FGBC FLORIDA GREEN BUILDING COALITION

A Green Florida for a Blue Planet

Building Science
For the Green Professional
Energy Efficiency

Your Presenters

ES Green & Company, LLC

"A Common Sense Approach"

Randy Conn, CBC 027066
FGBC Certifier
Water Star™ Certifier
FGBC Certified Green Professional
Home Inspector HI 1867
randyconnbuilder@aol.com
850-933-0188

Jane Conn
Florida, National Energy Rater
Water Star™ Certifier
FGBC Certified Green Professional
jbixconn@comcast.net
850-545-5738

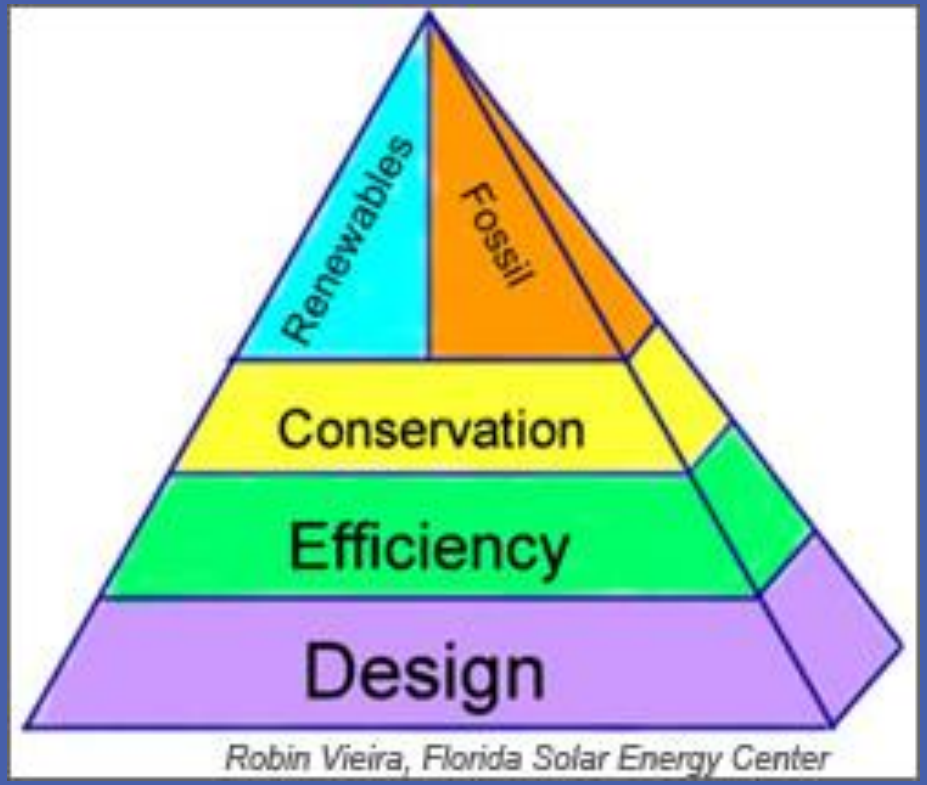
Energy Efficiency

- Complying with Florida's energy policy
- Complying with Green Building Certification Energy Requirements
- Space Heating and Cooling Systems
- Air Distribution Systems

Energy

- Leaning Objectives—Energy Efficiency
  - Identify the critical factors for ensuring energy efficiency.
  - Describe the technical resources and considerations involved with designing and installing an energy efficient HVAC system.
  - Explain the important energy conservation features of lighting, appliance, and water heating components.

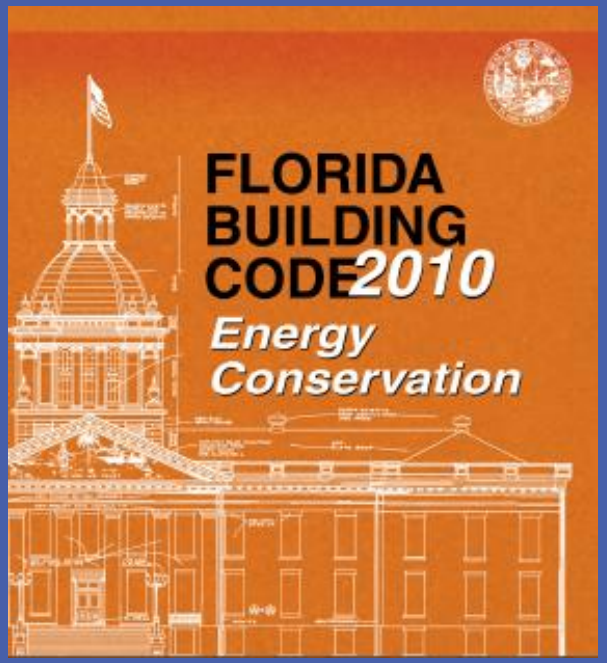
Introduction



- Conservation via
  - Building envelope
  - Air barrier
- Efficient consumption applies to:
  - Seasonal consumption
  - Baseload consumption
- Alternative energy
- All three work interdependently

Complying with Florida's energy policy

- Florida has an energy code that is updated by the Florida Building Commission every three years.



Florida Energy Code Compliance

- Two general methods:
  - Prescriptive : strict envelope measures with federal minimum heating, cooling and water heating equipment
  - Performance: building simulation software is used to project the energy use of the proposed design and compare it to a predefined standard reference design of the same size. This method allows trade-offs between envelope and equipment.

Three Prescriptive Methods

- R-value computation – comply with table values and applicable parts of code
- U-Factor alternative – similar but uses whole assembly U-Factor
- Total UA alternative – allows trade-offs between envelope sections

Prescriptive R-Value Compliance

Windows: Max. U-0.65 (skylights 0.75), SHGC 0.30, 20% GFA

Walls: Frame R-13, Block R-6 / R-7.8

Roof Reflectance: Min. 0.25

Ceilings: R-30

Floors: R-13 raised floor; R-0 slab-on-grade

Doors: Max. U-0.65

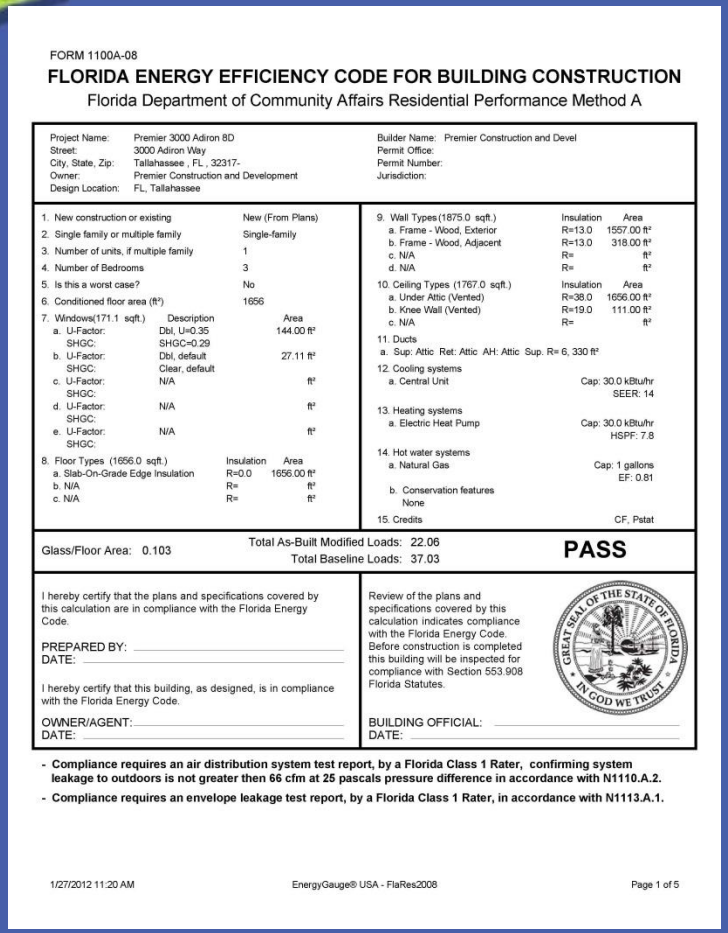
Equipment efficiency: federal code

Ducts: R-6, located in conditioned space and tested Qn≤0.03

Performance Method

- Most builders comply using the performance method.
- 2010 Florida Energy Code requires the proposed design home to have a projected annual energy load of 0.80 of the Florida standard reference design.

Performance Method



FORM 1100A-08

FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Community Affairs Residential Performance Method A

Project Name:	Premier 3000 Adiron 8D	Builder Name:	Premier Construction and Devel
Street:	3000 Adiron Way	Permit Office:	
City, State, Zip:	Tallahassee , FL, 32317-	Permit Number:	
Owner:	Premier Construction and Development	Jurisdiction:	
Design Location:	FL, Tallahassee		

1. New construction or existing	New (From Plans)		9. Wall Types(1875.0 sqft.)	Insulation	Area
2. Single family or multiple family	Single-family		a. Frame - Wood, Exterior	R=13.0	1557.00 ft²
3. Number of units, if multiple family	1		b. Frame - Wood, Adjacent	R=13.0	318.00 ft²
4. Number of Bedrooms	3		c. N/A	R=	ft²
5. Is this a worst case?	No		d. N/A	R=	ft²
6. Conditioned floor area (ft²)	1656		10. Ceiling Types (1767.0 sqft.)	Insulation	Area
7. Windows(171.1 sqft.)	Description	Area	a. Under Attic (Vented)	R=38.0	1656.00 ft²
a. U-Factor: SHGC:	Dbl, U=0.35 SHGC=0.29	144.00 ft²	b. Knee Wall (Vented)	R=19.0	111.00 ft²
b. U-Factor: SHGC:	Dbl, default Clear, default	27.11 ft²	c. N/A	R=	ft²
c. U-Factor: SHGC:	N/A	ft²	11. Ducts		
d. U-Factor: SHGC:	N/A	ft²	a. Sup: Attic Ret: Attic AH: Attic Sup. R= 6, 330 ft²		
e. U-Factor: SHGC:	N/A	ft²	12. Cooling systems		
8. Floor Types (1656.0 sqft.)	Insulation	Area	a. Central Unit	Cap: 30.0 kBtu/hr SEER: 14	
a. Slab-On-Grade Edge Insulation	R=0.0	1656.00 ft²	13. Heating systems		
b. N/A	R=	ft²	a. Electric Heat Pump	Cap: 30.0 kBtu/hr HSPF: 7.8	
c. N/A	R=	ft²	14. Hot water systems		
			a. Natural Gas	Cap: 1 gallons EF: 0.81	
			b. Conservation features None		
			15. Credits	CF, Pstat	

Glass/Floor Area: 0.103

Total As-Built Modified Loads: 22.06

Total Baseline Loads: 37.03

PASS

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code.

PREPARED BY: _____

DATE: _____

I hereby certify that this building, as designed, is in compliance with the Florida Energy Code.

OWNER/AGENT: _____

DATE: _____

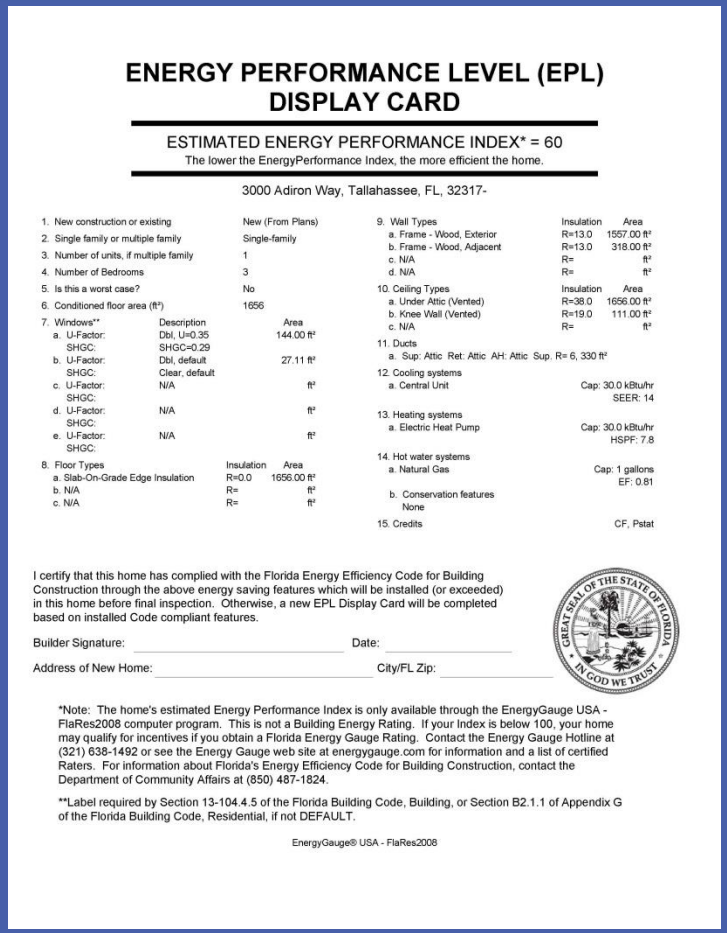
Review of the plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed this building will be inspected for compliance with Section 553.908 Florida Statutes.

BUILDING OFFICIAL: _____

DATE: _____

- **Compliance requires an air distribution system test report, by a Florida Class 1 Rater, confirming system leakage to outdoors is not greater then 66 cfm at 25 pascals pressure difference in accordance with N1110.A.2.**
- **Compliance requires an envelope leakage test report, by a Florida Class 1 Rater, in accordance with N1113.A.1.**

1/27/2012 11:20 AM EnergyGauge® USA - FlaRes2008 Page 1 of 5



ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX* = 60

The lower the EnergyPerformance Index, the more efficient the home.

3000 Adiron Way, Tallahassee, FL, 32317-

1. New construction or existing	New (From Plans)		9. Wall Types	Insulation	Area
2. Single family or multiple family	Single-family		a. Frame - Wood, Exterior	R=13.0	1557.00 ft²
3. Number of units, if multiple family	1		b. Frame - Wood, Adjacent	R=13.0	318.00 ft²
4. Number of Bedrooms	3		c. N/A	R=	ft²
5. Is this a worst case?	No		d. N/A	R=	ft²
6. Conditioned floor area (ft²)	1656		10. Ceiling Types	Insulation	Area
7. Windows**	Description	Area	a. Under Attic (Vented)	R=38.0	1656.00 ft²
a. U-Factor: SHGC:	Dbl, U=0.35 SHGC=0.29	144.00 ft²	b. Knee Wall (Vented)	R=19.0	111.00 ft²
b. U-Factor: SHGC:	Dbl, default Clear, default	27.11 ft²	c. N/A	R=	ft²
c. U-Factor: SHGC:	N/A	ft²	11. Ducts		
d. U-Factor: SHGC:	N/A	ft²	a. Sup: Attic Ret: Attic AH: Attic Sup. R= 6, 330 ft²		
e. U-Factor: SHGC:	N/A	ft²	12. Cooling systems		
8. Floor Types	Insulation	Area	a. Central Unit	Cap: 30.0 kBtu/hr SEER: 14	
a. Slab-On-Grade Edge Insulation	R=0.0	1656.00 ft²	13. Heating systems		
b. N/A	R=	ft²	a. Electric Heat Pump	Cap: 30.0 kBtu/hr HSPF: 7.8	
c. N/A	R=	ft²	14. Hot water systems		
			a. Natural Gas	Cap: 1 gallons EF: 0.81	
			b. Conservation features None		
			15. Credits	CF, Pstat	

I certify that this home has complied with the Florida Energy Efficiency Code for Building Construction through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL Display Card will be completed based on installed Code compliant features.

Builder Signature: _____ Date: _____

Address of New Home: _____ City/FL Zip: _____

*Note: The home's estimated Energy Performance Index is only available through the EnergyGauge USA - FlaRes2008 computer program. This is not a Building Energy Rating. If your Index is below 100, your home may qualify for incentives if you obtain a Florida Energy Gauge Rating. Contact the Energy Gauge Hotline at (321) 638-1492 or see the Energy Gauge web site at energygauge.com for information and a list of certified Raters. For information about Florida's Energy Efficiency Code for Building Construction, contact the Department of Community Affairs at (850) 487-1824.

**Label required by Section 13-104.4.5 of the Florida Building Code, Building, or Section B2.1.1 of Appendix G of the Florida Building Code, Residential, if not DEFAULT.

EnergyGauge® USA - FlaRes2008

Energy

Energy

Energy

Energy

Energy


EfficientLighting
ENERGY SAVING LIGHTING FIXTURE
CEILING MOUNT
EL-800-W
EfficientLighting
ENERGY SAVING LIGHTING FIXTU
CEILING MOUNT
EL-800-W
PROGRESS LIGHTING
ENERGY STAR
-20EBWB
INFORMACIÓN DE DESEMPEÑO Y ENERGÍA
INFORMACIÓN SOBRE LA ENERGÍA
5,203
67
78
Hunter
Modelo 28460
Pro's Best

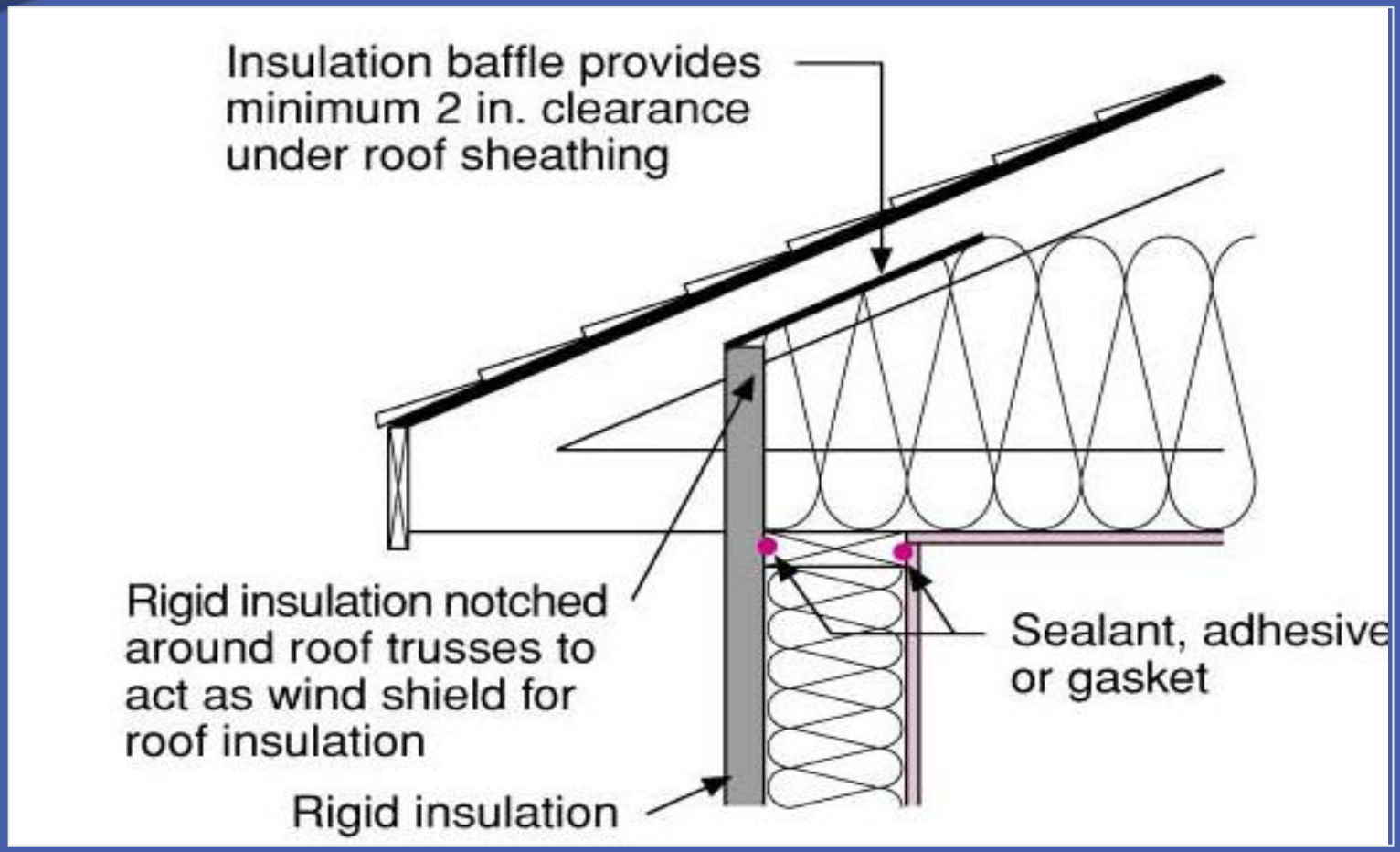
Air Barrier

- Building envelope

Air barrier

Thermal boundary

Insulation Placement



Insulation Types and Forms

Insulation Installation

- 1
- 2
- 3

Insulation Installation

Insulation Installation

Insulation Installation

Heat Transfer

- U-value – The rate of heat loss by the product or assembly
  - To determine the U-value for a given product, divide 1 by the R-value.
  - Example: R19 fiberglass insulation has a U-value of 1/19, or .05263.
- Advanced framing techniques increase the effective insulation value.

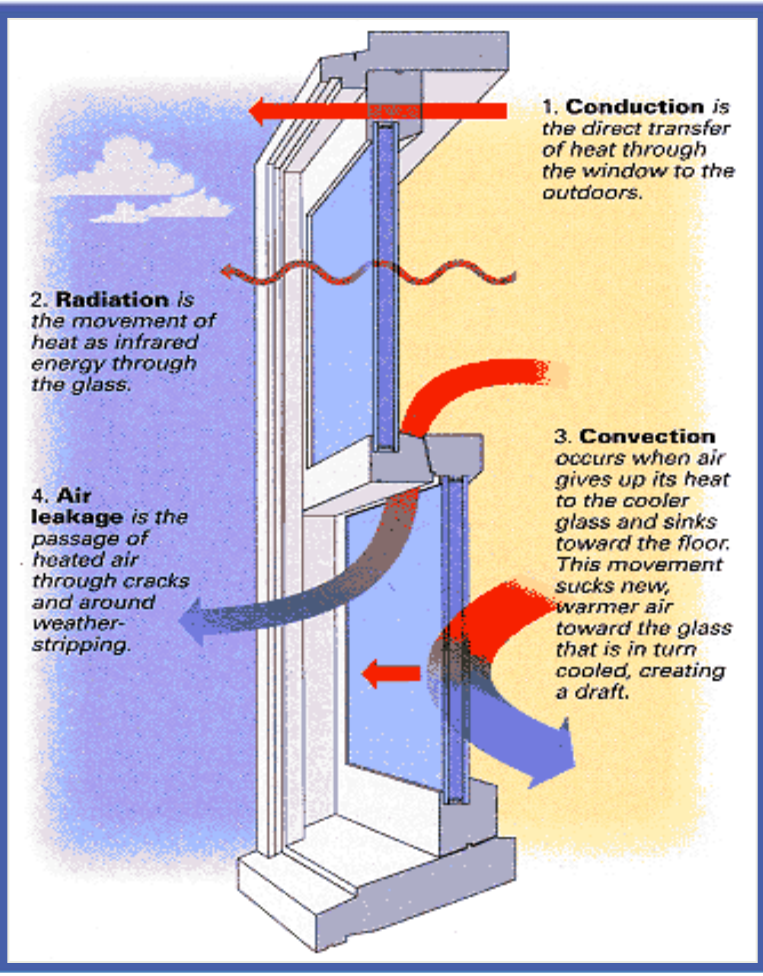
Alternative Building Systems

- OVE
- SIPs
- ICFs
- Precast concrete

When used together, they can provide significant advantages.

Fenestration: Windows, Skylights, and Doors

- Window Issues:
  - Conduction
  - Radiation
  - Convection
  - Air leakage



Windows, Skylights, and Doors

- Frame and glazing options
  - Insulated glass
  - Low-E glass
  - Low-conductance gas fillings
  - Composite spacers
- Fenestration ratings

U-values

- Triple-glazed units: .12
- Double glazed units: .50 to .30

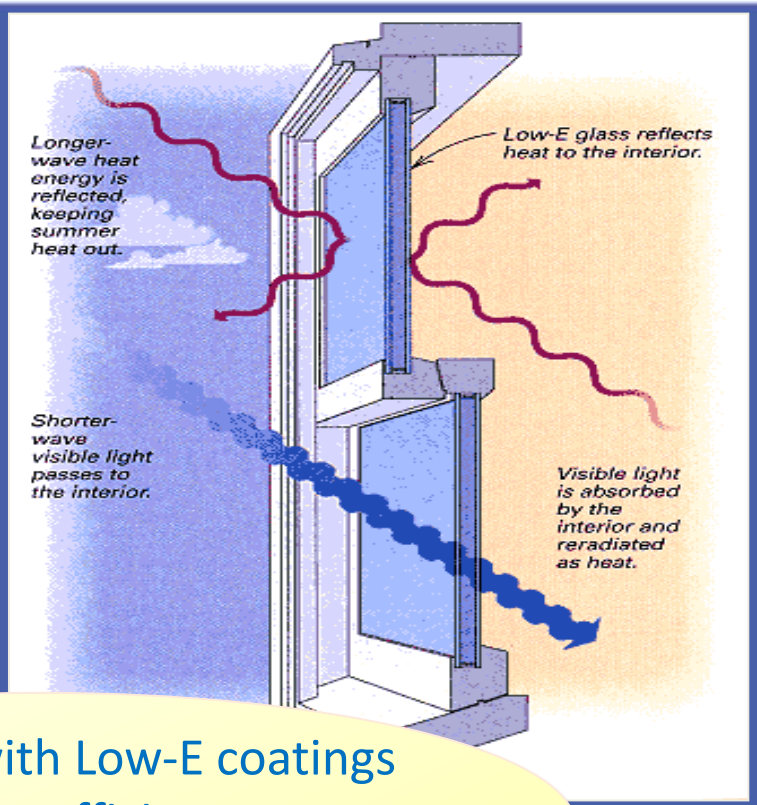
Windows, Skylights, and Doors

- Frame and glazing options
  - Insulated glass
  - Low-E glass
  - Low-conductance gas fillings
  - Composite spacers
- Fenestration ratings

- Reflects up to 90% of long-wave heat energy
- Allows shorter wave, visible light to pass

Windows, Skylights, and Doors

- Frame and glazing options
  - Insulated glass
  - Low-E glass
  - Low-conductance gas fillings
  - Composite spacers
- Fenestration ratings



- Combined with Low-E coatings boosts energy efficiency
- 5% of the window's overall cost

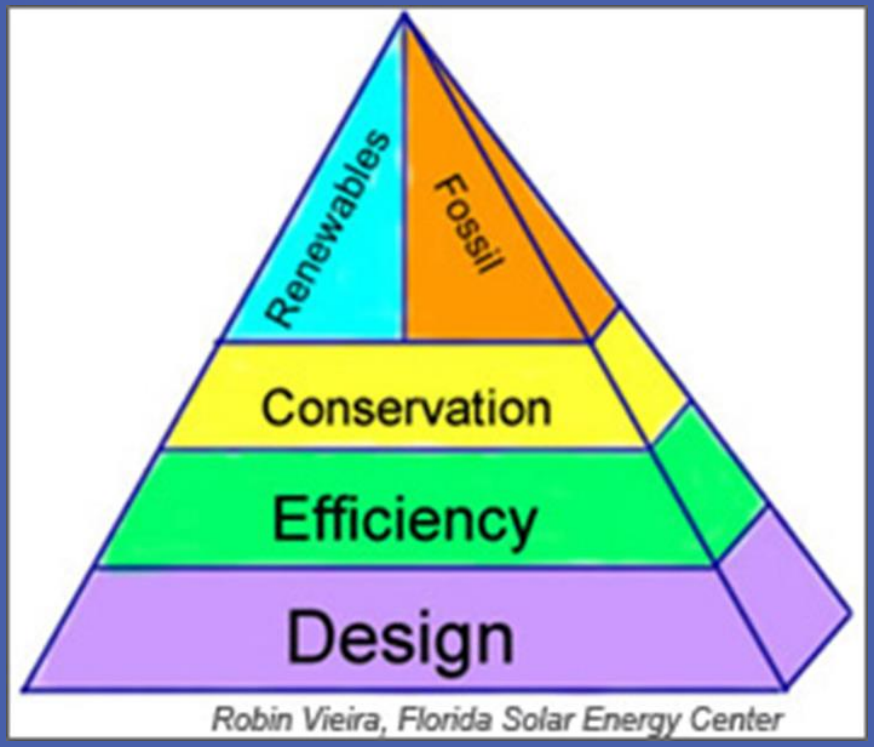
Windows, Skylights, and Doors

- Frame and glazing options
  - Insulated glass
  - Low-E glass
  - Low-conductance gas fillings
  - Composite spacers
- Fenestration ratings

- U-values .02 lower than aluminum-spaced counterparts

Windows, Skylights, and Doors

Energy



- Design criteria
- Design considerations
- Equipment selection
- Distribution

Design Criteria

- Proper design uses scientific criteria and a systematic method.
- The Standard points to ACCA and AHRI resources.
  - ACCA Manual J
  - GAMA H-22
  - ACCA Manual S
  - ACCA Manual D
  - ACCA Manual RS

Design Loads

System sizes should be selected based on the building design loads.

