids, compressions, or obstructions
- Split or fitted tightly around wiring or obstructions in wall
- Occasional very small gaps are acceptable for "Grade I"
- Wall insulation shall be enclosed on all six sides
- Must be in substantial contact with the sheathing material.
- Inset stapling is neat (no buckling), and the batt is only compressed at the edges of each cavity, to the depth of the tab itself.

Compression or incomplete fill amounting to **2% or less**, if the empty spaces are **less than 30%** of the intended fill thickness, are acceptable for "Grade I"



RESNET Standards – Grade I Insulation

Gray areas illustrate compression

Gray areas illustrate gaps & Voids

Duct leakage



“Total duct leakage is still a challenge, depending on the market. Things are changing in practice for many and it's taking time for them to hit the target consistently.”

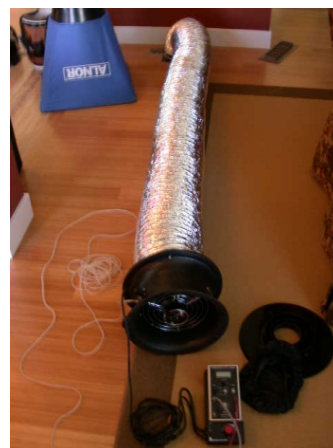
Wake Up!!

- Building cavities as Ducts
- Sealing boots to sub-surfaces / drywall
- The target is achievable with a little practice and guidance



Total Duct Leakage ... Why?

- Not an indication of systems performance - gives us an indication of holes and hole size
- Does not replicate leakage under normal operation
- System performance (how well it delivers air) is being verified in other ways
 - Flow testing and pressure balance testing
- Ensures comfort, building durability, safety and efficiency



“Rough or Final that is the question?”

Rough



Final



“If we want tight ducts When should they be tested?”

- Rough
 - Why doesn't testing at a rough stage meet the intent and rational for the program
 - Why can't it be left up to the Rater when testing should occur?

- Rough
 - Consistency of how ducts can be sealed
 - How do you fix a problem at a final stage
 - Ability to fog the system for contactor education

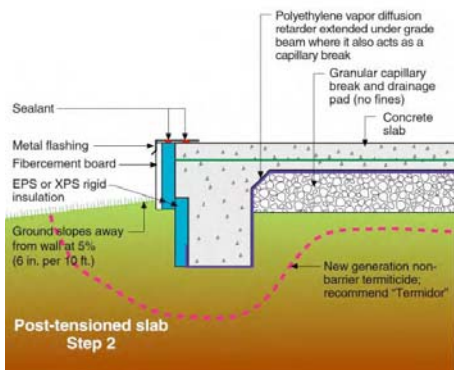


When should it be tested rough or final - ROUGH!



Slab Edge Insulation

“ I have to do what ... R- what ... From where to where ... It is never going to last through the construction cycle.”

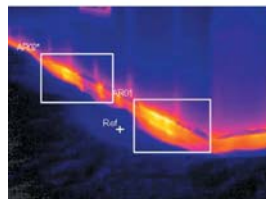


- Above grade details
- Post tension slabs
- Entry's and Garage connections
- Walkout basements
- Structural subfloors



Thermal Enclosure Checklist Footnote 4&5

- 4. Slab edge insulation is only required for slab-on-grade floors with a floor surface less than 12 inches below grade
 - Slab insulation shall **extend to the top of the slab** to provide a complete thermal break
- 5. Where an insulated wall separates a garage, patio, porch, or other unconditioned space from the conditioned space of the house, slab insulation **shall also be installed** at this interface to provide a thermal break between the conditioned and unconditioned slab.
- Where specific details cannot meet this requirement, partners shall provide the detail to EPA to request an exemption prior to the home's qualification.