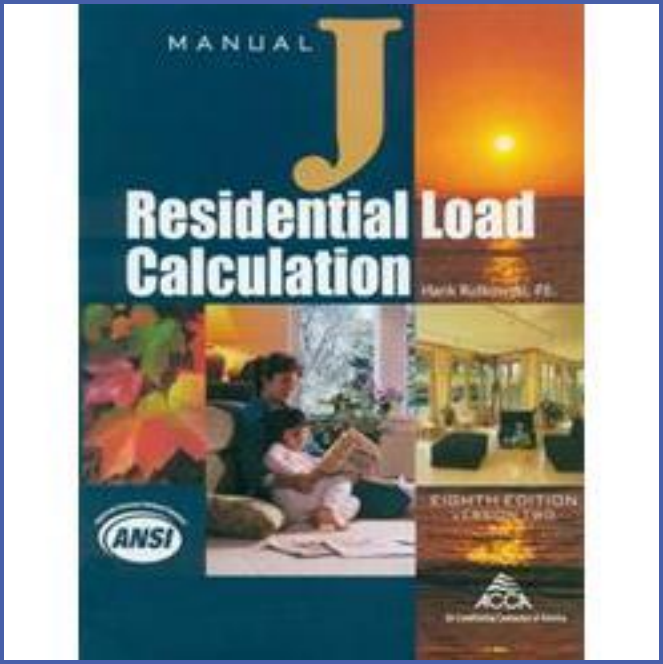
Undersized Equipment

- Does not maintain the comfort level when weather imposes an increased design load
- Slightly undersized equipment may actually provide more comfort at a lower cost by running constantly at the extreme of the design load.

Oversized Equipment

- Causes short-cycles
- Marginalizes part-load temperature control
- Creates pockets of stagnant air
- Degrades humidity control
- Requires larger duct runs
- Increases installed and operating costs
- Increases the installed load
- Causes unnecessary stress on machinery

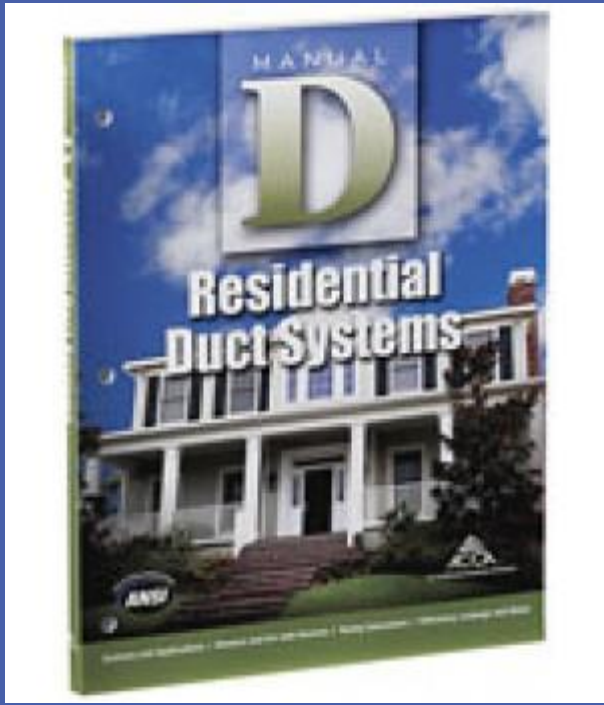
Design Loads



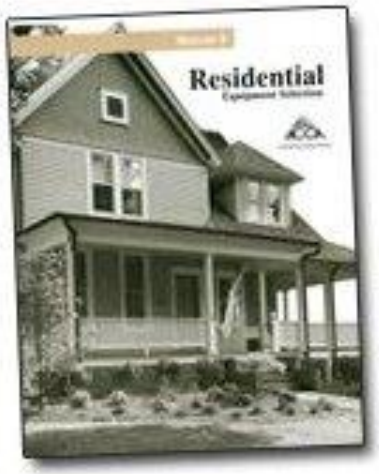
- Manual J residential load calculation enables accurate estimates.

System Selection

- Manual D Residential duct design



System Selection



- Manual S residential system selection

Space Heating and Cooling Systems

Space Heating and Cooling Systems

- **ENERGY STAR Most Efficient 2012 — Central Air Conditioners and Air Source Heat Pump**
  - IQ Drive units up to 24.5 SEER
  - non IQ drive units with SEER 18 to 20

Space Heating and Cooling Systems

- **ENERGY STAR Most Efficient 2012 — Furnaces**
  - Units with up to 0.975 AFUE
  - AFUE is the annual fuel utilization efficiency

Space Heating and Cooling Systems

- Keeping the systems affordable
  - Make home efficient, make ductwork efficient
  - Have contractor size the system using your specified windows and insulation
  - Be willing to shop around to different subs

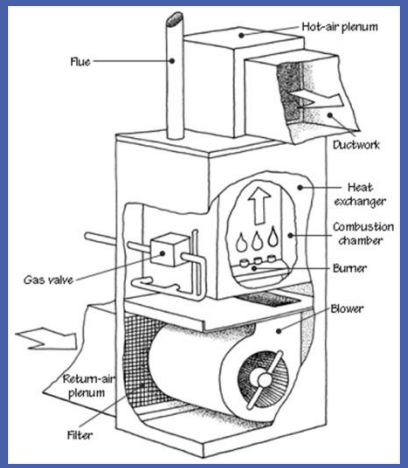
Space Heating and Cooling Systems

- Keeping the systems affordable
  - At some price, it may be more cost efficient to add solar electric panels to reduce energy bills than to go the premium cost for super-high-efficient units.
  - Weigh alternatives. Your energy rater can project savings.

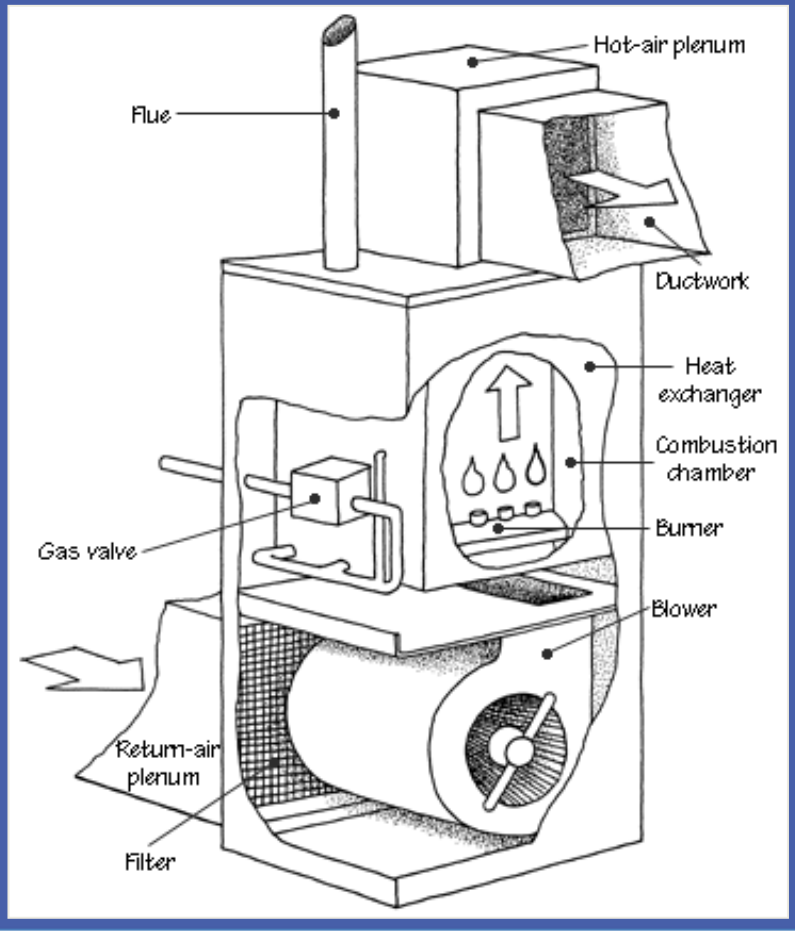
$$$

Equipment

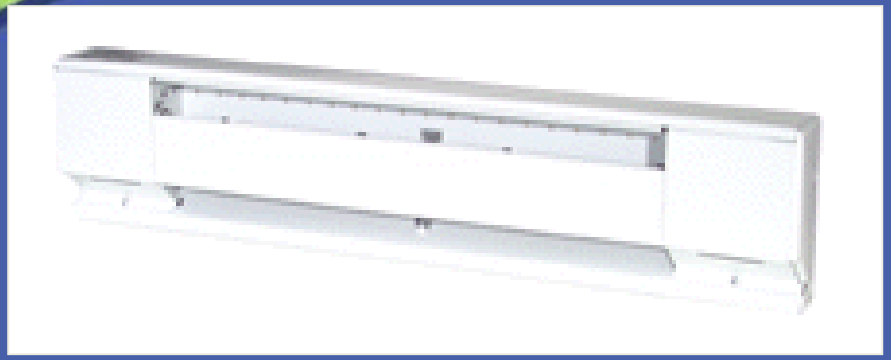
- There are choices in Florida for your type of heating/cooling systems



Forced Air Furnaces

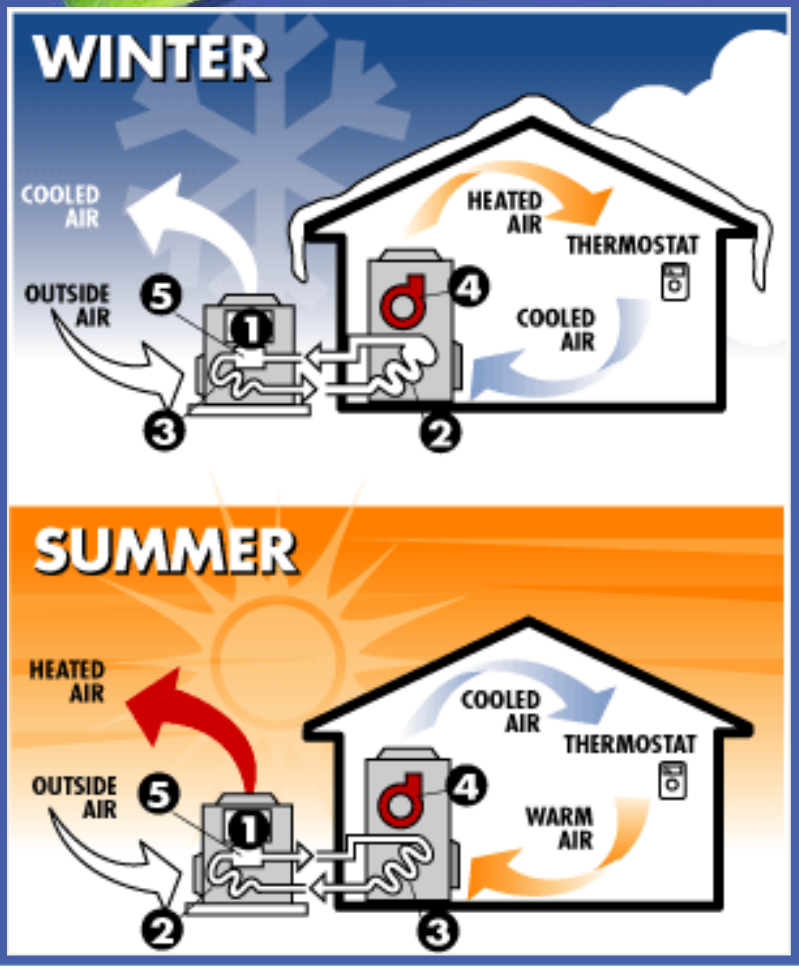


Electric Resistance Heaters



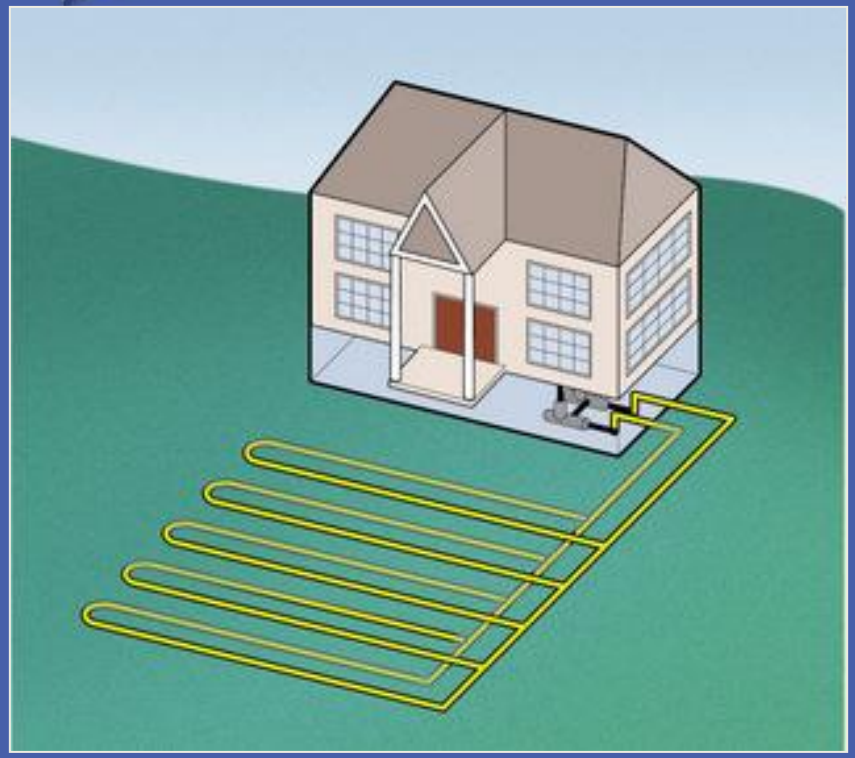
- Several options
  - In-floor radiant panels
  - Ceiling mounted radiant panels
  - Wall-mounted room heaters

Heat Pumps



- Mostly installed where there is primary demand for cooling

Heat Pumps



- Ground Source Heat Pumps

Mini-splits

- Use small individual indoor units in each room
  - Eliminates heat loss through ductwork
- Control for each unit
- Have equipment efficiencies in the 3.2 COP range

Occupant Temperature Controls

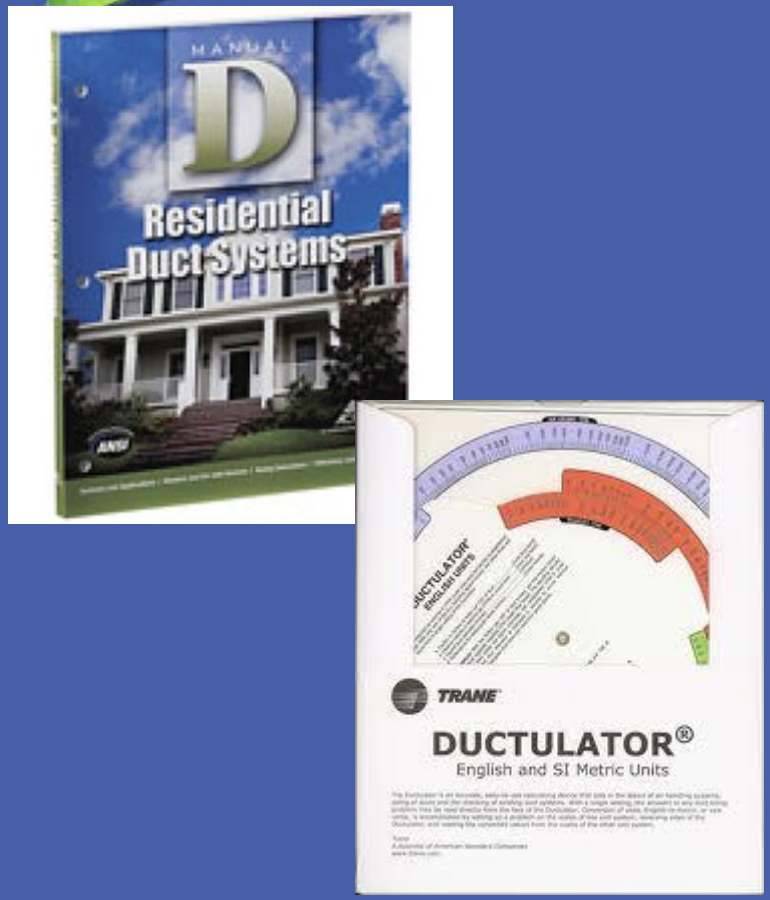
Distribution

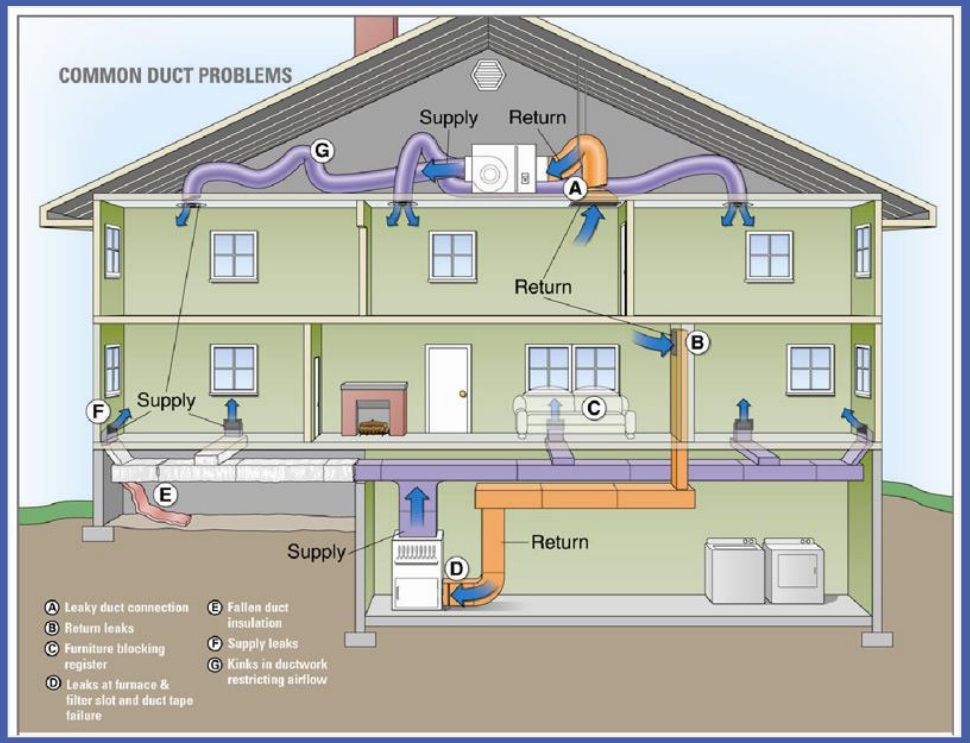
- Two methods of heat distribution:
  - Forced air duct systems
  - Hydronic systems

Forced Air Duct Systems

- Use an distribution or duct system to circulate heated or cooled air

Duct Design


MANUAL
D
Residential
Duct Systems
TRANE
DUCTULATOR®
English and SI Metric Units


COMMON DUCT PROBLEMS
Supply
Return
Return
Supply
Supply
Return
A Leaky duct connection
B Return leaks
C Furniture blocking register
D Leaks at furnace & filter slot and duct tape failure
E Fallen duct insulation
F Supply leaks
G Kinks in ductwork restricting airflow

Duct Materials

Air Return Principles

Duct and Register Locations

- Recommendation: Install air handler unit and distribution system inside the building envelope and in the conditioned space of the house.

Cooling with Natural Ventilation

- Design the home to allow breezes to flow.

Air Distribution Systems

- Ductwork in unconditioned space must be:
  - Sealed
  - Insulated
  - Close to leak free

Air Distribution Systems

- Some green homes will also attempt to be an ENERGY STAR® Qualified Home.

Most of the following pictures are from ENERGY STAR's V3 guidelines.

Air Distribution Systems

Air Distribution Systems

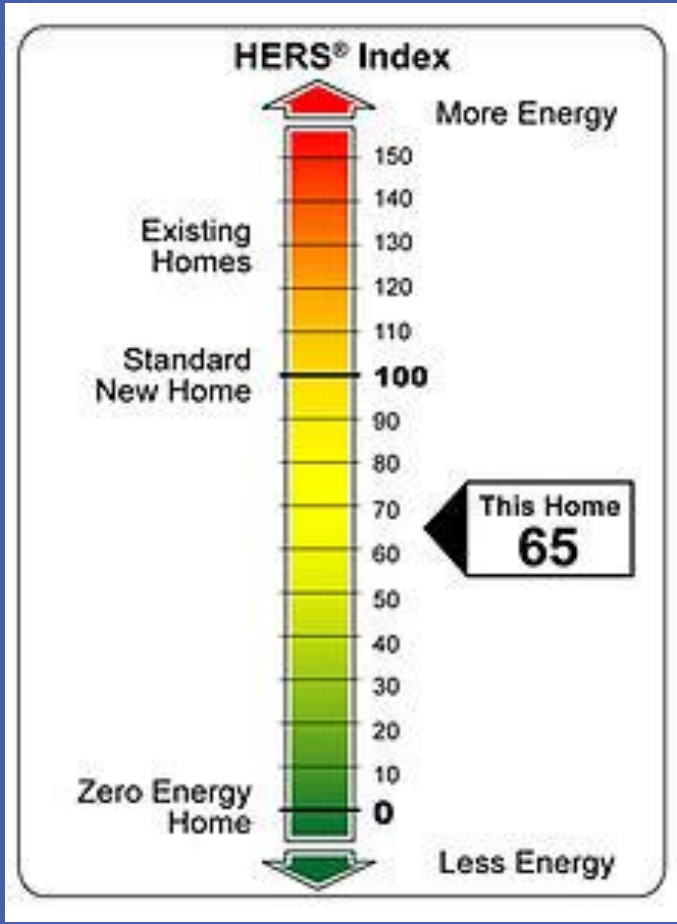
Air Distribution Systems

Not a best practice

Air Distribution Systems

Chase is not large enough for the duct

What is a HERS Index?

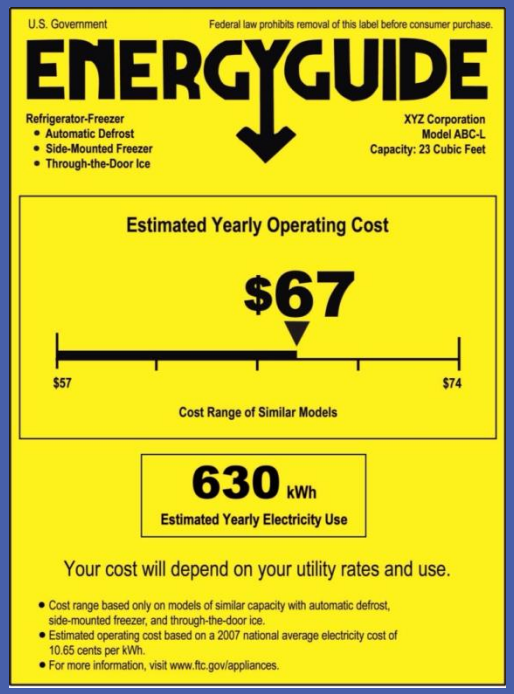


What is a HERS Index?