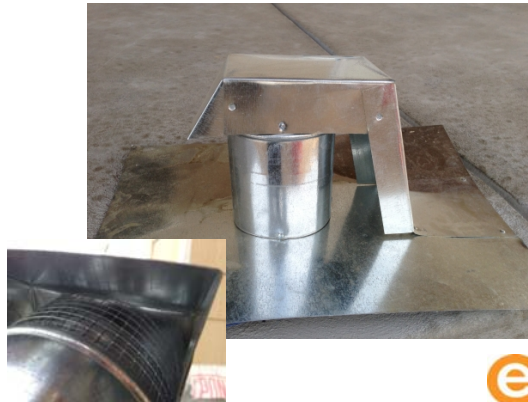
www.energystar.gov/slabeledge



Fan flows and ventilation flows

“Need to catch this at rough. If you see a builder grade 50 CFM fan housing with a 3” duct, tell the Super you doubt the fan will meet 50 CFM.”

- Upsize fan to 70 CFM
- Upsize duct to 4 or 5”
- Minimize elbows
- Look at terminations
- Communication
 - Flow Box
 - This is how you test
 - Etc.



Ventilation

“HVAC contractors don’t want raters poking holes in flex ducts to measure Air Cycler (supply ventilation) flow. The contractor just assumes it meets ASHRAE 62.2 and cries foul when I call it out”

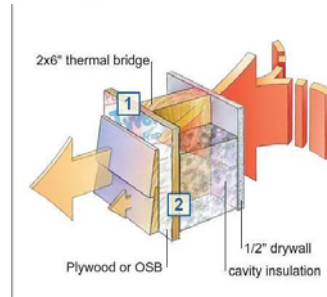
- Measurement issues
 - Flow box – Exhaust ventilation
 - Pitot tub fpm, duct size, conversion to CFM
 - Flow hoods
 - Pressure taps on some HRVs and ERVs



Thermal Bridging

“If no continuous insulation is used, discretion is required. If headers are insulated and there is a noticeable attempt to eliminate extra framing...3 stud corners, ladder blocking, possibly 24” OC, I believe the builder is making the right progression”

- Remember there is the ability to mix and match
- Intent vs. progress vs. 100% compliance
- New clarification:
 - 2x6 framing with stud spacing of 16 in. o.c. in Climate Zones 5 - 8 shall have $\geq R-20.0$ wall cavity insulation installed regardless of any framing plan or alternative equivalent total UA calculation

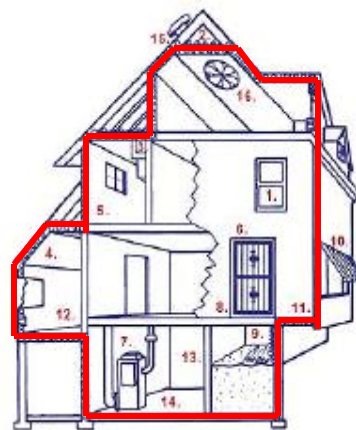


The Envelope & the HVAC Contractor

“If the process goes as intended I trust that my design will work... its when something is missed that I worry.”

Faith or reality?

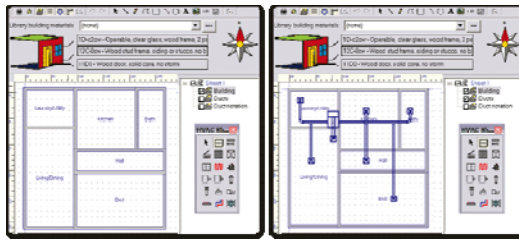
- House is a system Right!
- The Thermal Enclosure Checklist is directly connected with the HVAC checklists
 - Synergy
- Investments in the thermal envelope
 - saves costs on the HVAC system
 - lower capacity equipment
 - Improves comfort and efficiency
- The Thermal Envelope is the foundation of designing and installing a complete HVAC system.



Site Specific Design

“ There is a disconnect between what the Rater checklist and the Constrictor checklist are after. The Rater is reviewing the Contractor checklist based off of the Rated Home specification. Contractor is doing there work off plans not the Rated home.”

- Does the program explicitly say site specific Design?