WHAT IS INCLUDED IN A HERS INDEX		
Envelope		
Floors	Windows	Roof
Foundation type	# & size of windows	Roof configuration / slope
Insulation value	Tint / U-factor	Roof material / color
Perimeter / area	Type of frame	Attic details
Floor covering	Overhang details	Conditioned ceiling area
Walls	Ceilings	Solar absorbance
Orientation	Ceiling style	Roof deck insulation level
Area	Insulation value	Radiant barrier system
Insulation value	Area	Attic ventilation ratio
Doors	Garage	Infiltration
Door area / U value	Attached or not	Building envelope leakage
Equipment		
Cooling	Ducts	Appliances and Lights
System type	Insulation value	Programmable thermostat
Capacity	Duct location	Refrigerator
SEER	Air handler location	% flourescent lighting
Hot Water	Amount of leakage	Ceiling fans
Type / location	Duct surface area	Dishwasher
Efficiency	Heating	Photovoltaics
Daily usage	System type	Modules
Set temperature	Efficiency	Inverter
Solar or heat recovery	Capacity	Batteries

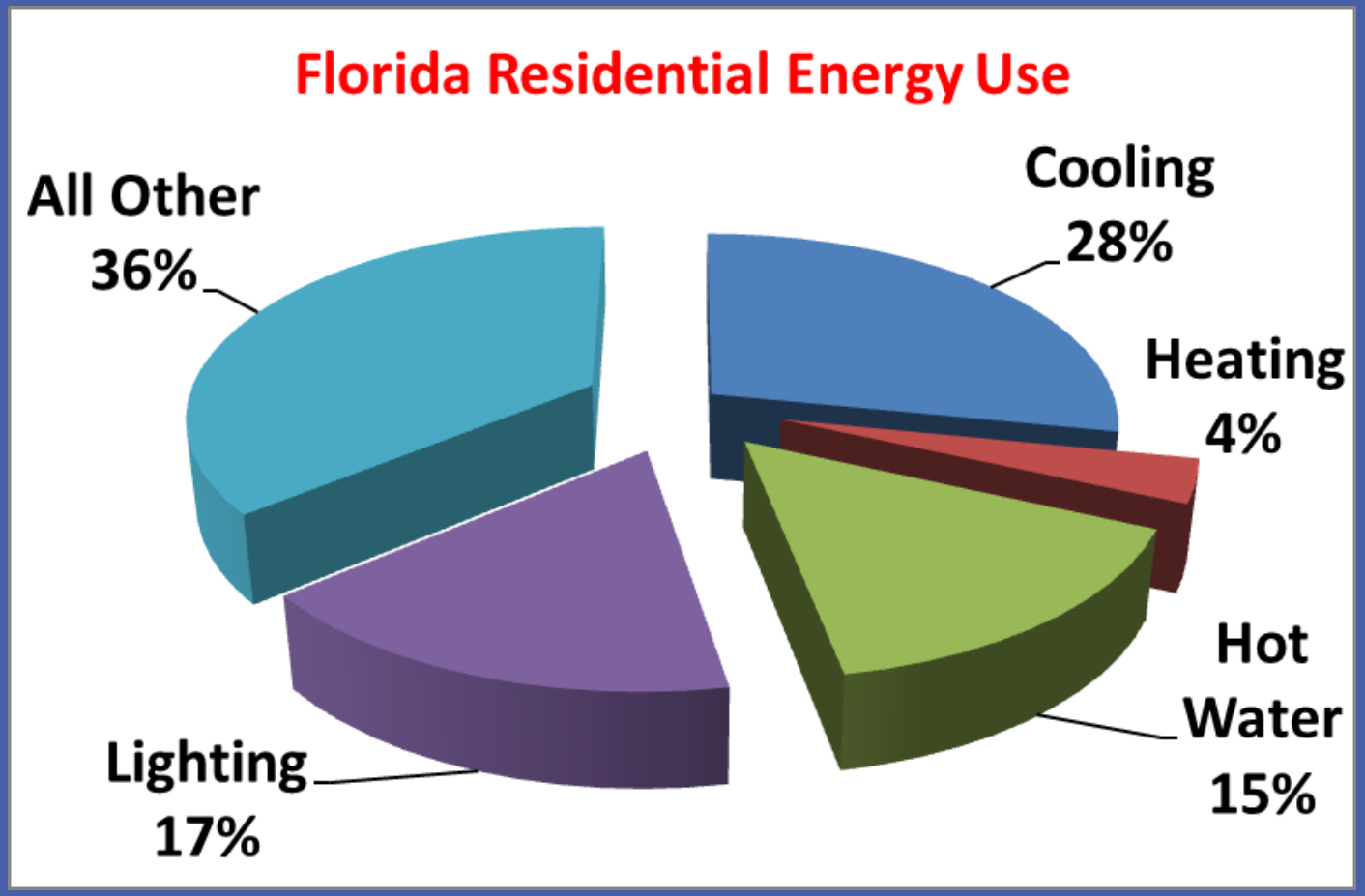
What is a HERS Index?

Energy

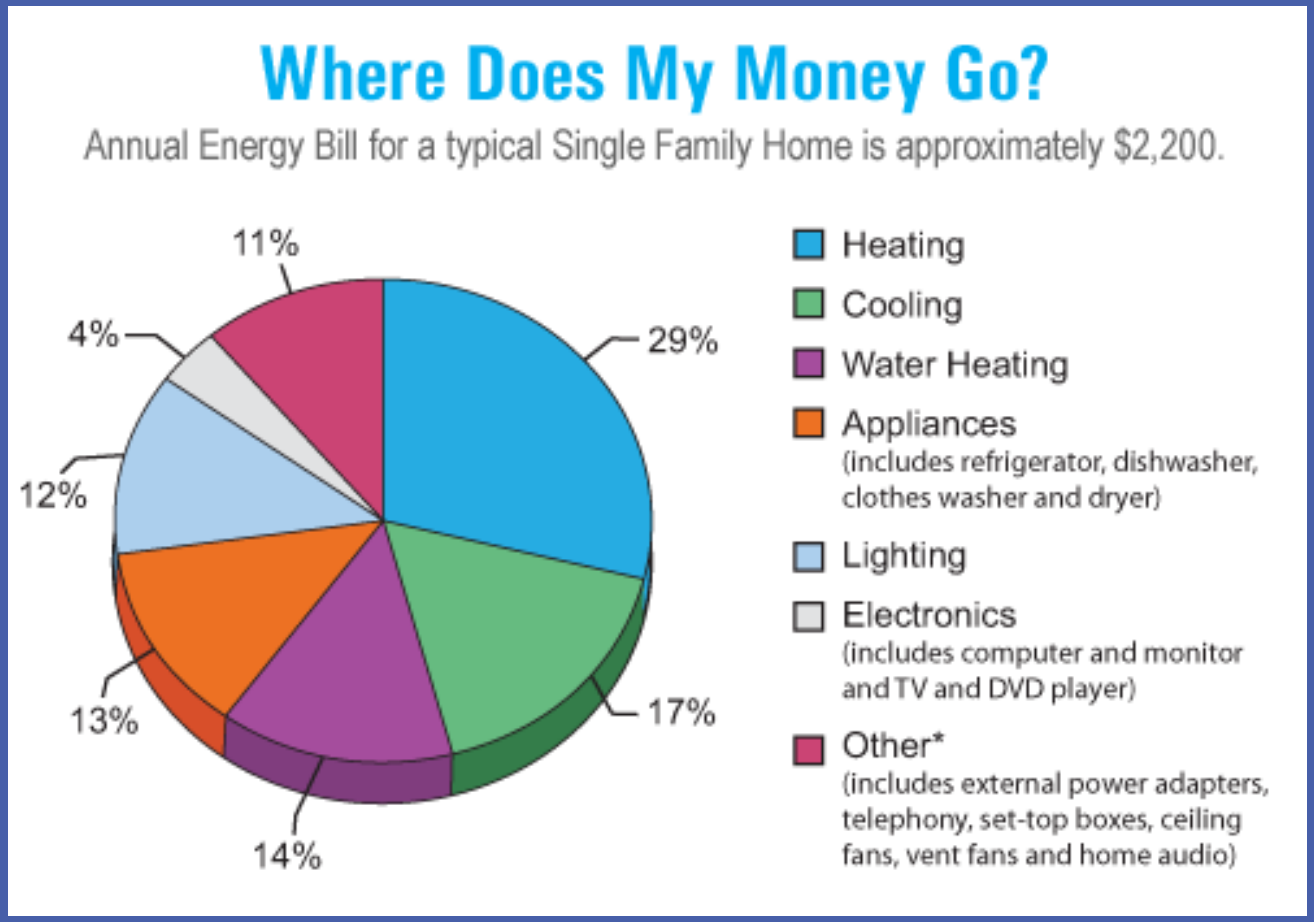

U.S. Government
Federal law prohibits removal of this label before consumer purchase.
ENERGYGUIDE
Refrigerator-Freezer
• Automatic Defrost
• Side-Mounted Freezer
• Through-the-Door Ice
XYZ Corporation
Model ABC-L
Capacity: 23 Cubic Feet
Estimated Yearly Operating Cost
$67
$57
$74
Cost Range of Similar Models
630 kWh
Estimated Yearly Electricity Use
Your cost will depend on your utility rates and use.
• Cost range based only on models of similar capacity with automatic defrost, side-mounted freezer, and through-the-door ice.
• Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh.
• For more information, visit www.ftc.gov/appliances.


ENERGY STAR

Home Energy Use in Florida



Florida vs. U.S. Use



Energy

Water Heaters—Learning Objectives

- How important is water heating to reducing energy consumption
- What are the 5 basic types of water heating systems
- What are the 4 basic fuels for these systems
- What is efficient delivery and why is it important

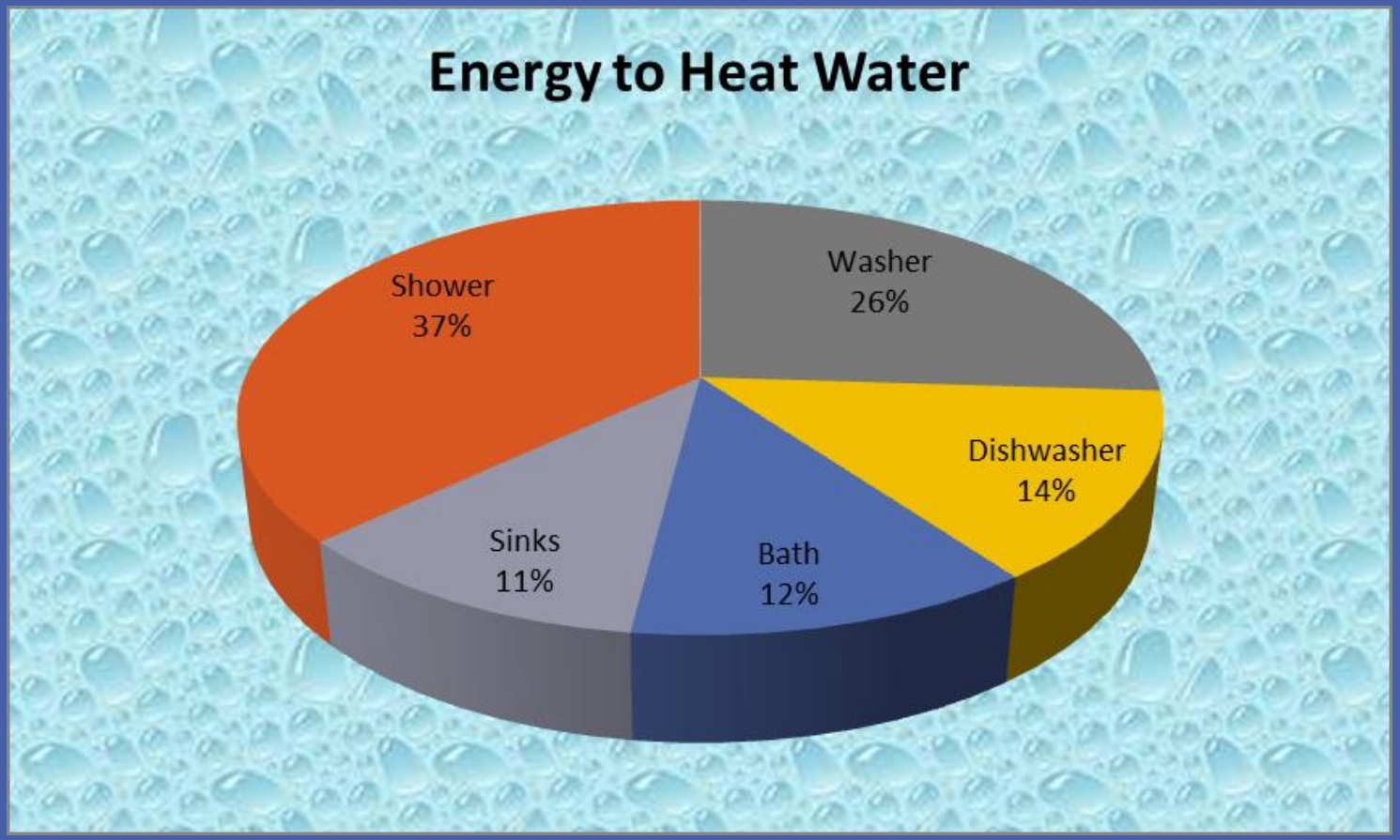
Energy

15%

10%

50%

Energy

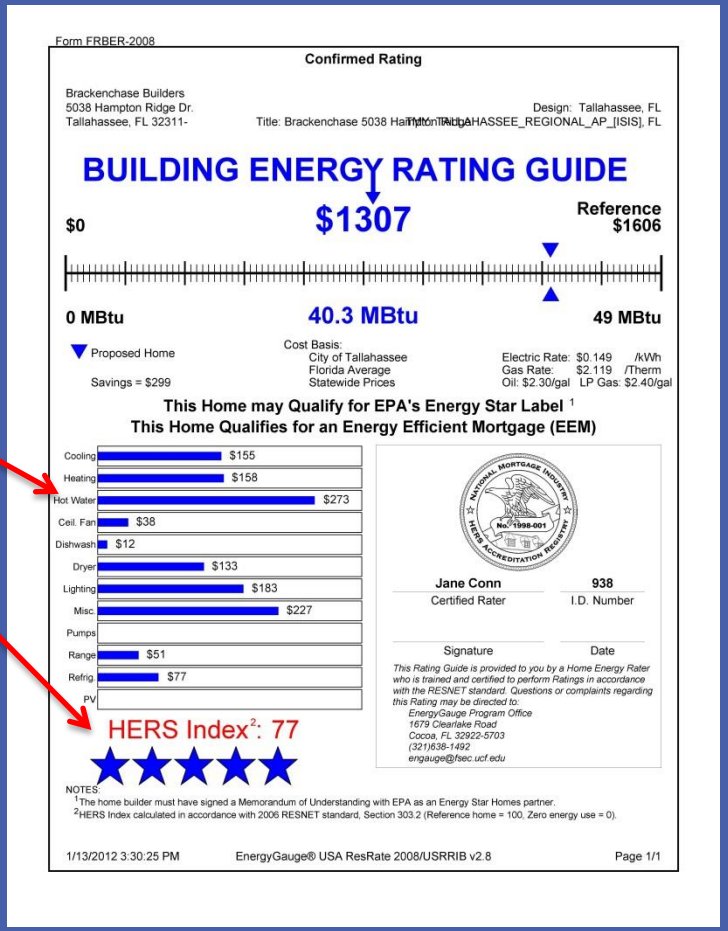

Energy to Heat Water
Shower
37%
Washer
26%
Dishwasher
14%
Sinks
11%
Bath
12%

Water Heaters

Tank Water Heater	Tankless Water Heater	Hybrid Water Heater	Energy Star Water Heater
			

Water Heater Energy Use

HERS index with tanked gas water heater



Form FRBER-2008

Confirmed Rating

Brackenchase Builders
5038 Hampton Ridge Dr.
Tallahassee, FL 32311-

Design: Tallahassee, FL
Title: Brackenchase 5038 Hampton Ridge TALLAHASSEE_REGIONAL_AP_[ISIS], FL

BUILDING ENERGY RATING GUIDE

$0 — **$1307** — Reference $1606

0 MBtu — **40.3 MBtu** — 49 MBtu

Proposed Home
Savings = $299

Cost Basis:
City of Tallahassee
Florida Average
Statewide Prices

Electric Rate: $0.149 /kWh
Gas Rate: $2.119 /Therm
Oil: $2.30/gal LP Gas: $2.40/gal

This Home may Qualify for EPA's Energy Star Label [1]
This Home Qualifies for an Energy Efficient Mortgage (EEM)

Cooling	$155
Heating	$158
Hot Water	$273
Ceil. Fan	$38
Dishwash	$12
Dryer	$133
Lighting	$183
Misc.	$227
Pumps	
Range	$51
Refrig	$77
PV	

HERS Index[2]: 77

Jane Conn — Certified Rater
938 — I.D. Number
Signature
Date

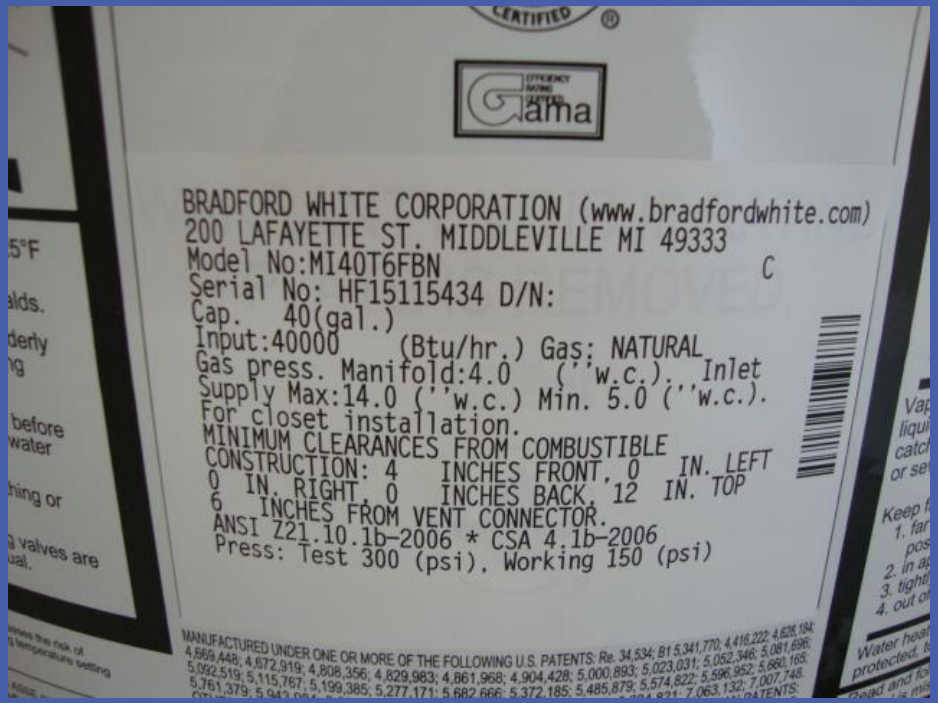
This Rating Guide is provided to you by a Home Energy Rater who is trained and certified to perform Ratings in accordance with the RESNET standard. Questions or complaints regarding this Rating may be directed to:
EnergyGauge Program Office
1679 Clearlake Road
Cocoa, FL 32922-5703
(321)638-1492
engauge@fsec.ucf.edu

NOTES:
[1]The home builder must have signed a Memorandum of Understanding with EPA as an Energy Star Homes partner.
[2]HERS Index calculated in accordance with 2006 RESNET standard, Section 303.2 (Reference home = 100, Zero energy use = 0).

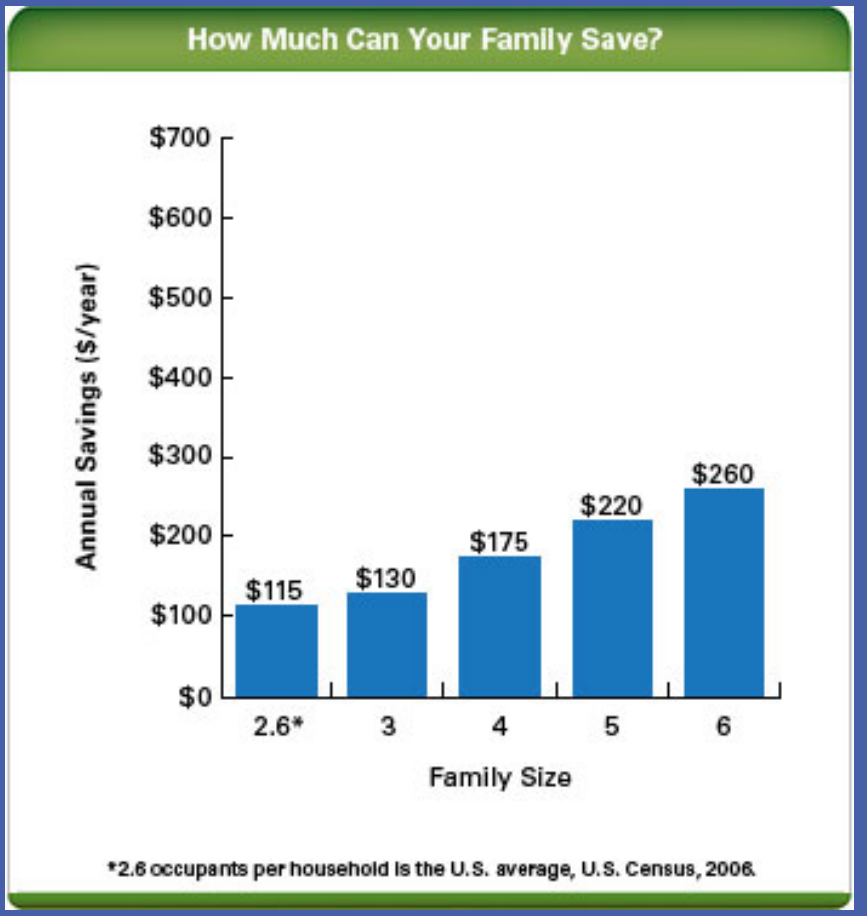
1/13/2012 3:30:25 PM EnergyGauge® USA ResRate 2008/USRRIB v2.8 Page 1/1

Tank Water Heaters

Conventional Tank Type

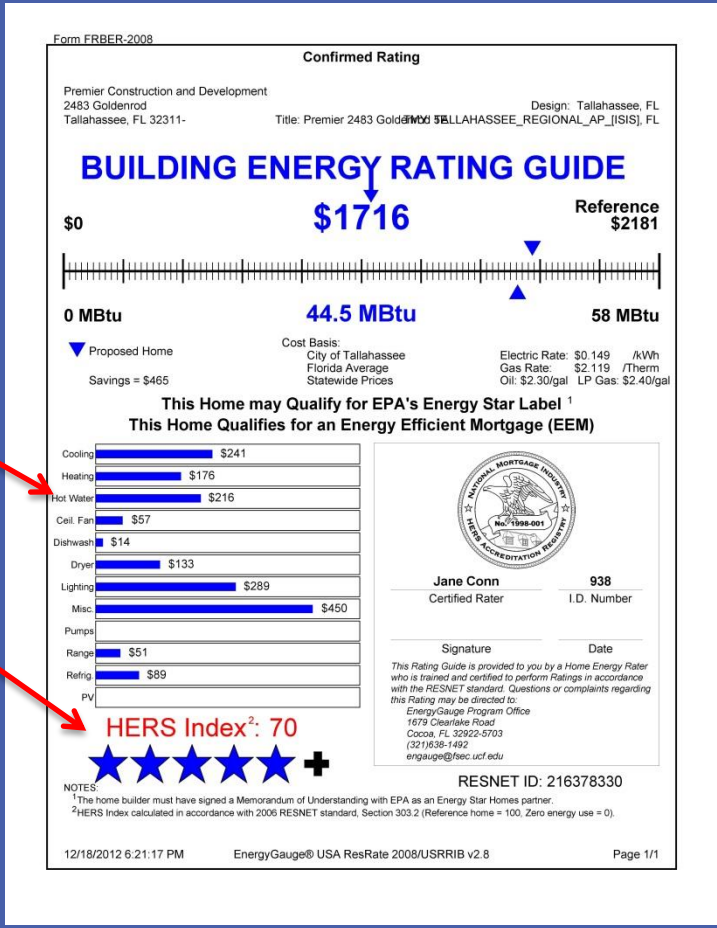


Tankless Water Heaters



Energy

HERS index with tankless water heater



Form FRBER-2008

Confirmed Rating

Premier Construction and Development
2483 Goldenrod
Tallahassee, FL 32311-

Design: Tallahassee, FL
Title: Premier 2483 Golden[illegible] TALLAHASSEE_REGIONAL_AP_[ISIS], FL

BUILDING ENERGY RATING GUIDE

$0 — $1716 — Reference $2181

0 MBtu — 44.5 MBtu — 58 MBtu

▼ Proposed Home
Savings = $465

Cost Basis:
City of Tallahassee
Florida Average
Statewide Prices

Electric Rate: $0.149 /kWh
Gas Rate: $2.119 /Therm
Oil: $2.30/gal LP Gas: $2.40/gal

This Home may Qualify for EPA's Energy Star Label [1]
This Home Qualifies for an Energy Efficient Mortgage (EEM)

Cooling	$241
Heating	$176
Hot Water	$216
Ceil. Fan	$57
Dishwash	$14
Dryer	$133
Lighting	$289
Misc	$450
Pumps	
Range	$51
Refrig.	$89
PV	

HERS Index[2]: 70

★★★★★+

Jane Conn — Certified Rater
938 — I.D. Number
Signature
Date

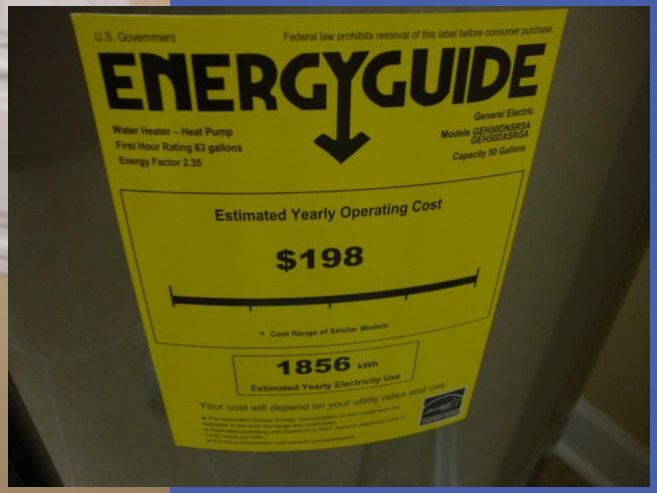
This Rating Guide is provided to you by a Home Energy Rater who is trained and certified to perform Ratings in accordance with the RESNET standard. Questions or complaints regarding this Rating may be directed to:
EnergyGauge Program Office
1679 Clearlake Road
Cocoa, FL 32922-5703
(321)638-1492
engauge@fsec.ucf.edu

RESNET ID: 216378330

NOTES:
[1] The home builder must have signed a Memorandum of Understanding with EPA as an Energy Star Homes partner.
[2] HERS Index calculated in accordance with 2006 RESNET standard, Section 303.2 (Reference home = 100, Zero energy use = 0).

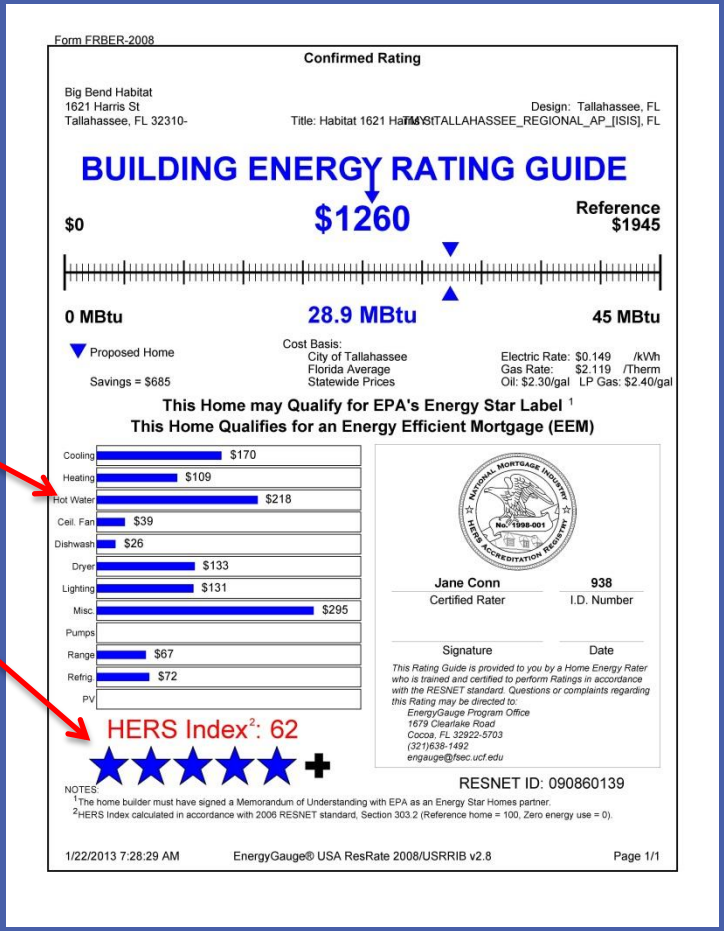
12/18/2012 6:21:17 PM — EnergyGauge® USA ResRate 2008/USRRIB v2.8 — Page 1/1

Heat Pump Water Heaters



Energy

HERS with a heat pump water heater



Form FRBER-2008

Confirmed Rating

Big Bend Habitat
1621 Harris St
Tallahassee, FL 32310-

Design: Tallahassee, FL
Title: Habitat 1621 Harris St TALLAHASSEE_REGIONAL_AP_[ISIS], FL

BUILDING ENERGY RATING GUIDE

$0 — **$1260** — Reference $1945

0 MBtu — **28.9 MBtu** — 45 MBtu

▼ Proposed Home
Savings = $685

Cost Basis:
City of Tallahassee
Florida Average
Statewide Prices

Electric Rate: $0.149 /kWh
Gas Rate: $2.119 /Therm
Oil: $2.30/gal LP Gas: $2.40/gal

This Home may Qualify for EPA's Energy Star Label [1]
This Home Qualifies for an Energy Efficient Mortgage (EEM)

Cooling	$170
Heating	$109
Hot Water	$218
Ceil. Fan	$39
Dishwash	$26
Dryer	$133
Lighting	$131
Misc.	$295
Pumps	
Range	$67
Refrig	$72
PV	

HERS Index[2]: 62

Jane Conn — Certified Rater
938 — I.D. Number
Signature
Date

This Rating Guide is provided to you by a Home Energy Rater who is trained and certified to perform Ratings in accordance with the RESNET standard. Questions or complaints regarding this Rating may be directed to:
EnergyGauge Program Office
1679 Clearlake Road
Cocoa, FL 32922-5703
(321)638-1492
engauge@fsec.ucf.edu

RESNET ID: 090860139

NOTES:
[1] The home builder must have signed a Memorandum of Understanding with EPA as an Energy Star Homes partner.
[2] HERS Index calculated in accordance with 2006 RESNET standard, Section 303.2 (Reference home = 100, Zero energy use = 0).

1/22/2013 7:28:29 AM EnergyGauge® USA ResRate 2008/USRRIB v2.8 Page 1/1

Energy

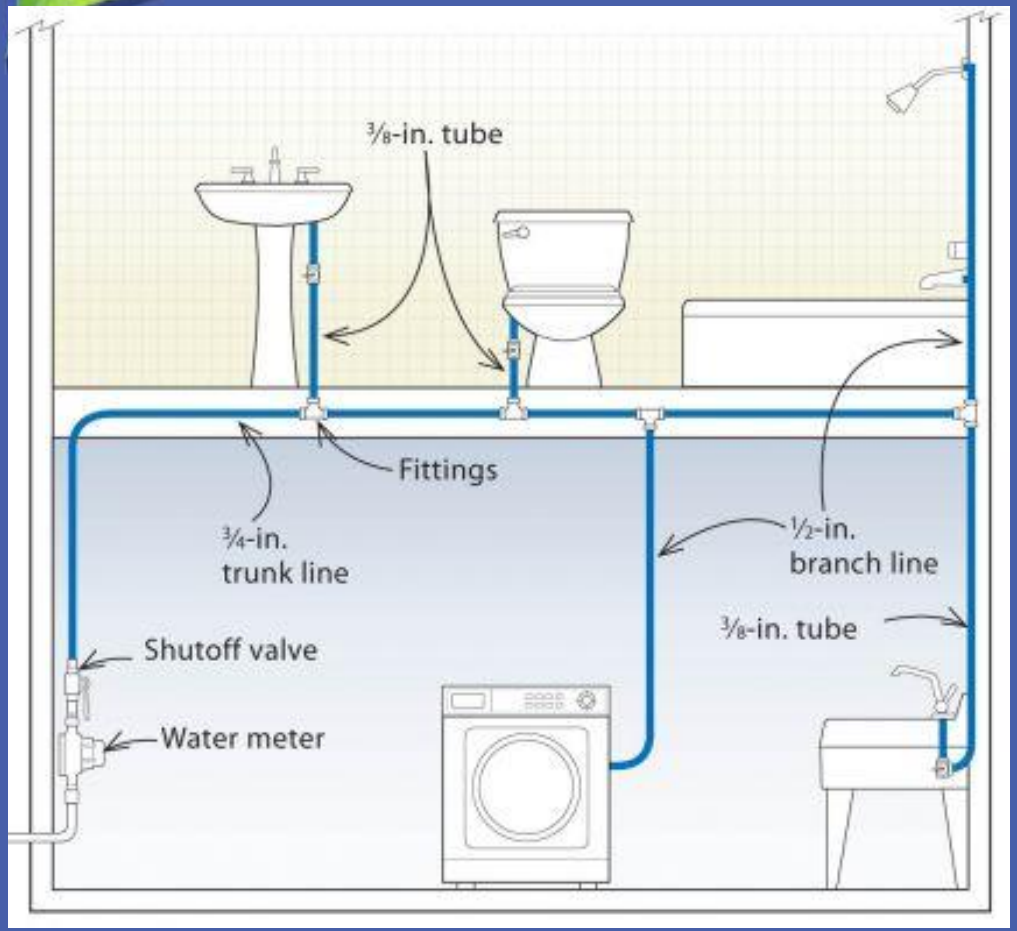
Energy

Energy

Water Heater Type	Efficiency (EF)	Installed Cost[1]	Yearly Energy Cost[2]	Life (years)[3]	Total Cost (Over 13 Years)[4]
Conventional gas storage	0.6	$850	$350	13	**$5,394**
High-efficiency gas storage	0.65	$1,025	$323	13	**$5,220**
Minimum Efficiency electric storage	0.9	$750	$463	13	**$6,769**
High-eff. electric storage	0.95	$820	$439	13	**$6,528**
Demand gas	0.82	$1,600	$256	13	**$4,925**
Electric heat pump water heater	2.2	$1,660	$190	13	**$4,125**
Solar with electric back-up	1.2	$4,800	$175	13	**$7,072**

Energy

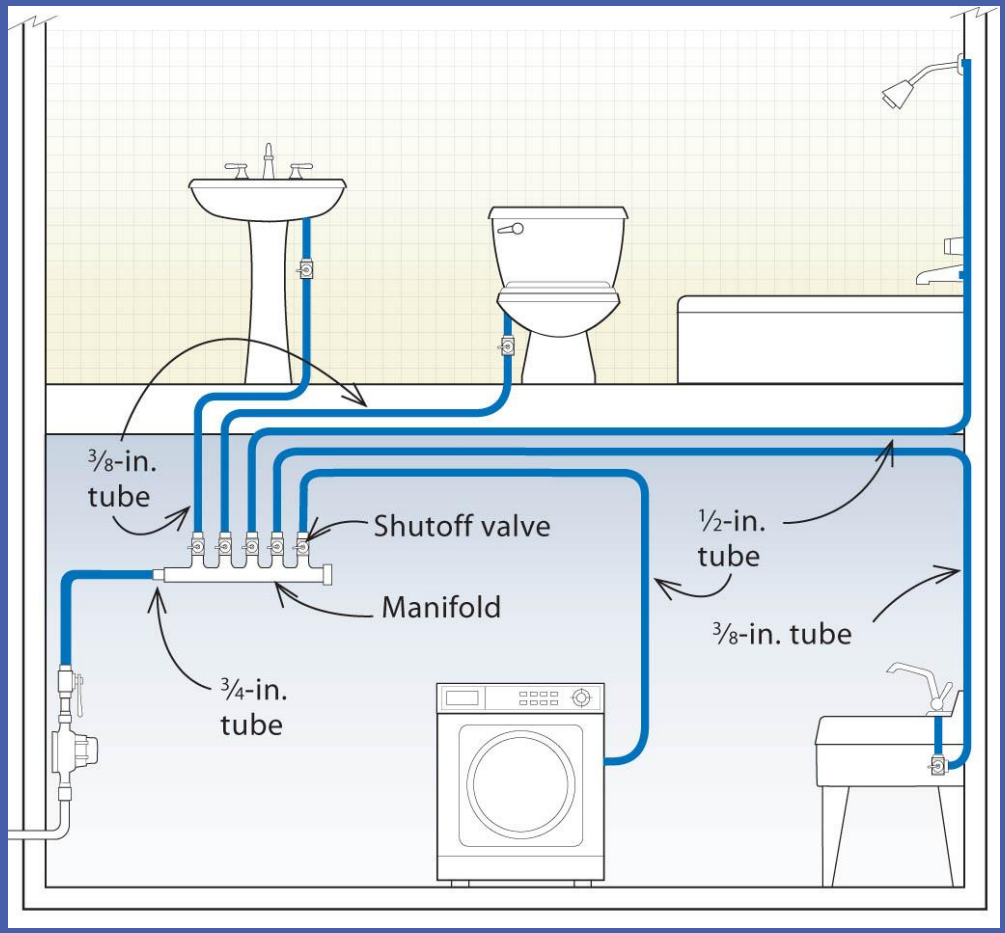
Energy



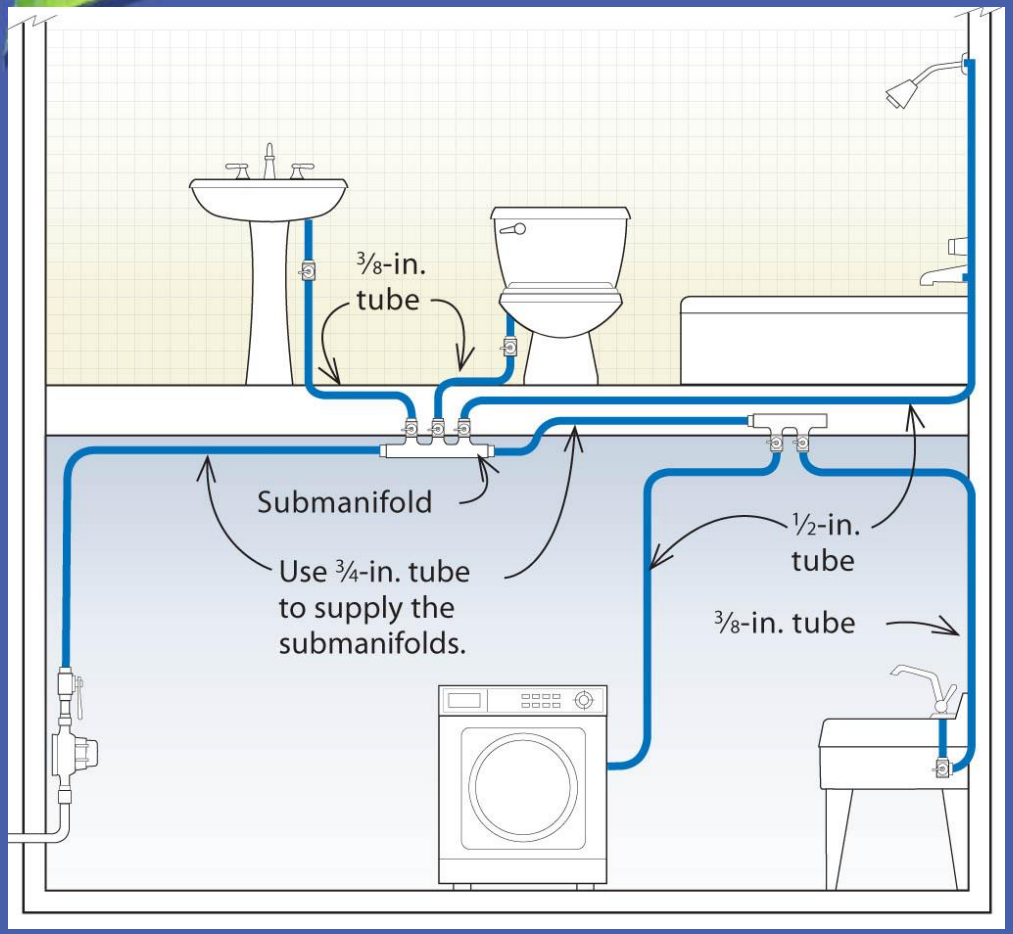
Typical trunk and branch system

Energy

Home run manifold system

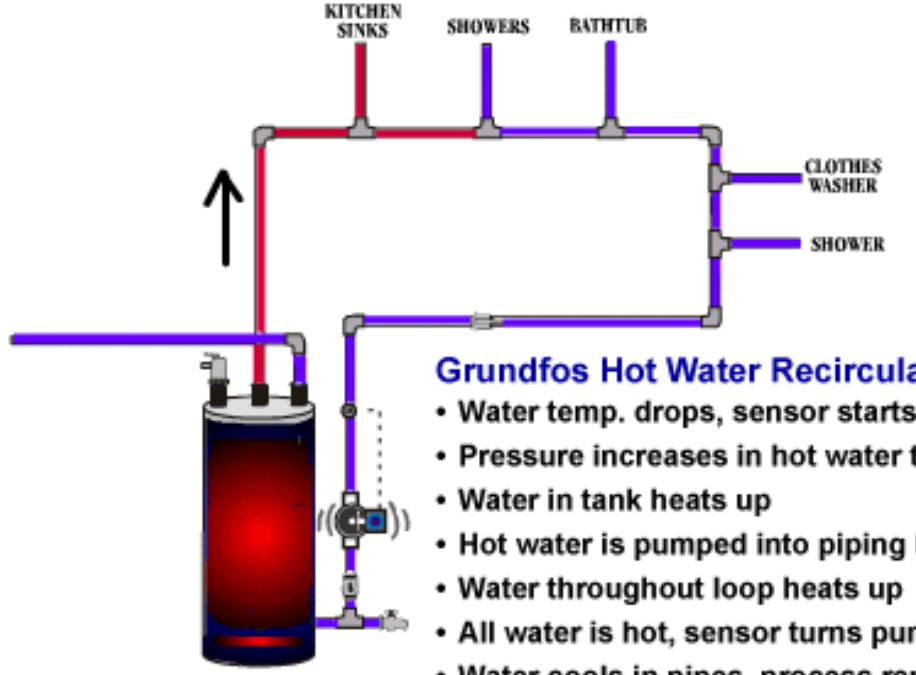


Energy



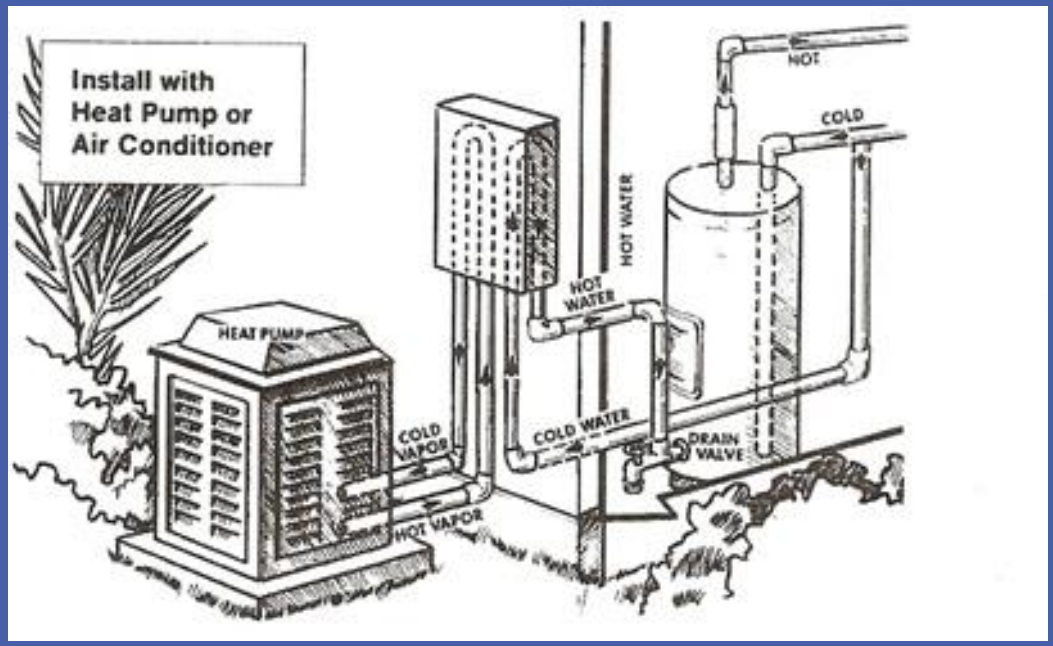
Submanifold system

Energy


KITCHEN SINKS
SHOWERS
BATHTUB
CLOTHES WASHER
SHOWER
Grundfos Hot Water Recirculation
• Water temp. drops, sensor starts pump
• Pressure increases in hot water tank
• Water in tank heats up
• Hot water is pumped into piping loop
• Water throughout loop heats up
• All water is hot, sensor turns pump off
• Water cools in pipes, process repeats

Energy

Energy


Install with
Heat Pump or
Air Conditioner
HOT
COLD
HOT WATER
HOT WATER
HEAT PUMP
COLD VAPOR
COLD WATER
DRAIN VALVE
HOT VAPOR

Energy

- Review
  - On average, what portion of your energy usage is attributable to heating water?
  - What are the five basic types of water heating systems?
  - What are the four basic fuels for these systems?
  - What is efficient delivery and why is it important?

Energy

- Lighting—Learning Objectives
  - Why do we need lighting?
  - How much of a home's energy usage can be attributed to conventional lighting?
  - What are the important concepts of lighting?

Energy

Energy

Energy

EISA

Energy Independence and Security Act Of 2007

Today's Bulbs	After the Standard	Standard Effective Date
100 watt	≤ 72 watts	1-Jan-12
75 watt	≤ 53 watts	1-Jan-13
60 watt	≤ 43 watts	1-Jan-14
40 watt	≤ 29 watts	1-Jan-14

Energy

Energy

Lighting Efficacy

Lumens ÷ Watts = Efficacy

75 watt incandescent

1100 lumens ÷ 100 watts = 11

Energy

Energy

Lighting Efficacy

Lumens ÷ Watts = Efficacy

75 Watt Halogen

1100 lumens ÷ 75 watts = .14

Energy

Energy

Lighting Efficacy

Lumens ÷ Watts = Efficacy

75 Watt CFLs

1100 lumens ÷ 23 watts = 47.8

Energy


62989
energy smart®
a smart way to save energy®
LED technology
tecnología LED
long life / low energy
larga vida útil / bajo consumo
CANDLE
3000K
CLEAR MEDIUM BASE
VELA 3000K
TRANSPARENTE
BASE DE MEDIANA
LASTS
13.7
YEARS*
DURA 13.7 AÑOS*
1.8
watts/vatios
15,000
hours/horas
ENERGY STAR
Brightness
75
lumens
Estimated
Energy Cost
$0.22
per year
DECORATIVE
DECORATIVA
contains: 1 bulb (CAM)
contiene: 1 bombilla (CAM)


energy smart®
a smart way to save energy®
LED technology
tecnología LED
long life / low energy
larga vida útil / bajo consumo
PAR20
2700K
20° NARROW
FLOODLIGHT
20° HAZ DIFUSO
ESTRECHO
DIMMABLE
SE PUEDE USAR CON
REDUCTOR DE LUZ
LASTS
22.8
YEARS*
DURA 22.8 AÑOS*
7
watts/vatios
25,000
hours/horas
ENERGY STAR
Brightness
300
lumens
Estimated
Energy Cost
$0.84
per year

Energy

Lighting Efficacy

Lumens ÷ Watts = Efficacy

75 Watt LEDs

1100 lumens ÷ 17 watts = 64.7

Energy

Color Temperature

3600-5500 = cool

2700-3000 = warm, and best for most indoor task lighting

Energy


Choosing the Right Color
Warm White, Soft White
The standard color of incandescent bulbs.
Cool White, Bright White
Good for kitchens and work spaces.
Natural or Daylight
Good for reading.
2700K
3000K
3500K
4100K
5000K
6500K

Energy

Color Rendition

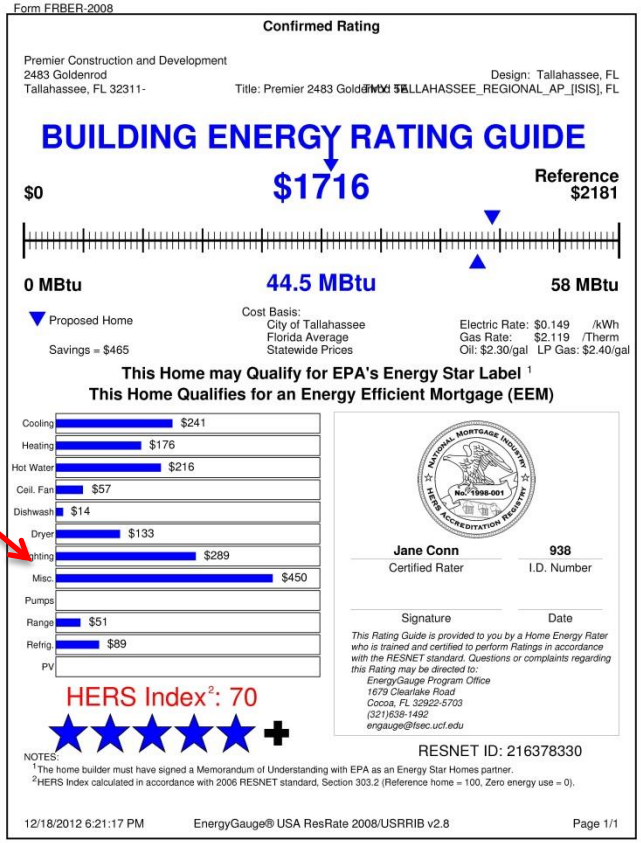
Fair
50–60 CRI
Standard Warm White Fluorescent
Standard Cool White Fluorescent
60–70 CRI
Premium High Pressure Sodium
Conventional Metal Halide

Better
70–80 CRI
Thin Coat Tri-Phospher Fluorescent

Best
80–90
White High Pressure Sodium
Warm Metal Halide
Thick Coat Tri-Phospher Fluorescent
90–100
High CRI Fluorescents
Incandescent and Tungsten-Halogen

Energy

Less than 20% energy efficient lighting



Form FRBER-2008

Confirmed Rating

Premier Construction and Development
2483 Goldenrod
Tallahassee, FL 32311-

Design: Tallahassee, FL
Title: Premier 2483 Golden[illegible] TALLAHASSEE_REGIONAL_AP_[ISIS], FL

BUILDING ENERGY RATING GUIDE

$0 — $1716 — Reference $2181

0 MBtu — 44.5 MBtu — 58 MBtu

▼ Proposed Home
Savings = $465

Cost Basis:
City of Tallahassee
Florida Average
Statewide Prices

Electric Rate: $0.149 /kWh
Gas Rate: $2.119 /Therm
Oil: $2.30/gal LP Gas: $2.40/gal

This Home may Qualify for EPA's Energy Star Label [1]
This Home Qualifies for an Energy Efficient Mortgage (EEM)

Cooling	$241
Heating	$176
Hot Water	$216
Ceil. Fan	$57
Dishwash	$14
Dryer	$133
[illegible]hting	$289
Misc.	$450
Pumps	
Range	$51
Refrig.	$89
PV	

HERS Index[2]: 70

★★★★★✚

Jane Conn — Certified Rater
938 — I.D. Number
Signature
Date

This Rating Guide is provided to you by a Home Energy Rater who is trained and certified to perform Ratings in accordance with the RESNET standard. Questions or complaints regarding this Rating may be directed to:
EnergyGauge Program Office
1679 Clearlake Road
Cocoa, FL 32922-5703
(321)638-1492
engauge@fsec.ucf.edu

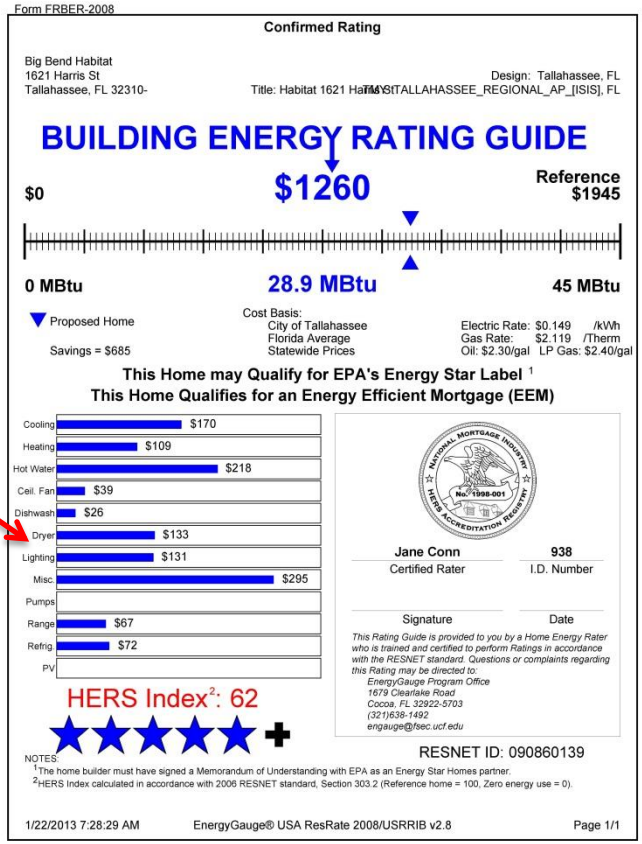
RESNET ID: 216378330

NOTES:
[1] The home builder must have signed a Memorandum of Understanding with EPA as an Energy Star Homes partner.
[2] HERS Index calculated in accordance with 2006 RESNET standard, Section 303.2 (Reference home = 100, Zero energy use = 0).