- Yes / But



For Home that Final in 2013

LOADS:

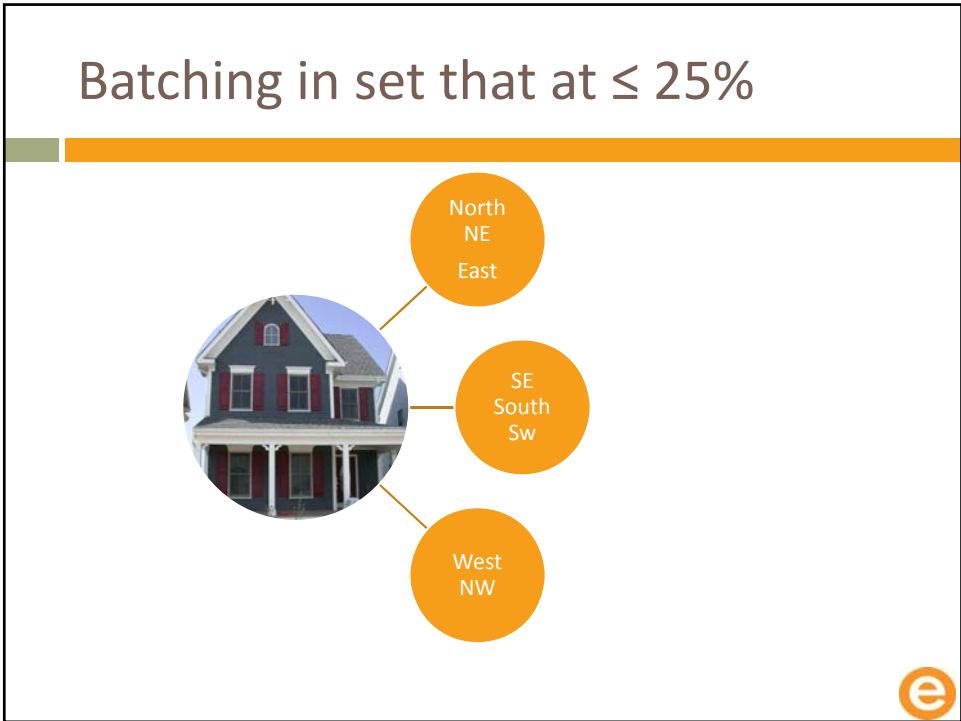
- For each house plan with **multiple configurations (e.g., orientations, elevations, options)**, the loads shall be calculated for each potential configuration
- If the loads **across all configurations** vary by $\leq 25\%$, then the largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S
- Otherwise, the contractor shall group the load for each configuration into a set with $\leq 25\%$ variation and equipment selection shall be completed for each set of loads



What does this mean?

Foundation Types	Slab on Grade	Full Basement	Base / Crawl	Walkout	Crawl / Walkout	Full Crawl		Elevations that change SQ or volume
Orientations		How many potential configurations are there?					Options	
North							3 bedroom	Elev. A
NE							4 Bedroom	Elev. B
East							Office/ bedroom	Elev. C
SE								Elev. D
South								
SW								
West								
NW								

Batching in set that at ≤ 25%



Start with Template Move to Sit Specific



Site Specific Design

- Rater Checklist
- For homes with a date of final inspection on or after 01/01/2013:
 - For each house plan with multiple configurations (e.g., orientations, elevations, options)
 - The Rater shall confirm that the parameters listed in Items 1.2.2 to 1.2.6 are **aligned with the rated home**



Matches Rated Home: i.e. site specific

- 1.2.2 Home orientation (2.5) **matches** orientation of **rated home**
- 1.2.3 Number of occupants (2.6) **equals** number of occupants in **rated home** (number of bedrooms + one)
- 1.2.4 Conditioned floor area (2.7) is **within ±10%** of conditioned floor area of **rated home**
- 1.2.5 Window area (2.8) is **within ±10%** of calculated window area of **rated home**
- 1.2.6 Predominant window SHGC (2.9) is **within 0.1** of predominant value in **rated home**