12/18/2012 6:21:17 PM EnergyGauge® USA ResRate 2008/USRRIB v2.8 Page 1/1

Energy

80% energy efficient lighting



Form FRBER-2008

Confirmed Rating

Big Bend Habitat
1621 Harris St
Tallahassee, FL 32310-

Design: Tallahassee, FL
Title: Habitat 1621 Harris StTALLAHASSEE_REGIONAL_AP_[ISIS], FL

BUILDING ENERGY RATING GUIDE

$0 — **$1260** — Reference $1945

0 MBtu — **28.9 MBtu** — 45 MBtu

▼ Proposed Home
Savings = $685

Cost Basis:
City of Tallahassee
Florida Average
Statewide Prices

Electric Rate: $0.149 /kWh
Gas Rate: $2.119 /Therm
Oil: $2.30/gal LP Gas: $2.40/gal

This Home may Qualify for EPA's Energy Star Label [1]
This Home Qualifies for an Energy Efficient Mortgage (EEM)

Cooling	$170
Heating	$109
Hot Water	$218
Ceil. Fan	$39
Dishwash	$26
Dryer	$133
Lighting	$131
Misc.	$295
Pumps	
Range	$67
Refrig.	$72
PV	

HERS Index[2]: 62

Jane Conn — Certified Rater
938 — I.D. Number
Signature
Date

This Rating Guide is provided to you by a Home Energy Rater who is trained and certified to perform Ratings in accordance with the RESNET standard. Questions or complaints regarding this Rating may be directed to:
EnergyGauge Program Office
1679 Clearlake Road
Cocoa, FL 32922-5703
(321)638-1492
engauge@fsec.ucf.edu

RESNET ID: 090860139

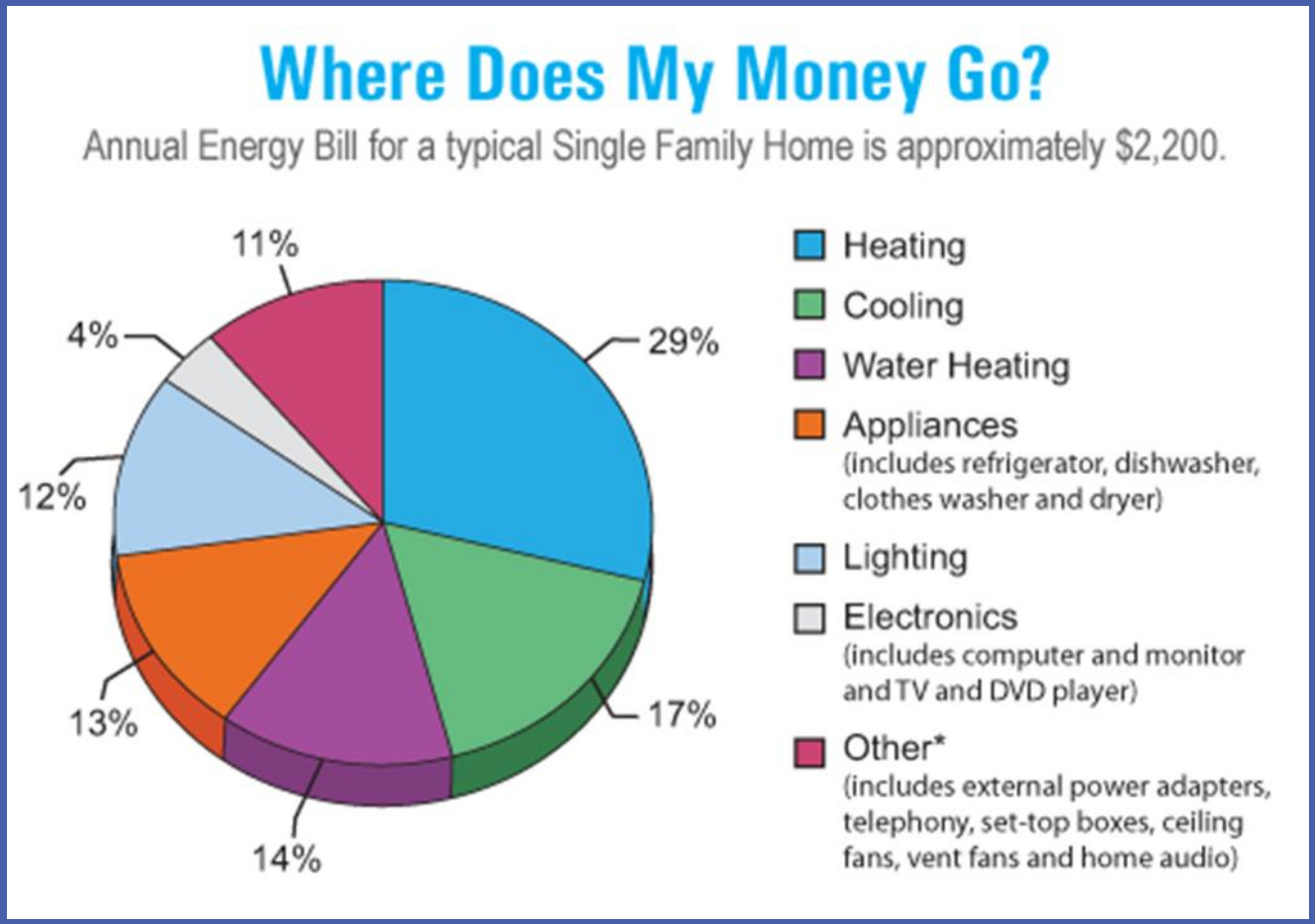
NOTES:
[1]The home builder must have signed a Memorandum of Understanding with EPA as an Energy Star Homes partner.
[2]HERS Index calculated in accordance with 2006 RESNET standard, Section 303.2 (Reference home = 100, Zero energy use = 0).

1/22/2013 7:28:29 AM — EnergyGauge® USA ResRate 2008/USRRIB v2.8 — Page 1/1

Energy

- Lighting—Review
  - Why do we need lighting?
  - How much of a home's energy usage can be attributed to conventional lighting?
  - What are the important concepts of lighting?

Energy


Where Does My Money Go?
Annual Energy Bill for a typical Single Family Home is approximately $2,200.
11%
4%
29%
12%
13%
17%
14%
Heating
Cooling
Water Heating
Appliances
(includes refrigerator, dishwasher, clothes washer and dryer)
Lighting
Electronics
(includes computer and monitor and TV and DVD player)
Other*
(includes external power adapters, telephony, set-top boxes, ceiling fans, vent fans and home audio)

Energy

- Appliance Learning Objectives
  - What appliances are ENERGY STAR labeled—and which are not?
  - What minimum increase in efficiency over industry standard must these labeled appliances meet?

Energy

ENERGY STAR certified refrigerators are required to use about 15% less energy than non-certified models.

Energy

ENERGY STAR certified clothes washers use about 20% less energy and 35% less water than regular washers.

Energy

A new, ENERGY STAR qualified dishwasher will save, on average, 1,300 gallons of water over its lifetime.

Energy

Freezers that have earned the ENERGY STAR are at least 10 percent more energy efficient than the minimum federal standard.

Energy

Adult beverages anyone?

Energy

Energy

So what's missing?

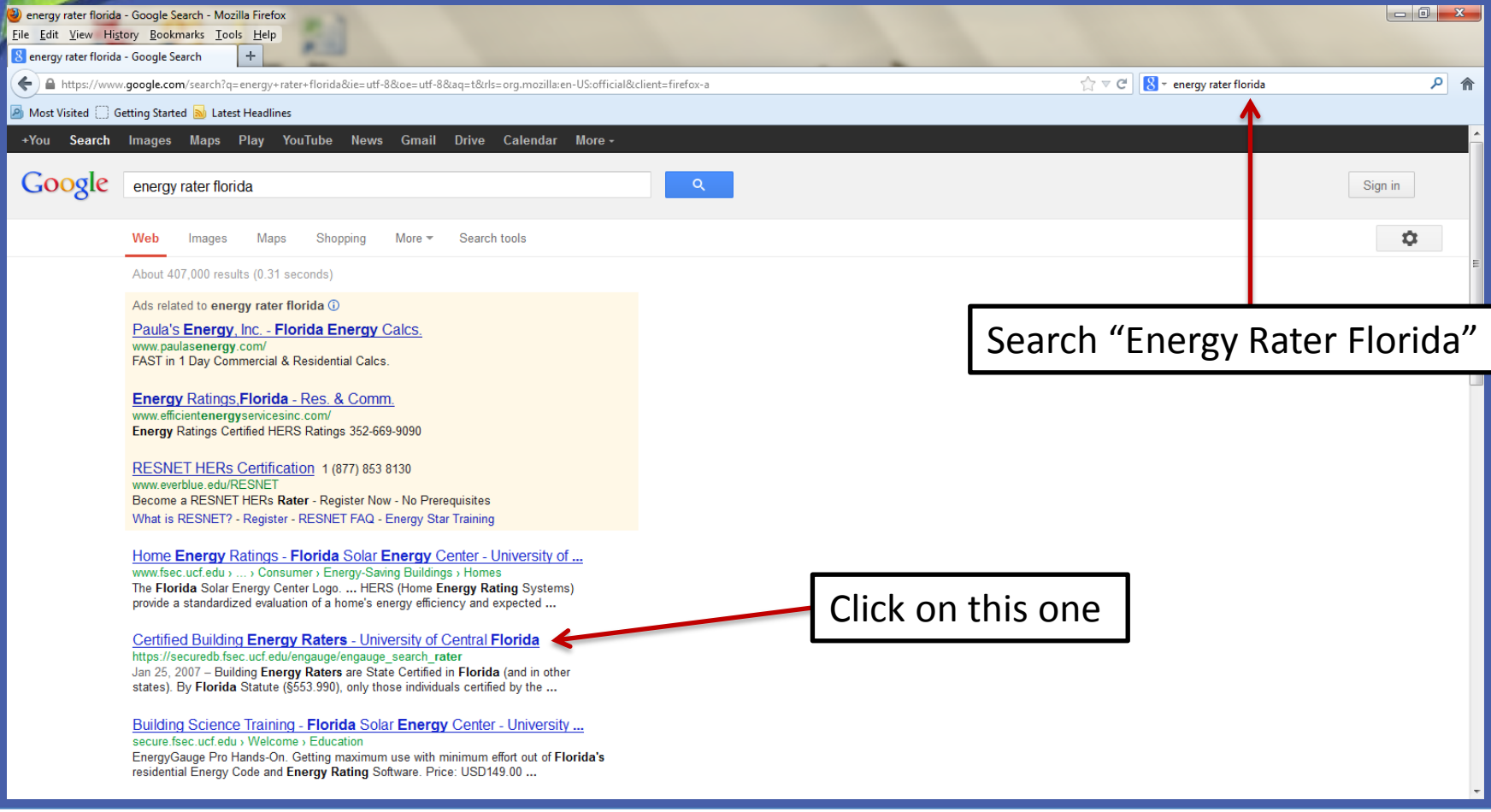
Energy

- Appliance Learning Review
  - What appliances are ENERGY STAR labeled—and which are not?
  - What minimum increase in efficiency over industry standard must these labeled appliances meet?

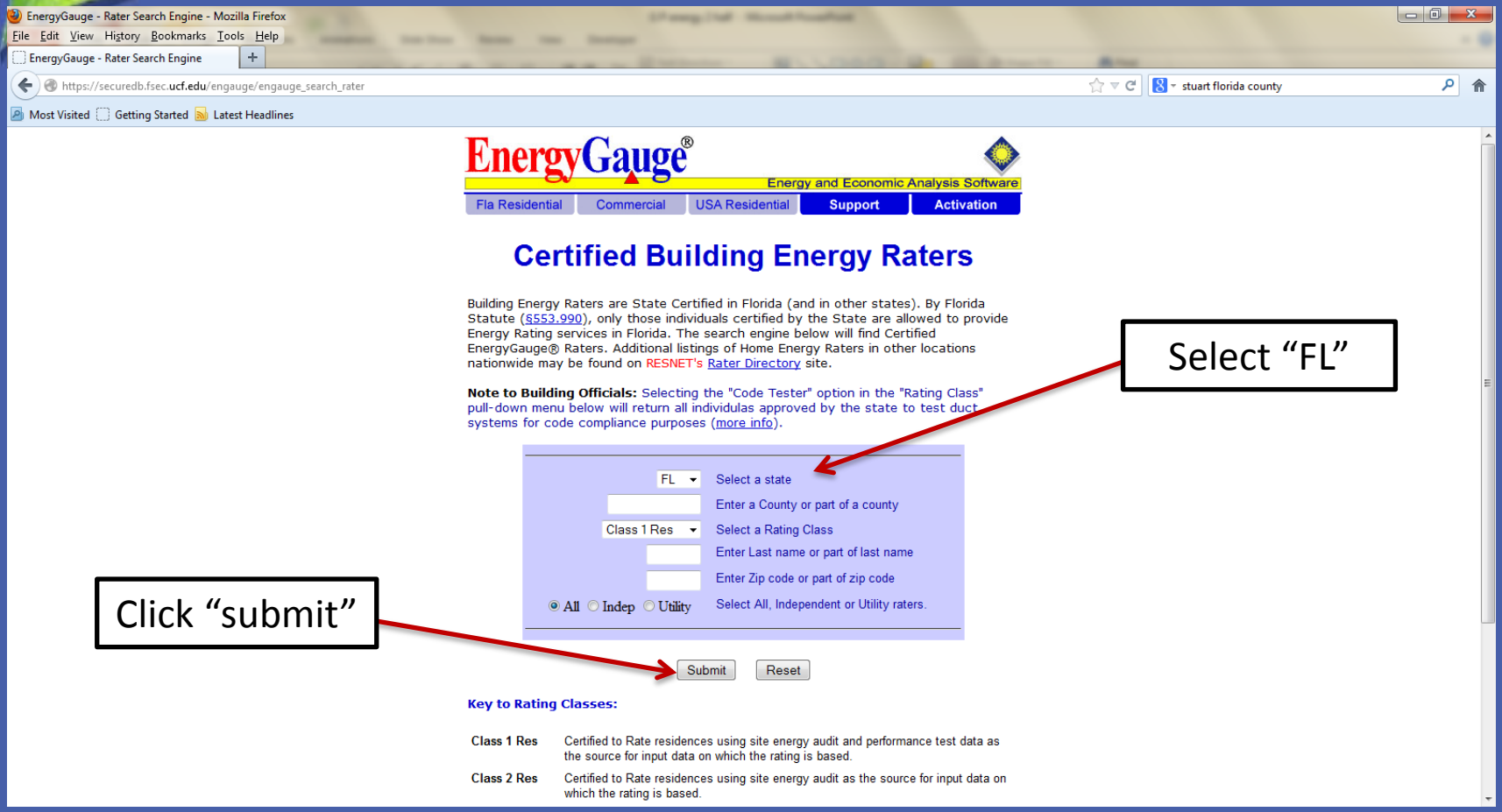
Energy

- Verifying Energy Performance Learning Objectives
  - How is a home designed for energy efficiency?
  - What is modeling?
  - How are homes tested?

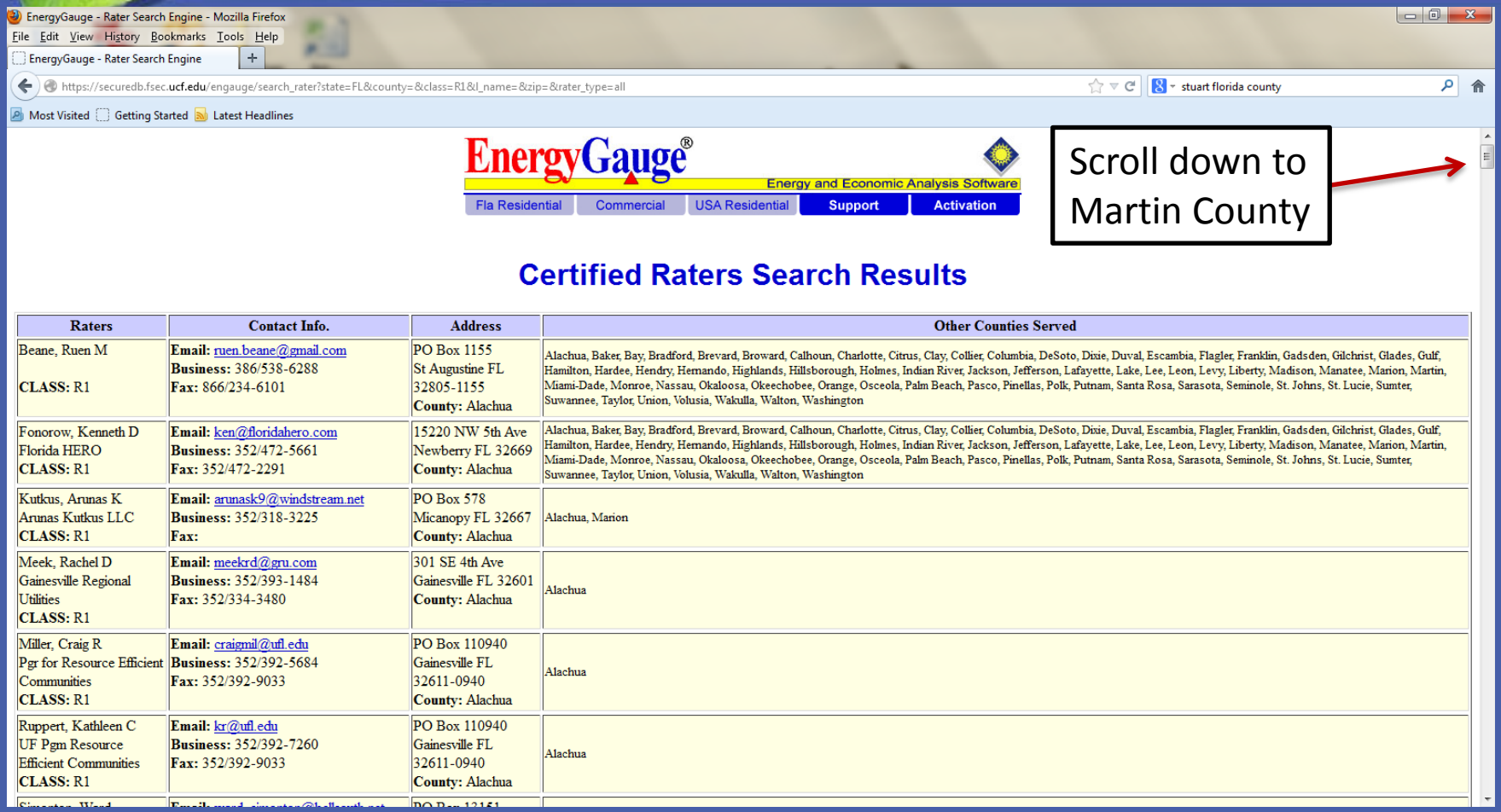
Energy


energy rater florida - Google Search - Mozilla Firefox
File Edit View History Bookmarks Tools Help
energy rater florida - Google Search
https://www.google.com/search?q=energy+rater+florida&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a
energy rater florida
Most Visited Getting Started Latest Headlines
+You Search Images Maps Play YouTube News Gmail Drive Calendar More
Google
energy rater florida
Sign in
Web Images Maps Shopping More Search tools
About 407,000 results (0.31 seconds)
Ads related to energy rater florida
Paula's Energy, Inc. - Florida Energy Calcs.
www.paulasenergy.com/
FAST in 1 Day Commercial & Residential Calcs.
Energy Ratings,Florida - Res. & Comm.
www.efficientenergyservicesinc.com/
Energy Ratings Certified HERS Ratings 352-669-9090
RESNET HERs Certification 1 (877) 853 8130
www.everblue.edu/RESNET
Become a RESNET HERs Rater - Register Now - No Prerequisites
What is RESNET? - Register - RESNET FAQ - Energy Star Training
Home Energy Ratings - Florida Solar Energy Center - University of ...
www.fsec.ucf.edu › ... › Consumer › Energy-Saving Buildings › Homes
The Florida Solar Energy Center Logo. ... HERS (Home Energy Rating Systems) provide a standardized evaluation of a home's energy efficiency and expected ...
Certified Building Energy Raters - University of Central Florida
https://securedb.fsec.ucf.edu/engauge/engauge_search_rater
Jan 25, 2007 – Building Energy Raters are State Certified in Florida (and in other states). By Florida Statute (§553.990), only those individuals certified by the ...
Building Science Training - Florida Solar Energy Center - University ...
secure.fsec.ucf.edu › Welcome › Education
EnergyGauge Pro Hands-On. Getting maximum use with minimum effort out of Florida's residential Energy Code and Energy Rating Software. Price: USD149.00 ...
Search “Energy Rater Florida”
Click on this one

Energy


EnergyGauge - Rater Search Engine - Mozilla Firefox
File Edit View History Bookmarks Tools Help
EnergyGauge - Rater Search Engine
https://securedb.fsec.ucf.edu/engauge/engauge_search_rater
stuart florida county
Most Visited Getting Started Latest Headlines
EnergyGauge®
Energy and Economic Analysis Software
Fla Residential
Commercial
USA Residential
Support
Activation
Certified Building Energy Raters
Building Energy Raters are State Certified in Florida (and in other states). By Florida Statute (§553.990), only those individuals certified by the State are allowed to provide Energy Rating services in Florida. The search engine below will find Certified EnergyGauge® Raters. Additional listings of Home Energy Raters in other locations nationwide may be found on RESNET's Rater Directory site.
Note to Building Officials: Selecting the "Code Tester" option in the "Rating Class" pull-down menu below will return all individulas approved by the state to test duct systems for code compliance purposes (more info).
FL
Select a state
Enter a County or part of a county
Class 1 Res
Select a Rating Class
Enter Last name or part of last name
Enter Zip code or part of zip code
All
Indep
Utility
Select All, Independent or Utility raters.
Submit
Reset
Key to Rating Classes:
Class 1 Res
Certified to Rate residences using site energy audit and performance test data as the source for input data on which the rating is based.
Class 2 Res
Certified to Rate residences using site energy audit as the source for input data on which the rating is based.
Select "FL"
Click "submit"

Energy



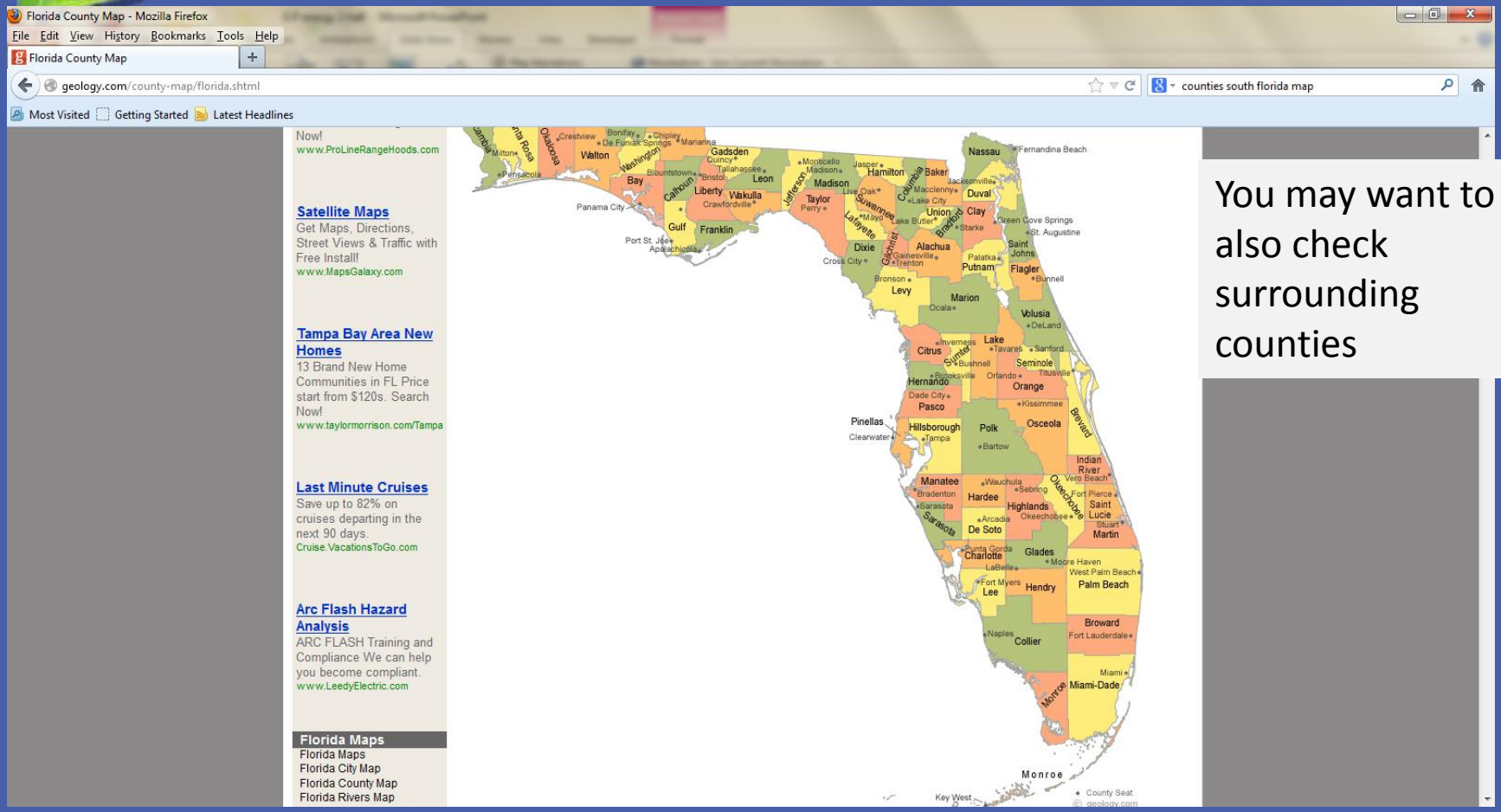
Certified Raters Search Results

Raters	Contact Info.	Address	Other Counties Served
Beane, Ruen M **CLASS:** R1	**Email:** ruen.beane@gmail.com **Business:** 386/538-6288 **Fax:** 866/234-6101	PO Box 1155 St Augustine FL 32805-1155 **County:** Alachua	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, DeSoto, Dixie, Duval, Escambia, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, Washington
Fonorow, Kenneth D Florida HERO **CLASS:** R1	**Email:** ken@floridahero.com **Business:** 352/472-5661 **Fax:** 352/472-2291	15220 NW 5th Ave Newberry FL 32669 **County:** Alachua	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, DeSoto, Dixie, Duval, Escambia, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, Washington
Kutkus, Arunas K Arunas Kutkus LLC **CLASS:** R1	**Email:** arunask9@windstream.net **Business:** 352/318-3225 **Fax:**	PO Box 578 Micanopy FL 32667 **County:** Alachua	Alachua, Marion
Meek, Rachel D Gainesville Regional Utilities **CLASS:** R1	**Email:** meekrd@gru.com **Business:** 352/393-1484 **Fax:** 352/334-3480	301 SE 4th Ave Gainesville FL 32601 **County:** Alachua	Alachua
Miller, Craig R Pgr for Resource Efficient Communities **CLASS:** R1	**Email:** craigmil@ufl.edu **Business:** 352/392-5684 **Fax:** 352/392-9033	PO Box 110940 Gainesville FL 32611-0940 **County:** Alachua	Alachua
Ruppert, Kathleen C UF Pgm Resource Efficient Communities **CLASS:** R1	**Email:** kr@ufl.edu **Business:** 352/392-7260 **Fax:** 352/392-9033	PO Box 110940 Gainesville FL 32611-0940 **County:** Alachua	Alachua