ENERGY STAR Qualified Homes, Version 3 (Rev. 06) HVAC System Quality Installation Rater Checklist ¹			
Home Address: _____		City: _____	State: _____
1. Review of HVAC System Quality Installation Contractor Checklist ²	Must Correct	Rater Verified	N/A
1. HVAC System Quality Installation Contractor Checklist completed in its entirety and collected for records, along with documentation on ventilation system (1.3), full load calculations (2.18), and AHRI certificate (3.13).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Review the following parameters related to system cooling design, selection, and installation from the HVAC Contractor Checklist (Contractor Checklist Item # indicated in parenthesis). ³			
1.2.1 Outdoor design temperatures (2.4) are equal to the 1% and 99% ACCA Manual J design temperatures for contractor-designated <u>design location</u> ⁴	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.2 Home orientation (2.5) matches orientation of <u>rated home</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.3 Number of occupants (2.6) equals number of occupants in <u>rated home</u> ⁵	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.4 Conditioned floor area (2.7) is within ±10% of conditioned floor area of <u>rated home</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.5 Window area (2.8) is within ±10% of calculated window area of <u>rated home</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.6 Predominant window SHGC (2.9) is within 0.1 of predominant value in <u>rated home</u> ⁶	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.7 Listed latent cooling capacity (3.8) exceeds design latent heat gain (2.12)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.8 Listed sensible cooling capacity (3.9) exceeds design sensible heat gain (2.13)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.9 Listed total cooling capacity (3.10) is 95-115% (or 95-125% for Heat Pumps in Climate Zones 4-8) of design total heat gain (2.14), or next nominal size ⁷	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.10 HVAC manufacturer and model numbers on installed equipment, Contractor Checklist (3.1, 3.2, 5.1), and AHRI certificate or OEM catalog data all match ⁸	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.11 Using reported liquid line (6.3) or suction line (6.5) pressure, corresponding temperature (as determined using pressure / temperature chart for refrigerant type) matches reported condenser (7.1) or evaporator (7.5) saturation temperature (± 3 degrees) ⁹	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2.12 Calculated subcooling (7.1 minus 6.4) value is within ±3 °F of the reported target temperature (7.3) or calculated superheat (6.6 minus 7.5) value is within ±5 °F of the reported target temperature (7.7). ⁹	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Rater-verified supply & return duct static pressure ≤ 110% of contractor values (9.3, 9.4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 Contractor-prepared <u>balancing report</u> indicating the room name and design airflow for each supply and return register collected by Rater for records. In addition, final individual room airflows measured and documented on balancing report through one of the following options:			
1.4.1 Measured and documented by contractor (10.1.1), OR;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4.2 Measured by Rater using Section 804.2 of the Mortgage Industry National HERS Standard, documented by Rater, & verified by Rater to be within the greater of ± 20% or 25 CFM of design airflow (10.1.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5 HVAC contractor holds credentials necessary to complete the HVAC System QI Contractor Checklist ¹⁰	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Two Options

- Better coordination between Builder and HVAC contractor
 - Plans don't match what is being built
 - Window Sqft other option

- Site visit at the time the tin is dropped
 - Confirm framing and duct layout
 - Confirm envelope specs
 - Confirm windows, bedroom, Sqft, SHGC



Rater HVAC Checklist

- *Listed total cooling capacity (3.10 on HVAC Contractors Checklist Rev6) is 95-115% (or 95-125% for Heat Pumps in Climate Zones 4-8) of design total heat gain (2.14 on HVAC Contractors Checklist Rev6), or next nominal size. Check PASS if next nominal size.*

2.12 Design Latent Heat Gain:	<u>479</u>	BTUh
2.13 Design Sensible Heat Gain:	<u>23501</u>	BTUh
2.14 Design Total Heat Gain:	<u>23501</u>	BTUh
2.15 Design Total Heat Loss:	<u>47903</u>	BTUh
2.16 Design Airflow: ¹³	<u>1730</u>	CFM
2.17 Design Duct Static Pressure: ¹⁴	<u>1.0</u>	In. Water Column
2.18 Full Load Calculations Report Attached ¹⁵		
3. Selected Cooling Equipment, If Cooling Equipment to be Installed		
3.1 Condenser Manufacturer & Model:	<u>13ACX036230</u>	
3.2 Evaporator / Fan Coil Manufacturer & Model:	<u>R-374AC16F1</u>	
3.3 AHRI Reference #: ¹⁶	<u>310934</u>	
3.4 Listed Efficiency:	EER <u>13</u> SEER	
3.5 Metering Device Type:	<input checked="" type="checkbox"/> TXV <input type="checkbox"/> Fixed orifice <input type="checkbox"/> Other:	
3.6 Refrigerant Type:	<input checked="" type="checkbox"/> R-410a <input type="checkbox"/> Other:	
3.7 Fan Speed Type: ¹⁷	<input checked="" type="checkbox"/> Fixed <input type="checkbox"/> Variable (ECM / ICM) <input type="checkbox"/> Other:	
3.8 Listed Sys. Latent Capacity at Design Cond.: ¹⁸	<u>43000</u>	BTUh
3.9 Listed Sys. Sensible Capacity at Design Cond.: ¹⁸	<u>28700</u>	BTUh
3.10 Listed Sys. Total Capacity at Design Cond.: ¹⁸	<u>35000</u>	BTUh
3.11 If Listed Sys. Latent Capacity (Value 3.8) ≤ Design Latent Heat Gain (Value 2.12), ENERGY STAR		