Energy

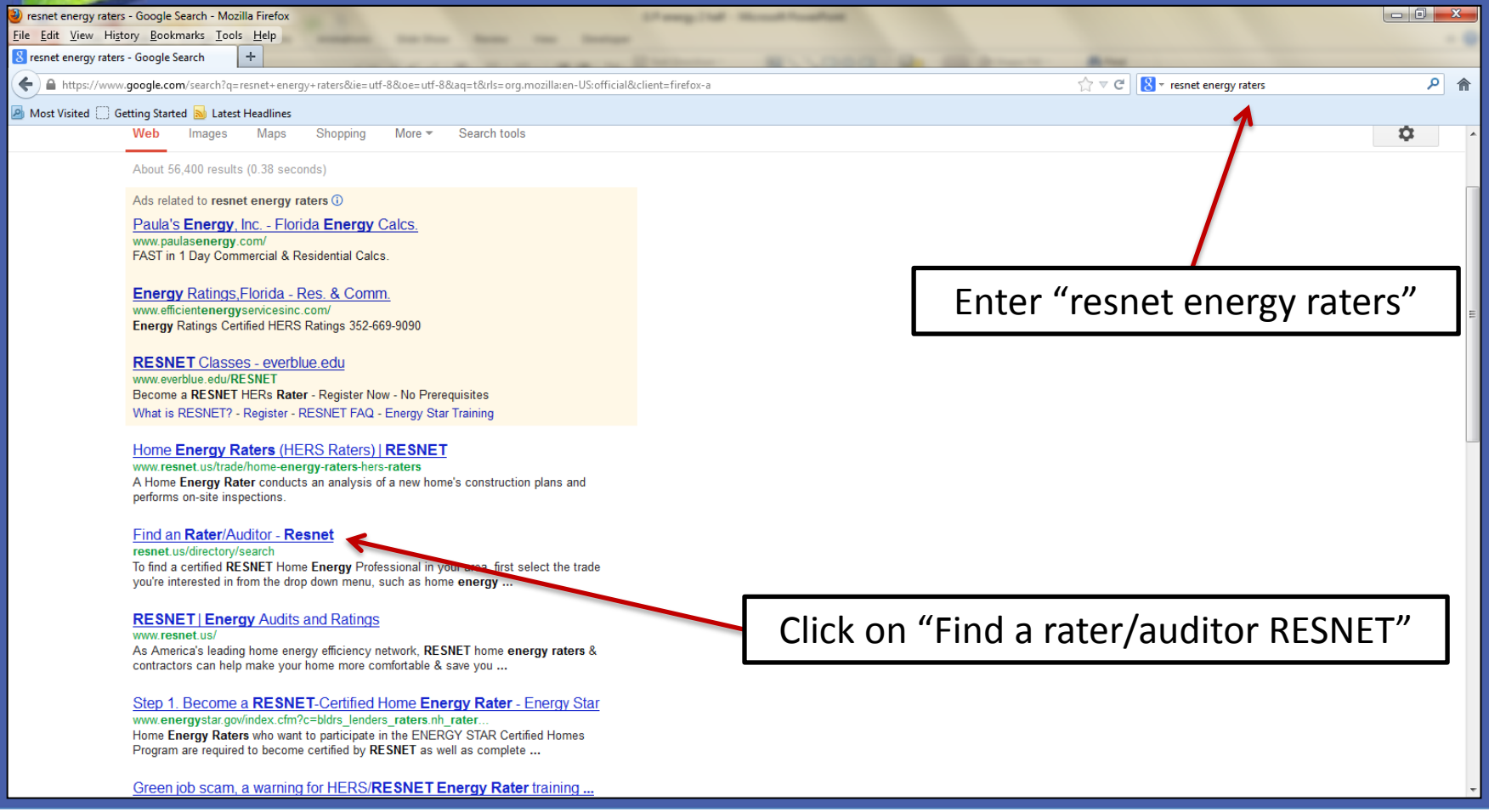
Sun Kool Air Conditioning Inc **CLASS:** R1	**Business:** 352/622-1067 **Fax:** 352/622-9797	Ocala FL 34470 **County:** Marion	Alachua, Citrus, Lake, Levy, Marion, Sumter
Jacobs, Jonathan C MechaniCalcs LLC **CLASS:** R1	**Email:** MechaniCalcs@gmail.com **Business:** 386-503-0449 **Fax:**	5579 SE 44th Circle Ocala FL 34480 **County:** Marion	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, DeSoto, Dixie, Duval, Escambia, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, Washington
Banks III, Robert P Healthy Homes for Healthy Living LLC **CLASS:** R1	**Email:** iaqbob@gmail.com **Business:** 772/287-6639 **Fax:** 772/781-0707	4157 SW Oakhaven Ln Palm City FL 34990 **County:** Martin	Martin, St. Lucie
Reidy, David J SunCool Energy Co **CLASS:** R1,PNC	**Email:** david@suncoolenergy.com **Web:** www.suncoolenergy.com **Business:** 772/631-1243 **Fax:**	3832 SE Jefferson St Stuart FL 34997 **County:** Martin	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, DeSoto, Dixie, Duval, Escambia, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, Washington
Rushing, Tina E Chelco **CLASS:** R1	**Email:** trushing@chelco.com **Business:** 850/892-5069 x-124 **Fax:** 850/892-9243	PO Box 512 DeFuniak Springs FL 32435 **County:** Okaloosa	Holmes, Okaloosa, Santa Rosa, Walton
Barton, Demensio P Essential Rating LLC **CLASS:** R1,PNC	**Email:** demensiob@essentialrating.com **Business:** 813/361-1271 **Fax:**	PO Box 771322 Orlando FL 32877 **County:** Orange	Hillsborough
Burch, David N E3 Building Sciences **CLASS:** R1	**Email:** dnburch@yahoo.com **Business:** 407/790-8841 **Fax:**	2519 Holly Pine Cir Orlando FL 32820 **County:** Orange	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, DeSoto, Dixie, Duval, Escambia, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, Washington
Carmack, Gary Certified Energy Audits **CLASS:** R1,PNC	**Email:** gredbird@cfl.rr.com **Business:** 407/473-0784 **Fax:**	PO Box 140006 Orlando FL 32814 **County:** Orange	Alachua, Brevard, Citrus, Clay, Duval, Flagler, Hernando, Hillsborough, Indian River, Lake, Lee, Manatee, Marion, Nassau, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Volusia
Helvenston, Jason K Simply Sustain Inc **CLASS:** R1	**Email:** SimplySustain@gmail.com **Business:** 407/222-3104 **Fax:**	PO Box 547821 Orlando FL 32854 **County:** Orange	Brevard, Flagler, Highland, Hillsborough, Lake, Marion, Orange, Osceola, Pinellas, Polk, Seminole, Sumter, Volusia
Henderson, Kyle T Rinaldi's A/C CLASS: R1,PNC	**Email:** kylehenderson2001@yahoo.com **Business:** 407/275-0705 Fax: 407/273-9654	14416 Clarkson Dr Orlando FL 32828 County: Orange	Orange, Osceola, Polk, Seminole, Volusia

Energy

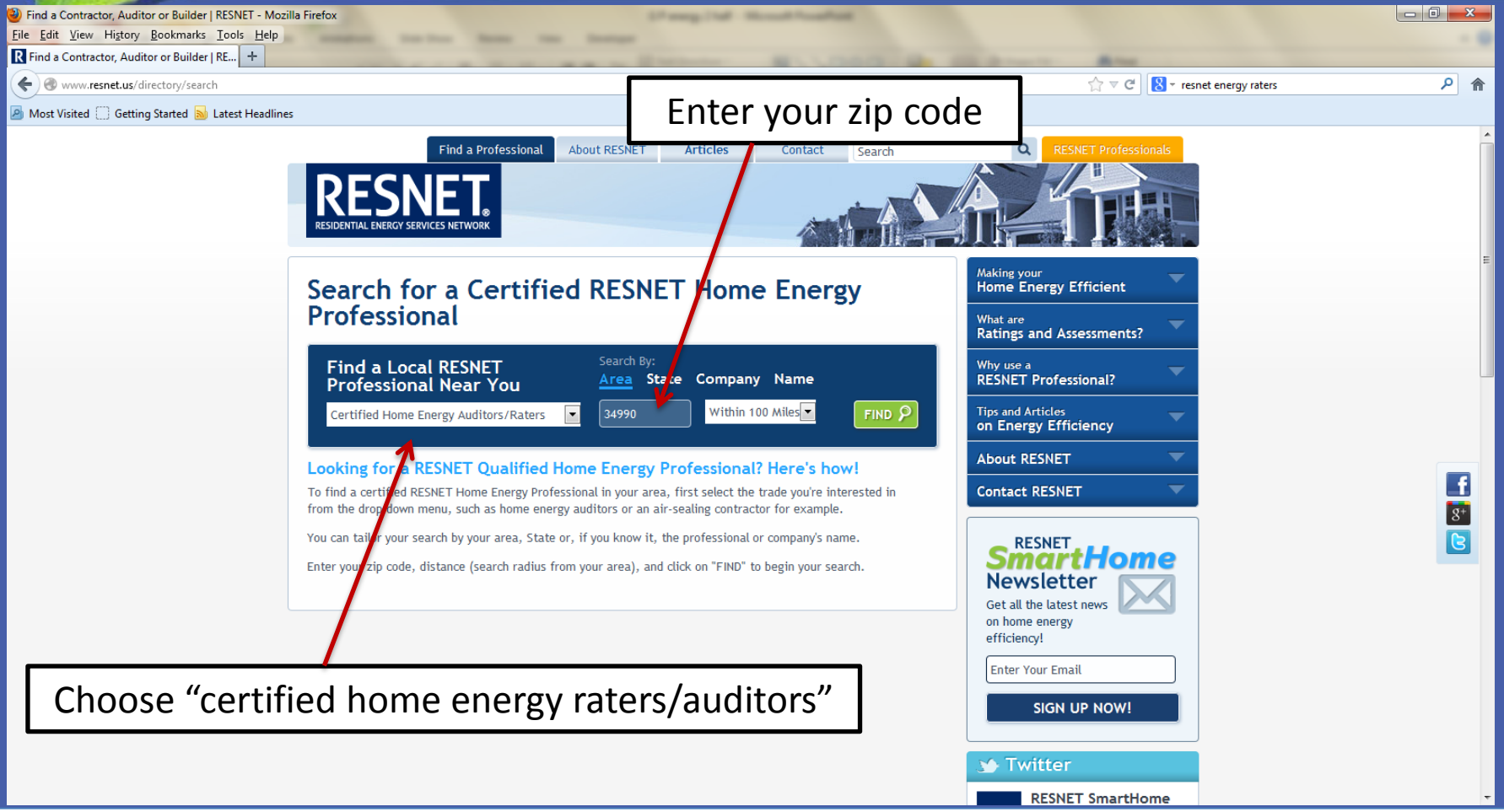


You may want to also check surrounding counties

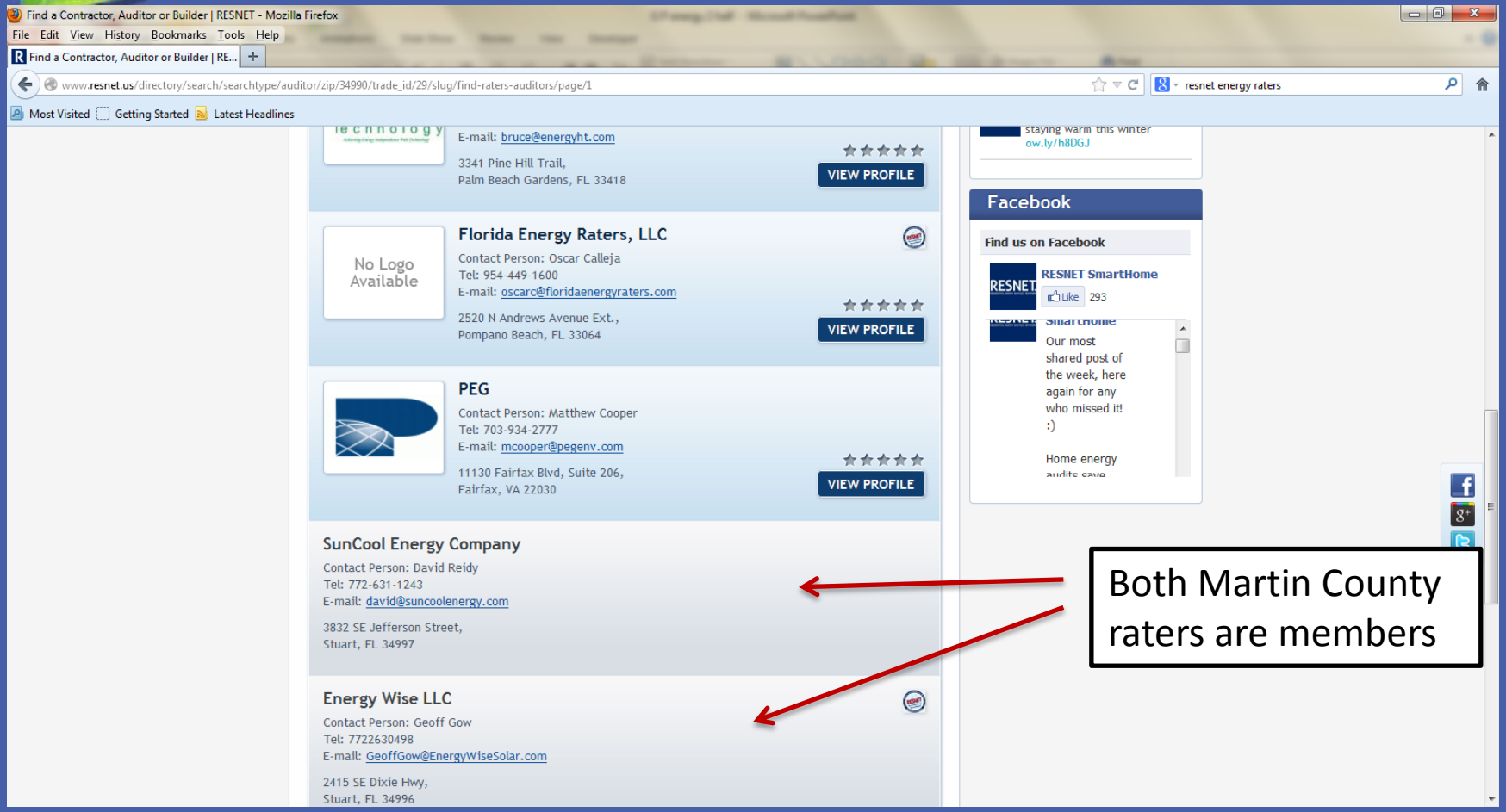
Energy


resnet energy raters - Google Search - Mozilla Firefox
File Edit View History Bookmarks Tools Help
resnet energy raters - Google Search
https://www.google.com/search?q=resnet+energy+raters&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a
resnet energy raters
Most Visited Getting Started Latest Headlines
Web Images Maps Shopping More Search tools
About 56,400 results (0.38 seconds)
Ads related to resnet energy raters
Paula's Energy, Inc. - Florida Energy Calcs.
www.paulasenergy.com/
FAST in 1 Day Commercial & Residential Calcs.
Energy Ratings,Florida - Res. & Comm.
www.efficientenergyservicesinc.com/
Energy Ratings Certified HERS Ratings 352-669-9090
RESNET Classes - everblue.edu
www.everblue.edu/RESNET
Become a RESNET HERs Rater - Register Now - No Prerequisites
What is RESNET? - Register - RESNET FAQ - Energy Star Training
Home Energy Raters (HERS Raters) | RESNET
www.resnet.us/trade/home-energy-raters-hers-raters
A Home Energy Rater conducts an analysis of a new home's construction plans and performs on-site inspections.
Find an Rater/Auditor - Resnet
resnet.us/directory/search
To find a certified RESNET Home Energy Professional in your area, first select the trade you're interested in from the drop down menu, such as home energy ...
RESNET | Energy Audits and Ratings
www.resnet.us/
As America's leading home energy efficiency network, RESNET home energy raters & contractors can help make your home more comfortable & save you ...
Step 1. Become a RESNET-Certified Home Energy Rater - Energy Star
www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_rater...
Home Energy Raters who want to participate in the ENERGY STAR Certified Homes Program are required to become certified by RESNET as well as complete ...
Green job scam, a warning for HERS/RESNET Energy Rater training ...
Enter “resnet energy raters”
Click on “Find a rater/auditor RESNET”

Energy


Find a Contractor, Auditor or Builder | RESNET - Mozilla Firefox
File Edit View History Bookmarks Tools Help
www.resnet.us/directory/search
resnet energy raters
Most Visited Getting Started Latest Headlines
Enter your zip code
Find a Professional
About RESNET
Articles
Contact
Search
RESNET Professionals
RESNET
RESIDENTIAL ENERGY SERVICES NETWORK
Search for a Certified RESNET Home Energy Professional
Find a Local RESNET Professional Near You
Search By:
Area State Company Name
Certified Home Energy Auditors/Raters
34990
Within 100 Miles
FIND
Looking for a RESNET Qualified Home Energy Professional? Here's how!
To find a certified RESNET Home Energy Professional in your area, first select the trade you're interested in from the drop-down menu, such as home energy auditors or an air-sealing contractor for example.
You can tailor your search by your area, State or, if you know it, the professional or company's name.
Enter your zip code, distance (search radius from your area), and click on "FIND" to begin your search.
Making your Home Energy Efficient
What are Ratings and Assessments?
Why use a RESNET Professional?
Tips and Articles on Energy Efficiency
About RESNET
Contact RESNET
RESNET SmartHome Newsletter
Get all the latest news on home energy efficiency!
Enter Your Email
SIGN UP NOW!
Twitter
RESNET SmartHome
Choose “certified home energy raters/auditors”

Energy

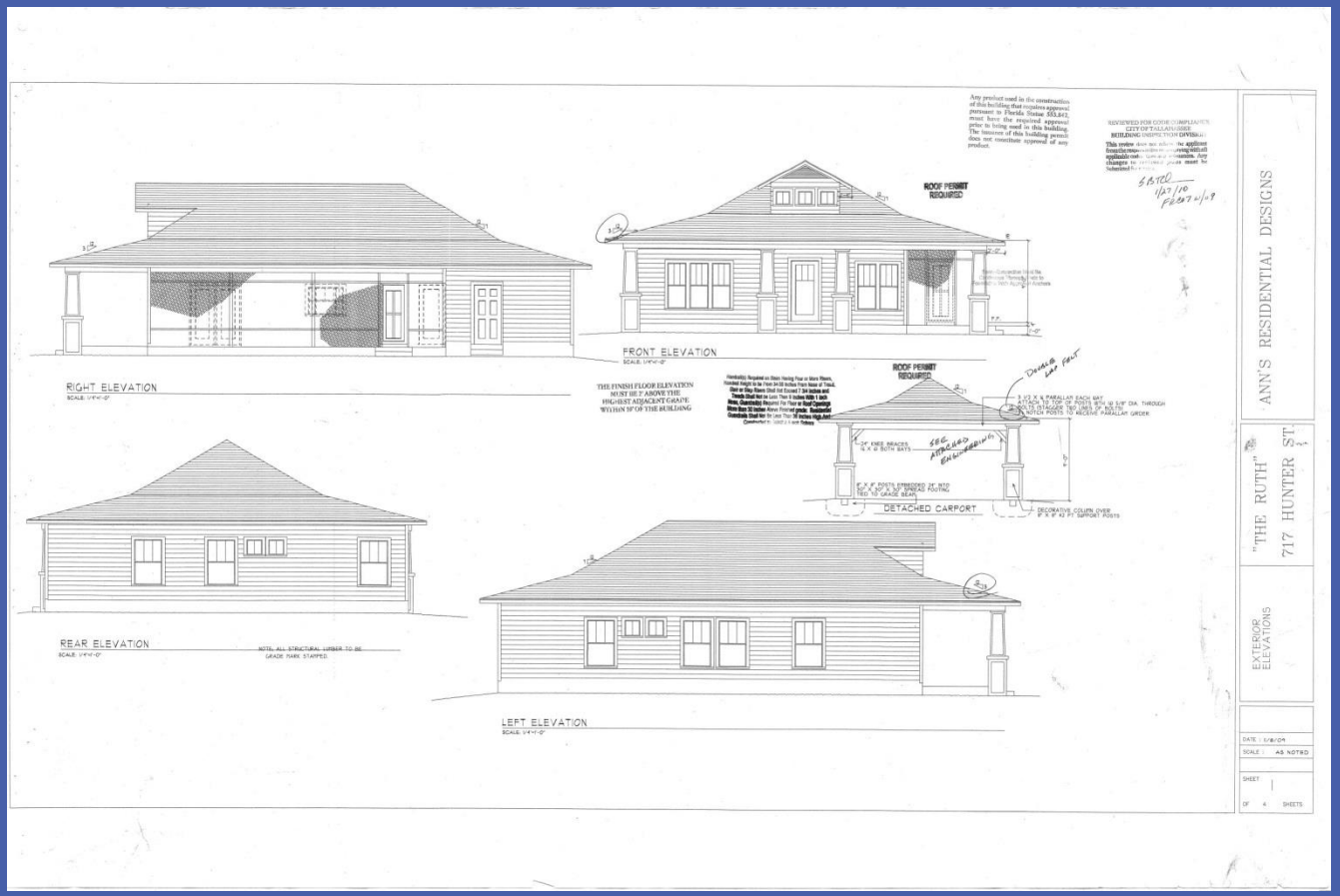

Find a Contractor, Auditor or Builder | RESNET - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Find a Contractor, Auditor or Builder | RE...
www.resnet.us/directory/search/searchtype/auditor/zip/34990/trade_id/29/slug/find-raters-auditors/page/1
resnet energy raters
Most Visited Getting Started Latest Headlines
E-mail: bruce@energyht.com
3341 Pine Hill Trail,
Palm Beach Gardens, FL 33418
VIEW PROFILE
No Logo Available
Florida Energy Raters, LLC
Contact Person: Oscar Calleja
Tel: 954-449-1600
E-mail: oscarc@floridaenergyraters.com
2520 N Andrews Avenue Ext.,
Pompano Beach, FL 33064
VIEW PROFILE
PEG
Contact Person: Matthew Cooper
Tel: 703-934-2777
E-mail: mcooper@pegenv.com
11130 Fairfax Blvd, Suite 206,
Fairfax, VA 22030
VIEW PROFILE
SunCool Energy Company
Contact Person: David Reidy
Tel: 772-631-1243
E-mail: david@suncoolenergy.com
3832 SE Jefferson Street,
Stuart, FL 34997
Energy Wise LLC
Contact Person: Geoff Gow
Tel: 7722630498
E-mail: GeoffGow@EnergyWiseSolar.com
2415 SE Dixie Hwy,
Stuart, FL 34996
staying warm this winter
ow.ly/h8DGJ
Facebook
Find us on Facebook
RESNET SmartHome
Like 293
Our most shared post of the week, here again for any who missed it! :)
Home energy
Both Martin County raters are members