- 23501 x 1.15 = 27026
- Next nominal Size is 30,000 or 2.5 Ton
- 36,000 3 Ton installed
- We learned that the manufacture data what wrong
 - Altitude
 - Transposed columns



ESv3 HVAC Checklist review

- 2 system houses
 - Software analysis
 - Window break down on:
 - Manual J
 - Checklist
 - REM
 - SQFT break down on:
 - Manual J
 - Checklist
 - REM



Managing Checklist Documentation

“Probably the single biggest thing I’ve heard from Raters is how hard it is to get the HVAC Contractor checklist. Several rating companies, large and small, have told me they are going to stop offering EnergyStar ratings as a service just for that reason.”

- Importance of Communication
 - “Prior to ESv3, I don't think that most HVAC contractors even knew they were working on an ES homes because they were so detached from the process.”
- Tips
 - Engage the contractors
 - Business model
 - Do not report until documentation has been obtained
 - Software/web data management



File	Description
Not Uploaded	Optimiser Project File
3490 W Girard Dr KB Remfile 14.blg	Building File
3490 W Girard Dr KB Builder Packet.pdf	HERS Certificate
3490 W Girard Dr KB Tectite.pdf	ASTM E779 Compliant Blower Door Software Report
Not Uploaded	ESV3 Thermal Enclosure Checklist
img-220155210-0001.pdf	ESV3 Water Management Checklist
Not Uploaded	ESV3 HVAC Rater Checklist
3490 W. Girard Dr.,Plan 1540.pdf	ESV3 HVAC Contractor Checklist
Not Uploaded	Energy Use Guarantee - Fuel Summary
Not Uploaded	Energy Use Guarantee - REM File
Not Uploaded	Energy Use Guarantee - Certificate
Plan 1540, Bsmt., Load Calculations.pdf	HVAC Manual J Load Calc
CA13NA024.CNPVP3017 AHRI CERTIFICATE(1).pdf	AHRI Certificates
3490 W GIRARD DR FINAL FLOWS.pdf	HVAC Balancing Report
<input type="text"/> Browse...	Optimiser Project File
<input type="text"/> Browse...	ESV3 Thermal Enclosure Checklist
<input type="text"/> Browse...	ESV3 HVAC Rater Checklist
<input type="text"/> Browse...	ESV3 HVAC Contractor Checklist
<input type="text"/> Browse...	Energy Use Guarantee - Fuel Summary
<input type="text"/> Browse...	Energy Use Guarantee - REM File
<input type="text"/> Browse...	Energy Use Guarantee - Certificate
<input type="button" value="Upload Files"/>	
Plan 1540, Bsmt., Load Calculations(1).pdf	
CA13NA024.CNPVP3017 AHRI CERTIFICATE(6).pdf	
3490 W. Girard Dr.,Plan 1540(1).pdf	
3490 W GIRARD DR FINAL FLOWS(1).pdf	

Review of ESV3 HVAC System Quality Installation Contractor Checklist

Review the following parameters related to system cooling design, selection, and installation from the ESV3 HVAC Contractor Checklist
HVAC Contractor to put checklist in house permit pack for Rater to pick up.
(All HVAC items of ESV3 required by IAP, BC, and EPL)

Program	Pass/Collected Fail/No N/A	Builder Standardized Sign Off Comments	Note: Lo
ESV3 - 1.1 HCAVR BC - 5 IAP 4.1 & 7.1	Collect and Store HVAC System Quality Installation Contractor checklist completed in its entirety. (one per system)	Have HVAC Contractor fix list: HVAC Contractor Checklist doe	
ESV3 - 1.1 & 2.7 HCAVR IAP 4.1, 4.2	Collect and store HVAC design documents: Manual J, D, S. (one per system)	Have HVAC Contractor fix list: HVAC Contractor Checklist doe	
ESV3 - 1.1 & 2.7 HCAVR IAP 4.1, 4.2	Collect and store HVAC design documents: AHRI certificates. (one per system)	Have HVAC Contractor fix list: HVAC Contractor Checklist doe	
ESV3 - 1.1 & 2.7 HCAVR IAP 4.1, 4.2	Collect and store HVAC design documents: Balancing report (one per system)	Have HVAC Contractor fix list: HVAC Contractor Checklist doe	
		HVAC Design/Rated	+/-% of Design
ESV3 - 1.2.1	Pass/Collected Fail/No N/A	Contractor Home	
HVAC BC - 2 IAP 4.1	Summer Outdoor design temperatures (2.4 on HVAC Contractor Checklist Rev6) are equal to the 1% & 99% of ACCA Manual J design temperatures for contractor-designated design location	90	
ESV3 - 1.2.1 HVAC BC - 2 IAP 4.1	WINTER Outdoor design temperatures (2.4 on HVAC Contractor Checklist Rev6) are equal to 1% & 99% of ACCA Manual J design temperatures for contractor-designated design location	1	
ESV3 - 1.2.2 HVAC BC - 2	Home orientation (2.5 on HVAC Contractor Checklist Rev6) matches orientation of rated home:	E	E
ESV3 - 1.2.3 HVAC BC - 2 IAP 4.1	Number of Occupants (2.6 on HVAC Contractors Checklist Rev6) equals number of bedrooms in rated home plus 1.	5	5
ESV3 - 1.2.4 HVAC BC - 2	Conditioned floor area (2.7 on HVAC Contractors Checklist Rev6) is within ± 10% of conditioned floor area of rated home.	4291	3850 11 %
ESV3 - 1.2.5 HVAC			

HVAC Commissioning

“Many partners are still unfamiliar with commissioning tests and are intimidated as a result.”

- Energy Star videos
 - http://www.energystar.gov/index.cfm?c=bldrs_leaders_raters.nh_videos
 - Static pressure
 - Air volume at the evaporator
 - Electrical measurements
 - Assessing Refrigerant charge



Right sizing the HVAC System

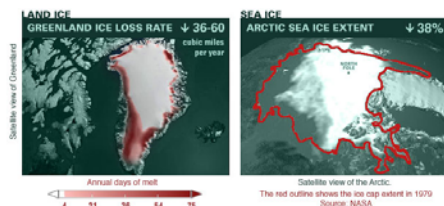
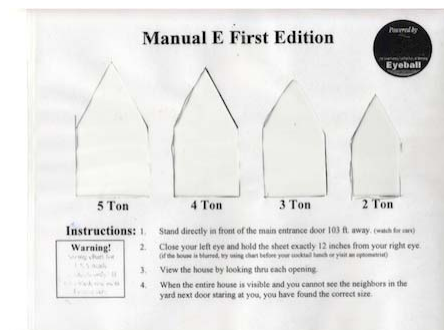
“ No way will that size equipment meet the load of this house ... Do you want to take the call from the Builder?”

- Some partners don't believe that using Manual J, D, and S will result in a comfortable home
- It is like the Climate change debate

“ I didn't believe it but it works ... But ... It reduced equipment capacity and cost, it improve comfort and efficiency, and it lessened our warranty.”

Tips for the none believer:

- Can't participate in ESv3
- Incremental approach
- Try down-sizing by just a half ton
- Then try another half ton reduction
- Reach the right-sized capacity
- While doing this get your design as close as possible to the specification of the actual house



CREDENTIALING

“The cost of getting credentialed is a big hurdle as I see little value from what ACCA is offering me.”

- Market issues:
 - Some have very little competition
 - Little market demand but still a requirement
- Is this enough:
 - Regardless this is required ...
 - The credential provides market differentiation ...



ESv3 From a Raters Perspective

Thank you!

Robby@nrglogic.com

www.nrglogic.com

720-838-0677



Located on the northern German island of Usedom