Energy

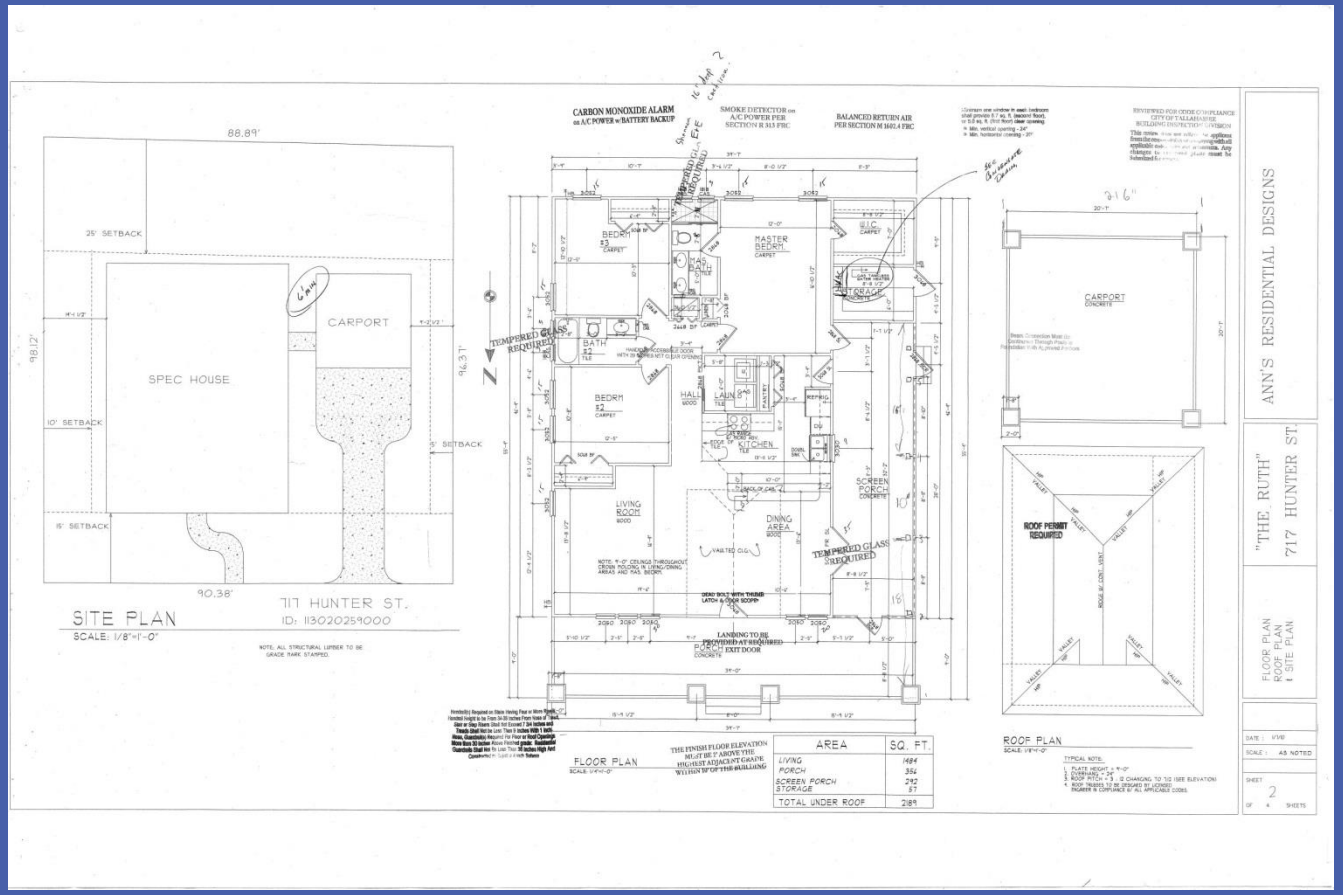

FIRST FLOOR


energy
DESIGNED
TO EARN THE
ENERGY STAR
This home plan meets strict energy efficiency guidelines set by U.S. EPA. Field verification is required for the home to earn the ENERGY STAR label.
www.energystar.gov

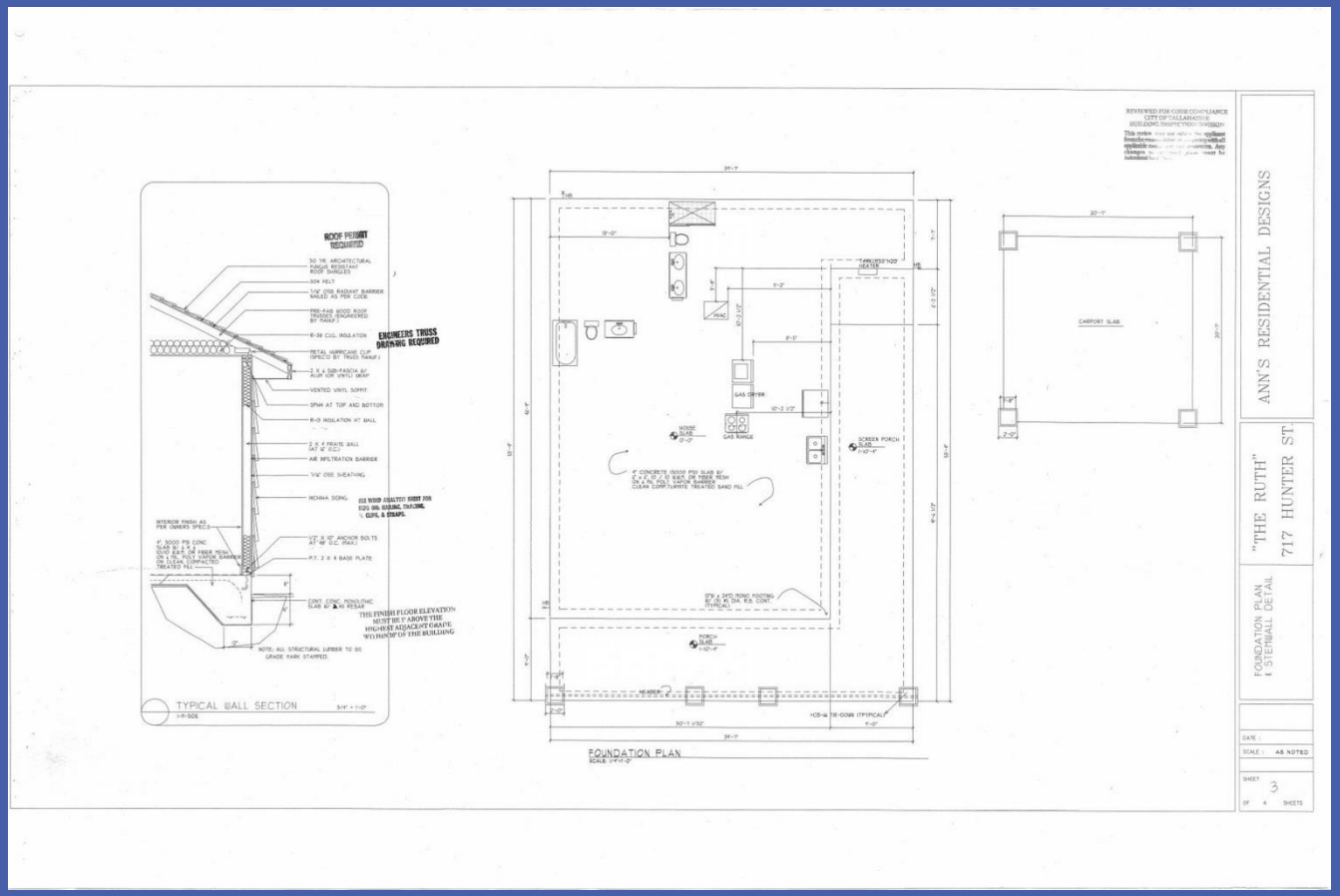
Energy


ROOF PERMIT REQUIRED
FRONT ELEVATION
RIGHT ELEVATION
ROOF PERMIT REQUIRED
DETACHED CARPORT
REAR ELEVATION
LEFT ELEVATION
ANN'S RESIDENTIAL DESIGNS
"THE RUTH"
717 HUNTER ST.
EXTERIOR ELEVATIONS

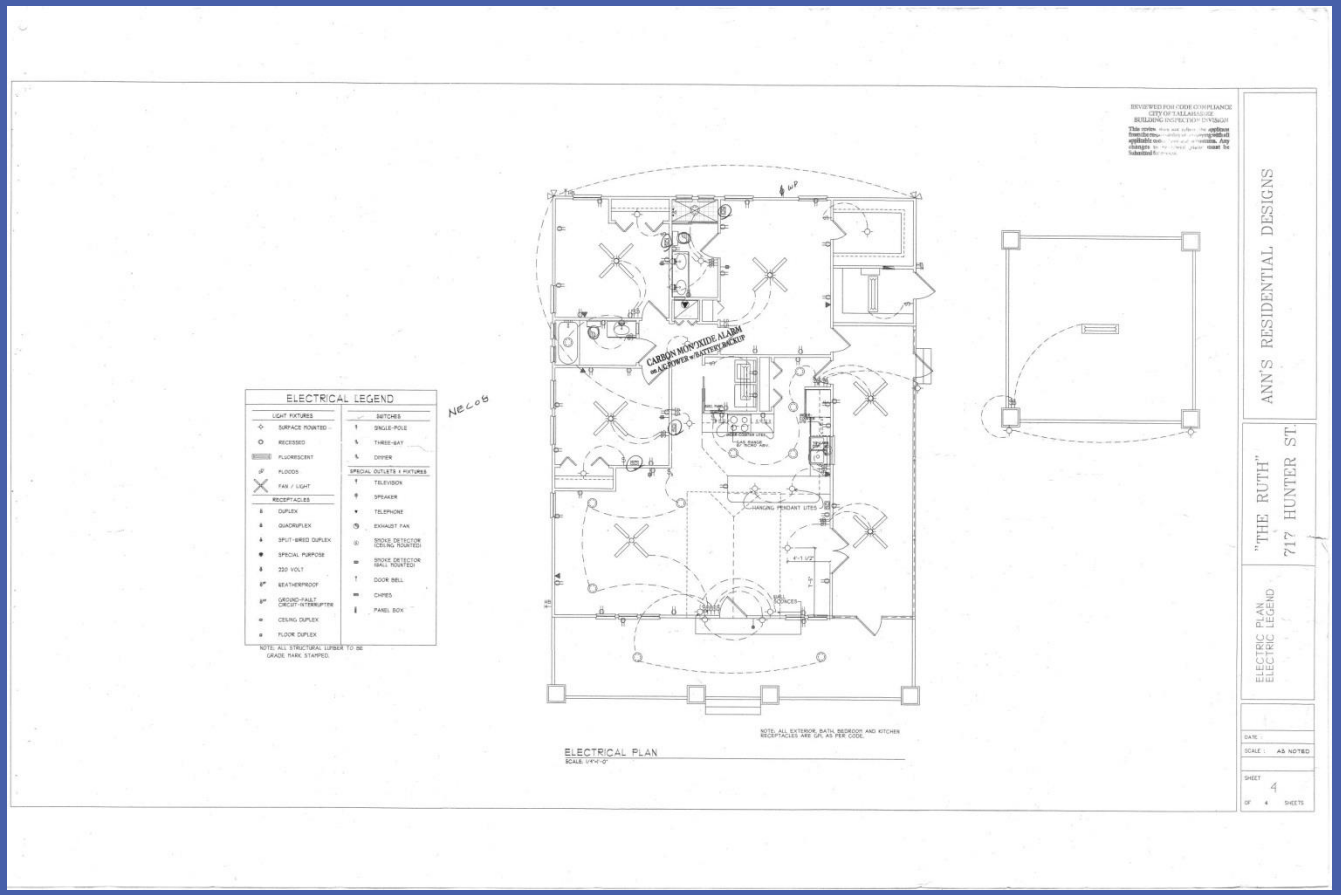
Energy


SITE PLAN
SCALE: 1/8"=1'-0"
717 HUNTER ST.
ID: 11302025900
SPEC HOUSE
CARPORT
25' SETBACK
10' SETBACK
15' SETBACK
5' SETBACK
88.89'
90.38'
98.12'
96.37'
FLOOR PLAN
SCALE: 1/4"=1'-0"
ROOF PLAN
SCALE: 1/8"=1'-0"
CARBON MONOXIDE ALARM
SMOKE DETECTOR
BALANCED RETURN AIR
TEMPERED GLASS REQUIRED
ROOF PERMIT REQUIRED
AREA
SQ. FT.
LIVING 1484
PORCH 354
SCREEN PORCH 292
STORAGE 57
TOTAL UNDER ROOF 2187
ANN'S RESIDENTIAL DESIGNS
"THE RUTH"
717 HUNTER ST.
FLOOR PLAN
ROOF PLAN
& SITE PLAN

Energy


ROOF PERMIT REQUIRED
ENGINEERS TRUSS DRAWING REQUIRED
TYPICAL WALL SECTION
FOUNDATION PLAN
ANN'S RESIDENTIAL DESIGNS
"THE RUTH"
717 HUNTER ST
FOUNDATION PLAN
STEMWALL DETAIL

Energy


ELECTRICAL LEGEND
NEC06
ELECTRICAL PLAN
"THE RUTH"
717 HUNTER ST.
ANN'S RESIDENTIAL DESIGNS

Energy

Residential System Sizing Calculation

Summary

Bill Kimbrel
717 Hunter St
Tallahassee, Fl 32303-

Project Title:
Kimbrel1484

Code Only
Professional Version
Climate: North

1/7/2010

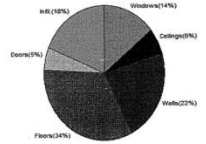
Location for weather data: Tallahassee - Defaults: Latitude(30) Altitude(55 ft.) Temp Range(M)
Humidity data: Interior RH (50%) Outdoor wet bulb (76F) Humidity difference(46gr.)

Winter design temperature	28	F	Summer design temperature	93	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	42	F	Summer temperature difference	18	F
Total heating load calculation	**25110**	**Btuh**	**Total cooling load calculation**	**28904**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Natural Gas Heat Pump)	119.5	30000	Sensible (SHR = 0.75)	95.5	22500
Heat Pump + Auxiliary(10.0kW)	255.4	64130	Latent	140.0	7500
			Total (Natural Gas Heat Pump)	103.8	30000

WINTER CALCULATIONS

Winter Heating Load (for 1484 sqft)

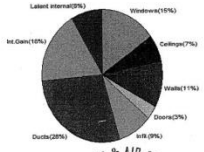
Load component			Load	
Window total	236	sqft	3562	Btuh
Wall total	1484	sqft	5532	Btuh
Door total	59	sqft	1340	Btuh
Ceiling total	1484	sqft	1582	Btuh
Floor total	171	sqft	8475	Btuh
Infiltration	100	cfm	4620	Btuh
Duct loss			0	Btuh
Subtotal			**25110**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**25110**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1484 sqft)

Load component			Load	
Window total	236	sqft	4337	Btuh
Wall total	1484	sqft	3227	Btuh
Door total	59	sqft	925	Btuh
Ceiling total	1484	sqft	1996	Btuh
Floor total			0	Btuh
Infiltration	51	cfm	1012	Btuh
Internal gain			5230	Btuh
Duct gain			6821	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Total sensible gain			**23548**	**Btuh**
Latent gain(ducts)			1357	Btuh
Latent gain(infiltration)			1599	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			2400	Btuh
Total latent gain			**5356**	**Btuh**
TOTAL HEAT GAIN			**28904**	**Btuh**



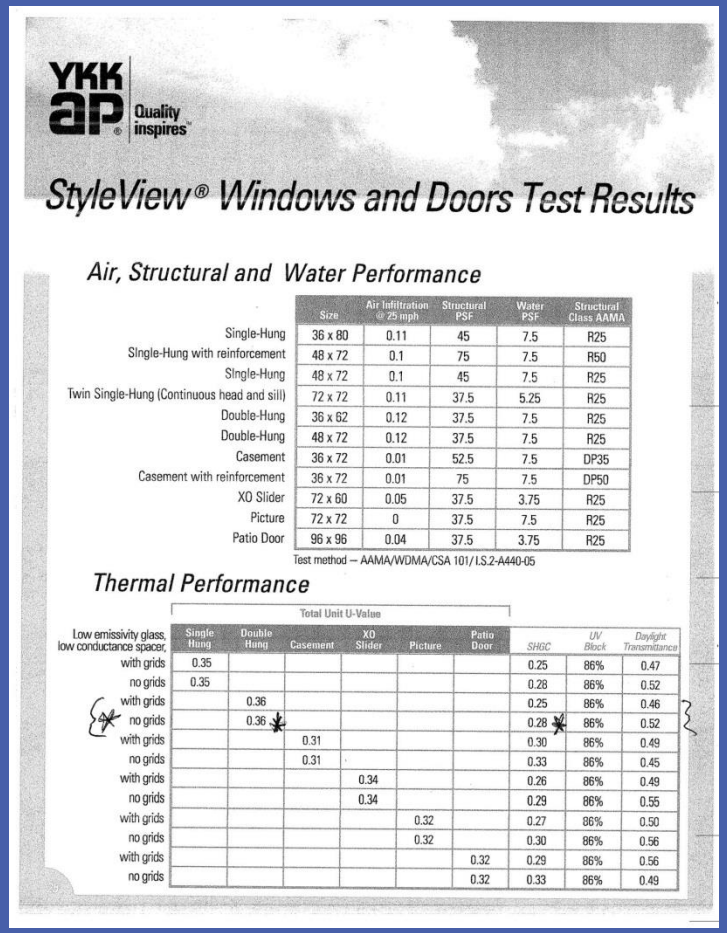
Version 8
For Florida residences only

EnergyGauge® FLRCPB v4.5.2

EnergyGauge® System 1 2010
PREPARED BY:
DATE:

HEATING & AIR CONDITIONING
AGC
TALLAHASSEE, FL 32311

Energy



YKK ap Quality inspires

StyleView® Windows and Doors Test Results

Air, Structural and Water Performance

	Size	Air Infiltration @ 25 mph	Structural PSF	Water PSF	Structural Class AAMA
Single-Hung	36 x 80	0.11	45	7.5	R25
SIngle-Hung with reinforcement	48 x 72	0.1	75	7.5	R50
SIngle-Hung	48 x 72	0.1	45	7.5	R25
Twin Single-Hung (Continuous head and sill)	72 x 72	0.11	37.5	5.25	R25
Double-Hung	36 x 62	0.12	37.5	7.5	R25
Double-Hung	48 x 72	0.12	37.5	7.5	R25
Casement	36 x 72	0.01	52.5	7.5	DP35
Casement with reinforcement	36 x 72	0.01	75	7.5	DP50
XO Slider	72 x 60	0.05	37.5	3.75	R25
Picture	72 x 72	0	37.5	7.5	R25
Patio Door	96 x 96	0.04	37.5	3.75	R25

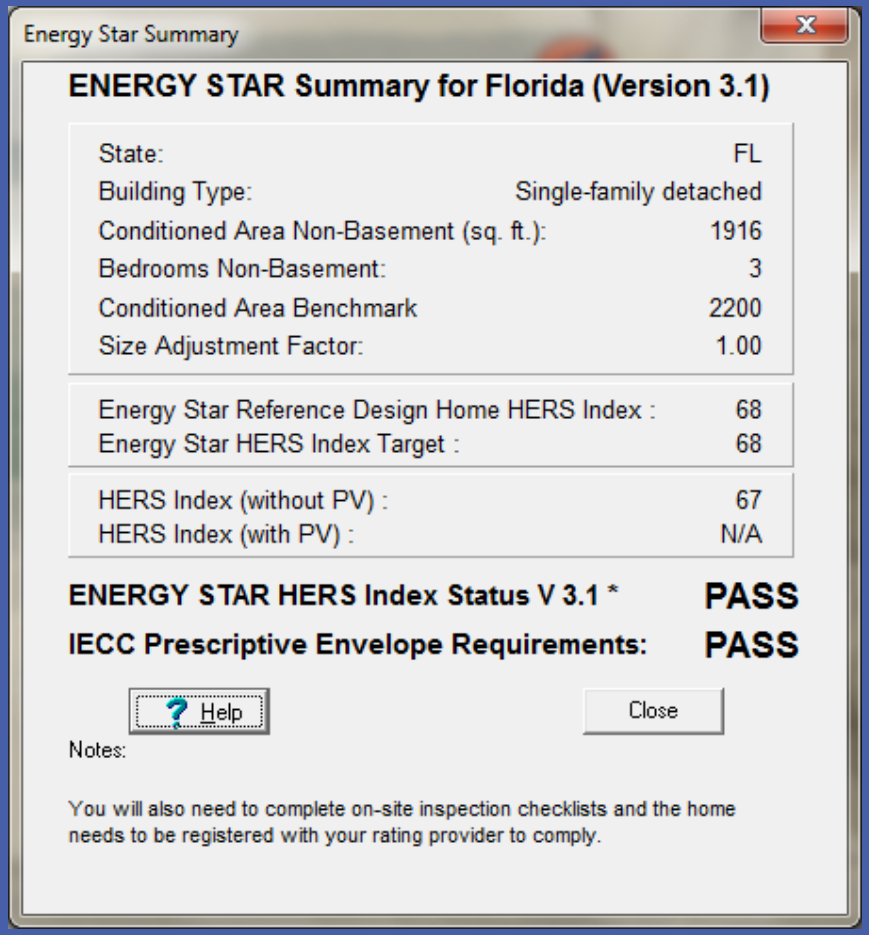
Test method – AAMA/WDMA/CSA 101/I.S.2-A440-05

Thermal Performance

	Total Unit U-Value								
Low emissivity glass, low conductance spacer,	Single Hung	Double Hung	Casement	XO Slider	Picture	Patio Door	SHGC	UV Block	Daylight Transmittance
with grids	0.35						0.25	86%	0.47
no grids	0.35						0.28	86%	0.52
with grids		0.36					0.25	86%	0.46
no grids		0.36					0.28	86%	0.52
with grids			0.31				0.30	86%	0.49
no grids			0.31				0.33	86%	0.45
with grids				0.34			0.26	86%	0.49
no grids				0.34			0.29	86%	0.55
with grids					0.32		0.27	86%	0.50
no grids					0.32		0.30	86%	0.56
with grids						0.32	0.29	86%	0.56
no grids						0.32	0.33	86%	0.49

Energy

Energy


Energy Star Summary
ENERGY STAR Summary for Florida (Version 3.1)
State: FL
Building Type: Single-family detached
Conditioned Area Non-Basement (sq. ft.): 1916
Bedrooms Non-Basement: 3
Conditioned Area Benchmark 2200
Size Adjustment Factor: 1.00
Energy Star Reference Design Home HERS Index : 68
Energy Star HERS Index Target : 68
HERS Index (without PV) : 67
HERS Index (with PV) : N/A
ENERGY STAR HERS Index Status V 3.1 * PASS
IECC Prescriptive Envelope Requirements: PASS
Help
Close
Notes:
You will also need to complete on-site inspection checklists and the home needs to be registered with your rating provider to comply.

Energy


Smoke Leakage at Air Handler


Smoke Test In Progress


Smoke Machine

Energy

Energy

ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
Thermal Enclosure System Rater Checklist

Home Address: _____ City: _____ State: _____

1. High-Performance Fenestration	Must Correct	Builder Verified[1]	Rater Verified	N/A
1.1 *Prescriptive Path:* Fenestration shall meet or exceed ENERGY STAR requirements [2]	☐	☐	☐	☐
1.2 *Performance Path:* Fenestration shall meet or exceed 2009 IECC requirements [2]	☐	☐	☐	☐
2. Quality-Installed Insulation				
2.1 Ceiling, wall, floor, and slab insulation levels shall comply with one of the following options:				
2.1.1 Meet or exceed 2009 IECC levels [3,4,5] **OR**;	☐	☐	☐	☐
2.1.2 Achieve ≤ 133% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, excluding fenestration and per guidance in Footnote 3d, AND home shall achieve ≤ 50% of the infiltration rate in Exhibit 1 of the National Program Requirements [4,6]	☐	☐	☐	☐
2.2 All ceiling, wall, floor, and slab insulation shall achieve RESNET-defined Grade I installation or, alternatively, Grade II for surfaces that contain a layer of continuous, air impermeable insulation ≥ R-3 in Climate Zones 1 to 4, ≥ R-5 in Climate Zones 5 to 8	☐	☐	☐	☐
3. Fully-Aligned Air Barriers [7]				
At each insulated location noted below, a complete air barrier shall be provided that is fully aligned with the insulation as follows: • At interior or exterior surface of ceilings in Climate Zones 1-3; at interior surface of ceilings in Climate Zones 4-8. Also, include barrier at interior edge of attic eave in all climate zones using a wind baffle that extends to the full height of the insulation. Include a baffle in every bay or a tabbed baffle in each bay with a soffit vent that will also prevent wind washing of insulation in adjacent bays • At exterior surface of walls in all climate zones; and also at interior surface of walls for Climate Zones 4-8 [7] • At interior surface of floors in all climate zones, including supports to ensure permanent contact and blocking at exposed edge [8,9]				
3.1 Walls [10]				
3.1.1 Walls behind showers and tubs	☐	☐	☐	☐
3.1.2 Walls behind fireplaces	☐	☐	☐	☐
3.1.3 Attic knee walls	☐	☐	☐	☐
3.1.4 Skylight shaft walls	☐	☐	☐	☐
3.1.5 Wall adjoining porch roof	☐	☐	☐	☐
3.1.6 Staircase walls	☐	☐	☐	☐
3.1.7 Double walls	☐	☐	☐	☐
3.1.8 Garage rim / band joist adjoining conditioned space	☐	☐	☐	☐
3.1.9 All other exterior walls	☐	☐	☐	☐
3.2 Floors				
3.2.1 Floor above garage	☐	☐	☐	☐
3.2.2 Cantilevered floor	☐	☐	☐	☐
3.2.3 Floor above unconditioned basement or unconditioned crawlspace	☐	☐	☐	☐
3.3 Ceilings [10]				
3.3.1 Dropped ceiling / soffit below unconditioned attic	☐	☐	☐	☐
3.3.2 All other ceilings	☐	☐	☐	☐
4. Reduced Thermal Bridging				
4.1 For insulated ceilings with attic space above (i.e., non-cathedralized), Grade I insulation extends to the inside face of the exterior wall below at these levels: CZ 1-5: ≥ R-21; CZ 6-8: ≥ R-30 [11]	☐	☐	☐	☐
4.2 For slabs on grade in CZ 4 and higher, 100% of slab edge insulated to ≥ R-5 at the depth specified by the 2009 IECC and aligned with thermal boundary of the walls [4,6]	☐	☐	☐	☐
4.3 Insulation beneath attic platforms (e.g., HVAC platforms, walkways) ≥ R-21 in CZ 1-5; ≥ R-30 in CZ 6-8	☐	☐	☐	☐
4.4 Reduced thermal bridging at above-grade walls separating conditioned from unconditioned space (rim / band joists exempted) using one of the following options: [12,13]				
4.4.1 Continuous rigid insulation, insulated siding, or combination of the two; ≥ R-3 in Climate Zones 1 to 4, ≥ R-5 in Climate Zones 5 to 8 [14,15], **OR**;	☐	☐	☐	☐
4.4.2 Structural Insulated Panels (SIPs), **OR**;	☐	☐	☐	☐
4.4.3 Insulated Concrete Forms (ICFs), **OR**;	☐	☐	☐	☐
4.4.4 Double-wall framing [16], **OR**;	☐	☐	☐	☐
4.4.5 Advanced framing, including all of the items below:				
4.4.5a All corners insulated ≥ R-6 to edge [17], **AND**;	☐	☐	☐	☐
4.4.5b All headers above windows & doors insulated [18], **AND**;	☐	☐	☐	☐
4.4.5c Framing limited at all windows & doors [19], **AND**;	☐	☐	☐	☐
4.4.5d All interior / exterior wall intersections insulated to the same R-value as the rest of the exterior wall [20], **AND**;	☐	☐	☐	☐
4.4.5e Minimum stud spacing of 16 in. o.c. for 2x4 framing in all Climate Zones and, in Climate Zones 5 through 8, 24 in. o.c. for 2x6 framing [21]	☐	☐	☐	☐

ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
Thermal Enclosure System Rater Checklist

5. Air Sealing	Must Correct	Builder Verified[1]	Rater Verified	N/A
5.1 Penetrations to unconditioned space fully sealed with solid blocking or flashing as needed and gaps sealed with caulk or foam				
5.1.1 Duct / flue shaft	☐	☐	☐	☐
5.1.2 Plumbing / piping	☐	☐	☐	☐
5.1.3 Electrical wiring	☐	☐	☐	☐
5.1.4 Bathroom and kitchen exhaust fans	☐	☐	☐	☐
5.1.5 Recessed lighting fixtures adjacent to unconditioned space ICAT labeled and fully gasketed. Also, if in insulated ceiling without attic above, exterior surface of fixture insulated to ≥ R-10 in CZ 4 and higher to minimize condensation potential.	☐	☐	☐	☐
5.1.6 Light tubes adjacent to unconditioned space include lens separating unconditioned and conditioned space and are fully gasketed [22]	☐	☐	☐	☐
5.2 Cracks in the building envelope fully sealed				
5.2.1 All sill plates adjacent to conditioned space sealed to foundation or sub-floor with caulk, foam, or equivalent material. Foam gasket also placed beneath sill plate if resting atop concrete or masonry and adjacent to conditioned space [23]	☐	☐	☐	☐
5.2.2 At top of walls adjoining unconditioned spaces, continuous top plates or sealed blocking using caulk, foam, or equivalent material	☐	☐	☐	☐
5.2.3 Drywall sealed to top plate at all unconditioned attic / wall interfaces using caulk, foam, drywall adhesive (but not other construction adhesives), or equivalent material. Either apply sealant directly between drywall and top plate or to the seam between the two from the attic above.	☐	☐	☐	☐
5.2.4 Rough opening around windows & exterior doors sealed with caulk or foam [24]	☐	☐	☐	☐
5.2.5 Marriage joints between modular home modules at all exterior boundary conditions fully sealed with gasket and foam	☐	☐	☐	☐
5.2.6 All seams between Structural Insulated Panels (SIPs) foamed and / or taped per manufacturer's instructions	☐	☐	☐	☐
5.2.7 In multifamily buildings, the gap between the drywall shaft wall (i.e. common wall) and the structural framing between units fully sealed at all exterior boundaries	☐	☐	☐	☐
5.3 Other openings				
5.3.1 Doors adjacent to unconditioned space (e.g., attics, garages, basements) or ambient conditions gasketed or made substantially air-tight	☐	☐	☐	☐
5.3.2 Attic access panels and drop-down stairs equipped with a durable ≥ R-10 insulated cover that is gasketed (i.e., not caulked) to produce continuous air seal when occupant is not accessing the attic [25]	☐	☐	☐	☐
5.3.3 Whole-house fans equipped with a durable ≥ R-10 insulated cover that is gasketed and either installed on the house side or mechanically operated [25]	☐	☐	☐	☐

Rater Name: _____ Rater Pre-Drywall Inspection Date: _____ Rater Initials: _____

Rater Name: _____ Rater Final Inspection Date: _____ Rater Initials: _____

Builder Employee: _____ Builder Inspection Date: _____ Builder Initials: _____

Notes:

1. At the discretion of the Rater, the builder may verify up to eight items specified in this Checklist. When exercised, the builder's responsibility will be formally acknowledged by the builder signing off on the checklist for the item(s) that they verified.
2. *For Prescriptive Path:* All windows, doors, and skylights shall meet or exceed ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0 as outlined at www.energystar.gov/windows. *For Performance Path:* All windows, doors and skylights shall meet or exceed the component U-factor and SHGC requirements specified in the 2009 IECC – Table 402.1.1. If no NFRC rating is noted on the window or in product literature (e.g., for site-built fenestration), select the U-factor and SHGC value from Tables 4 and 14, respectively, in 2005 ASHRAE Fundamentals, Chapter 31. Select the highest U-factor and SHGC value among the values listed for the known window characteristics (e.g., frame type, number of panes, glass color, and presence of low-e coating). Note that the U-factor requirement applies to all fenestration while the SHGC only applies to the glazed portion. The following exceptions apply:
   a. An area-weighted average of fenestration products shall be permitted to satisfy the U-factor requirements;
   b. An area-weighted average of fenestration products ≥ 50% glazed shall be permitted to satisfy the SHGC requirements;
   c. 15 square feet of glazed fenestration per dwelling unit shall be exempt from the U-factor and SHGC requirements, and shall be excluded from area-weighted averages calculated using a) and b), above;
   d. One side-hinged opaque door assembly up to 24 square feet in area shall be exempt from the U-factor requirements and shall be excluded from area-weighted averages calculated using a) and b), above;
   e. Fenestration utilized as part of a passive solar design shall be exempt from the U-factor and SHGC requirements, and shall be excluded from area-weighted averages calculated using a) and b), above. Exempt windows shall be facing within 45 degrees of true South and directly coupled to thermal storage mass that has a heat capacity > 20 btu / ft²x°F and provided in a ratio of at least 3 sq. ft. per sq. ft. of South facing fenestration. Generally, thermal mass materials will be at least 2 in. thick.

Energy

ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
HVAC System Quality Installation Contractor Checklist [1]

Home Address: _____ City: _____ State: _____

System Description [2] _____ Cooling system for temporary occupant load? [3] Yes ☐ No ☐

1. Whole-Building Mechanical Ventilation Design [4]	Builder Verified [5]	Cont. Verified [6]	N/A
1.1 Ventilation system installed that has been designed to meet ASHRAE 62.2-2010 requirements including, but not limited to, requirements in Items 1.2-1.5. [7]	☐	☐	-
1.2 Ventilation system does not utilize an intake duct to the return side of the HVAC system unless the system is designed to operate intermittently and automatically based on a timer and to restrict outdoor air intake when not in use (e.g., motorized damper).	☐	☐	-
1.3 Documentation is attached with ventilation system type, location, design rate, and frequency and duration of each ventilation cycle.	☐	☐	-
1.4 If present, continuously-operating vent. & exhaust fans designed to operate during all occupiable hours.	☐	☐	☐
1.5 If present, intermittently-operating whole-house ventilation system designed to automatically operate at least once per day and at least 10% of every 24 hours.	☐	☐	☐
2. Heating & Cooling System Design [8,9] - *Parameters used in the design calculations shall reflect home to be built, specifically, outdoor design temperatures, home orientation, number of bedrooms, conditioned floor area, window area, predominant window performance and insulation levels, infiltration rate, mechanical ventilation rate, presence of MERV6 or better filter, and indoor temperature setpoints = 70°F for heating; 75°F for cooling*			
2.1 Heat Loss / Gain Method: ☐ Manual J v8 ☐ 2009 ASHRAE ☐ Other: _____	☐	☐	-
2.2 Duct Design Method: ☐ Manual D ☐ Other: _____	☐	☐	☐
2.3 Equipment Selection Method: ☐ Manual S ☐ OEM Rec. ☐ Other: _____	☐	☐	-
2.4 Outdoor Design Temperatures: [9] Location: _____ 1%: ___ °F 99%: ___ °F	☐	☐	-
2.5 Orientation of Rated Home (e.g., North, South): _____	☐	☐	-
2.6 Number of Occupants Served by System: [10] _____	☐	☐	-
2.7 Conditioned Floor Area in Rated Home: _____ Sq. Ft.	☐	☐	-
2.8 Window Area in Rated Home: _____ Sq. Ft.	☐	☐	-
2.9 Predominant Window SHGC in Rated Home: [11] _____	☐	☐	-
2.10 Infiltration Rate in Rated Home: [12] Summer: _____ Winter: _____	☐	☐	-
2.11 Mechanical Ventilation Rate in Rated Home: _____ CFM	☐	☐	-
2.12 Design Latent Heat Gain: _____ BTUh	☐	☐	-
2.13 Design Sensible Heat Gain: _____ BTUh	☐	☐	-
2.14 Design Total Heat Gain: _____ BTUh	☐	☐	-
2.15 Design Total Heat Loss: _____ BTUh	☐	☐	-
2.16 Design Airflow: [13] _____ CFM	☐	☐	-
2.17 Design Duct Static Pressure: [14] _____ 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: _____	☐	☐	☐
3.2 Evaporator / Fan Coil Manufacturer & Model: _____	☐	☐	☐
3.3 AHRI Reference #: [16] _____	☐	☐	☐
3.4 Listed Efficiency: _____ EER _____ SEER	☐	☐	☐
3.5 Metering Device Type: ☐ TXV ☐ Fixed orifice ☐ Other: _____	☐	☐	☐
3.6 Refrigerant Type: ☐ R-410a ☐ Other: _____	☐	☐	☐
3.7 Fan Speed Type: [17] ☐ Fixed ☐ Variable (ECM / ICM) ☐ Other: _____	☐	☐	☐
3.8 Listed Sys. Latent Capacity at Design Cond.: [18] _____ BTUh	☐	☐	☐
3.9 Listed Sys. Sensible Capacity at Design Cond.: [18] _____ BTUh	☐	☐	☐
3.10 Listed Sys. Total Capacity at Design Cond.: [18] _____ BTUh	☐	☐	☐
3.11 If Listed Sys. Latent Capacity (Value 3.8) < Design Latent Heat Gain (Value 2.12), ENERGY STAR qualified dehumidifier installed	☐	☐	☐
3.12 Listed Sys. Total Capacity (Value 3.10) is 95-115% of Design Total Heat Gain (Value 2.14) or next nominal size [8,18]	☐	☐	☐
3.13 AHRI Certificate Attached [16]	☐	☐	☐
4. Selected Heat Pump Equipment, If Heatpump to be Installed			
4.1 AHRI Listed Efficiency: HSPF	☐	☐	☐
4.2 Performance at 17°F: Capacity _____ BTUh Efficiency: _____ COP	☐	☐	☐
4.3 Performance at 47°F: Capacity _____ BTUh Efficiency: _____ COP	☐	☐	☐

Effective for homes permitted starting 11/10/2012 Revised 9/10/2012 Page 7 of 16

ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
HVAC System Quality Installation Contractor Checklist [1]

5. Selected Furnace, If Furnace to be Installed	Builder Verified [5]	Cont. Verified [6]	N/A
5.1 Furnace Manufacturer & Model: _____	☐	☐	☐
5.2 Listed Efficiency: _____ AFUE	☐	☐	☐
5.3 Listed Output Heating Capacity: _____ BTUh	☐	☐	☐
5.4 Listed Output Heat. Cap. (Value 5.3) is 100-140% of Design Total Heat Loss (Value 2.15) or next nominal size [8,20]	☐	☐	☐
6. Refrigerant Tests - *Run system for 15 minutes before testing* Note: If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the manufacturer-recommended minimum operating temperature for the cooling cycle, then the system shall include a TXV, and the contractor shall mark "N/A" on the Checklist for Section 6 & 7. [21]			
6.1 Outdoor ambient temperature at condenser: ___ °F DB	☐	☐	
6.2 Return-side air temperature inside duct near evaporator, during cooling mode: ___ °F WB	☐	☐	
6.3 Liquid line pressure: ___ psig	☐	☐	
6.4 Liquid line temperature: ___ °F DB	☐	☐	
6.5 Suction line pressure: ___ psig	☐	☐	
6.6 Suction line temperature: ___ °F DB	☐	☐	
7. Refrigerant Calculations			
For System with Thermal Expansion Valve (TXV):			
7.1 Condenser saturation temperature: _____ °F DB (Using Value 6.3)	☐	☐	
7.2 Subcooling value: _____ °F DB (Value 7.1 - Value 6.4)	☐	☐	
7.3 OEM subcooling goal: _____ °F DB	☐	☐	
7.4 Subcooling deviation: _____ °F DB (Value 7.2 – Value 7.3)	☐	☐	
For System with Fixed Orifice:			
7.5 Evaporator saturation temperature: _____ °F DB (Using Value 6.5)	☐	☐	
7.6 Superheat value: _____ °F DB (Value 6.6 – Value 7.5)	☐	☐	
7.7 OEM superheat goal: _____ °F DB (Using superheat tables and Values 6.1 & 6.2)	☐	☐	
7.8 Superheat deviation: _____ °F DB (Value 7.6 – Value 7.7)	☐	☐	
7.9 Value 7.4 is ± 3°F or Value 7.8 is ± 5°F	☐	☐	
7.10 An OEM test procedure has been used in place of sub-cooling or super-heat process and documentation has been attached that defines this procedure	☐	☐	
8. Electrical Measurements – *Taken at electrical disconnect while component is in operation*			
8.1 Evaporator / air handler fan: ___ amperage _____ line voltage	☐	☐	
8.2 Condenser unit: ___ amperage _____ line voltage	☐	☐	
8.3 Electrical measurements within OEM-specified tolerance of nameplate value	☐	☐	
9. Air Flow Tests			
9.1 Air volume at evaporator: _____ CFM	☐	☐	
9.2 Test performed in which mode? ☐ Heating ☐ Cooling	☐	☐	
9.3 Return duct static pressure: _____ IWC Test Hole Location: [22] _____	☐	☐	
9.4 Supply duct static pressure: _____ IWC Test Hole Location: [22] _____	☐	☐	
9.5 Test hole locations are well-marked and accessible [22]	☐	☐	
9.6 Airflow volume at evaporator (Value 9.1), at fan design speed and full operating load, ± 15% of the airflow required per system design (Value 2.16) or within range recommended by OEM	☐	☐	
10. Air Balance			
10.1 Balancing report prepared and attached indicating the room name and design airflow for each supply and return register. In addition, final individual room airflows measured and documented through one of the following options:			
10.1.1 Measured by contractor using ANSI / ACCA 5 QI- 2007 protocol, documented by contractor on the balancing report, & verified by contractor to be within the greater of ± 20% or 25 CFM of design airflow [23], OR;	☐	☐	
10.1.2 To be measured, documented, and verified by a Rater per Item 1.4.2 of the HVAC System QI Rater Checklist	☐	☐	
11. System Controls			
11.1 Operating and safety controls meet OEM requirements	☐	☐	
12. Drain pan			
12.1 Corrosion-resistant drain pan, properly sloped to drainage system, included with each HVAC component that produces condensate [24]	☐	☐	

HVAC Company Name: _____

HVAC Contractor Name: _____ HVAC Contractor Signature: _____ Date: _____

Builder Name: [5] _____ Builder Signature: [5] _____ Date: _____

Effective for homes permitted starting 11/10/2012 Revised 9/10/2012 Page 8 of 16

Energy

ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
HVAC System Quality Installation Rater Checklist [1]

Home Address: _____ City: _____ State: ____

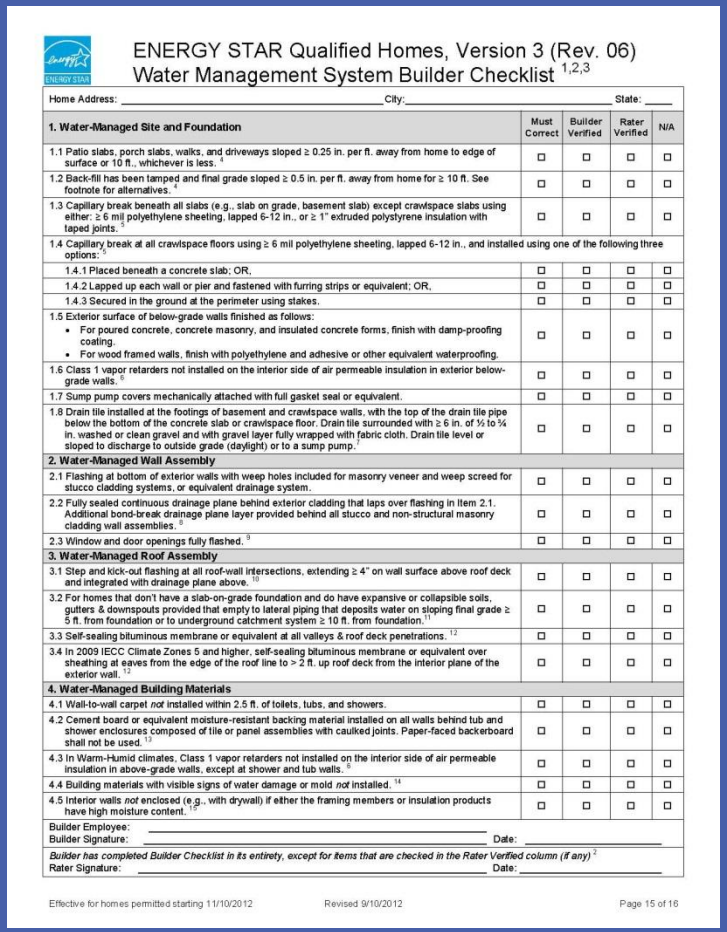
1. Review of HVAC System Quality Installation Contractor Checklist [2]	Must Correct	Rater Verified	N/A
1.1 HVAC System Quality Installation Contractor Checklist completed in its entirety and collected for records, along with documentation on ventilation system (1.3), full load calculations (2.18), and AHRI certificate (3.13).	☐	☐	☐
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):[4]			
1.2.1 Outdoor design temperatures (2.4) are equal to the 1% and 99% ACCA Manual J design temperatures for contractor-designated design location [4]	☐	☐	☐
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 [5]	☐	☐	☐
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 [6]	☐	☐	☐
1.2.7 Listed latent cooling capacity (3.8) exceeds design latent heat gain (2.12)	☐	☐	☐
1.2.8 Listed sensible cooling capacity (3.9) exceeds design sensible heat gain (2.13)	☐	☐	☐
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]	☐	☐	☐
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]	☐	☐	☐
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]	☐	☐	☐
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]	☐	☐	☐
1.3 Rater-verified supply & return duct static pressure ≤ 110% of contractor values (9.3, 9.4)	☐	☐	☐
1.4 Contractor-prepared balancing report 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;	☐	☐	☐
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)	☐	☐	☐
1.5 HVAC contractor holds credentials necessary to complete the HVAC System QI Contractor Checklist [10]	☐	☐	☐
2. Duct Quality Installation - *Applies to All Heating, Cooling, Ventilation, Exhaust, and Pressure Balancing Ducts* [11]			
2.1 Connections and routing of ductwork completed without kinks or sharp bends. [12]	☐	☐	☐
2.2 No excessive coiled or looped flexible ductwork. [13]	☐	☐	☐
2.3 Flexible ducts in unconditioned space not installed in cavities smaller than outer duct diameter; in conditioned space not installed in cavities smaller than inner duct diameter	☐	☐	☐
2.4 Flexible ducts supported at intervals as recommended by mfr. but at a distance ≤ 5 ft.	☐	☐	☐
2.5 Building cavities not used as supply or return ducts unless they meet Items 3.2, 3.3, 4.1, and 4.2 of this Checklist.	☐	☐	☐
2.6 HVAC ducts, cavities used as ducts, and combustion inlets and outlets may pass perpendicularly through exterior walls but shall not be run within exterior walls unless at least R-6 continuous insulation is provided on exterior side of the cavity, along with an interior and exterior air barrier where required by the Thermal Enclosure System Rater Checklist.	☐	☐	☐
2.7 Quantity & location of supply and return duct terminals match contractor balancing report. [11]	☐	☐	☐
2.8 Bedrooms pressure-balanced using any combination of transfer grills, jump ducts, dedicated return ducts, and / or undercut doors to either: a) provide 1 sq. in. of free area opening per 1 CFM of supply air, as reported on the contractor-provided balancing report; or b) achieve a Rater-measured pressure differential ≤ 3 Pa (0.012 in. w.c.) with respect to the main body of the house when all bedroom doors are closed and all air handlers are operating. [11,14,15]	☐	☐	☐
3. Duct Insulation - *Applies to All Heating, Cooling, Supply Ventilation, and Pressure Balancing Ducts* [16]			
3.1 All connections to trunk ducts in unconditioned space are insulated.	☐	☐	☐
3.2 *Prescriptive Path*: Supply ducts in unconditioned attic have insulation ≥ R-8. *Performance Path*: Supply ducts in unconditioned attic have insulation ≥ R-6.	☐	☐	☐
3.3 All other supply ducts and all return ducts in unconditioned space have insulation ≥ R-6.	☐	☐	☐

ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
HVAC System Quality Installation Rater Checklist [1]

4. Duct Leakage - *Applies to All Heating, Cooling, and Balanced Ventilation Ducts*	Must Correct	Rater Verified	N/A
4.1 Total Rater-measured duct leakage ≤ 8 CFM25 per 100 sq. ft. of conditioned area. [17]	☐	☐	☐
4.2 Rater-measured duct leakage to outdoors ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area. [17,18]	☐	☐	☐
5. Whole-Building Delivered Ventilation			
5.1 Rater-measured ventilation rate is within 100-120% of HVAC contractor design value (2.11). [19]	☐	☐	☐
6. Controls			
6.1 Air flow is produced when central HVAC fan is energized (set thermostat to "fan").	☐	☐	☐
6.2 Cool air flow is produced when the cooling cycle is energized (set thermostat to "cool"). [20,21]	☐	☐	☐
6.3 Heated air flow is produced when the heating cycle is energized (set thermostat to "heat"). [20]	☐	☐	☐
6.4 Continuously-operating ventilation & exhaust fans include readily accessible override controls.	☐	☐	☐
6.5 Function of ventilation controls is obvious (e.g., bathroom exhaust fan) or, if not, controls have been labeled.	☐	☐	☐
7. Ventilation Air Inlets & Ventilation Source			
7.1 All ventilation air inlets located ≥10 ft. of stretched-string distance from known contamination sources such as stack, vent, exhaust hood, or vehicle exhaust. Exception: ventilation air inlets in the wall ≥ 3 ft. from dryer exhausts and contamination sources exiting through the roof. [22]	☐	☐	☐
7.2 Ventilation air inlets ≥ 2 ft. above grade or roof deck in Climate Zones 1-3 or ≥ 4 ft. above grade or roof deck in Climate Zones 4-8 and not obstructed by snow, plantings, condensing units or other material at time of inspection. [23]	☐	☐	☐
7.3 Ventilation air inlets provided with rodent / insect screen with ≤ 0.5 inch mesh. [24]	☐	☐	☐
7.4 Ventilation air comes directly from outdoors, not from adjacent dwelling units, garages, crawlspaces, or attics.	☐	☐	☐
8. Local Mechanical Exhaust			
In each kitchen and bathroom, a system shall be installed that exhausts directly to the outdoors and meets one of the following Rater-measured airflow standards: [16,25,26]			
Location / **Continuous Rate** / **Intermittent Rate** [27]			
8.1 Kitchen — ≥ 5 ACH, based on kitchen volume [28] — ≥ 100 CFM and, if not integrated with range, also ≥ 5 ACH based on kitchen volume [26,29]	☐	☐	☐
8.2 Bathroom — ≥ 20 CFM — ≥ 50 CFM	☐	☐	☐
8.3 If fans share common exhaust duct, back-draft dampers installed.	☐	☐	☐
8.4 Common exhaust duct not shared by fans in separate dwellings. [30]	☐	☐	☐
8.5 Clothes dryers vented directly to outdoors, except for ventless dryers equipped with a condensate drain.	☐	☐	☐
9. Ventilation & Exhaust Fan Ratings (Exemptions for HVAC and Remote-Mounted Fans) [31]			
9.1 Intermittent supply and exhaust fans rated at ≤ 3 sones by mfr. when producing no less than the minimum airflow rate required by Section 8 of this Checklist, unless rated flow ≥ 400 CFM.	☐	☐	☐
9.2 Continuous supply & exhaust fans rated at ≤ 1 sone by mfr. when producing no less than the minimum airflow required by Section 8 of this Checklist.	☐	☐	☐
9.3 Bathroom fans used as part of a whole-house mechanical ventilation system shall be ENERGY STAR qualified; unless rated flow rate ≥ 500 CFM.	☐	☐	☐
10. Combustion Appliances			
10.1 Furnaces, boilers, and water heaters located within the home's pressure boundary are mechanically drafted or direct-vented. As an exception, naturally drafted equipment is allowed in Climate Zones 1-3. For naturally drafted furnaces, boilers, and water heaters, the Rater has followed RESNET or BPI combustion safety test procedures and met the selected standard's limits for depressurization, spillage, draft pressure, and CO concentration in ambient air, as well as a CO concentration in the flue of ≤ 25 ppm. [32,33,34]	☐	☐	☐
10.2 For fireplaces that are not mechanically drafted or direct-vented to outdoors, total net rated exhaust flow of the two largest exhaust fans (excluding summer cooling fans) is ≤ 15 CFM per 100 sq. ft. of occupiable space when at full capacity or the Rater has verified that the pressure differential is ≤ -5 Pa using BPI's or RESNET's worst-case depressurization test procedure. [35,33,34,35,36]	☐	☐	☐
10.3 If unvented combustion appliances other than cooking ranges are located inside the home's pressure boundary, the Rater has operated the appliance for at least 10 minutes and verified that the ambient CO level does not exceed 35 ppm. [37]	☐	☐	☐
11. Filtration			
11.1 At least one MERV 6 or higher filter installed in each ducted mechanical system. [38]	☐	☐	☐
11.2 All return air and mechanically supplied outdoor air pass through filter prior to conditioning.	☐	☐	☐
11.3 Filter located and installed so as to facilitate access and regular service by the owner. [39]	☐	☐	☐
11.4 Filter access panel includes gasket or comparable sealing mechanism and fits snugly against the exposed edge of filter when closed to prevent bypass. [40]	☐	☐	☐

Rater Name: _____ Date Checklist Inspected: _____
Rater Signature: _____ Rater Company Name: _____

Energy



ENERGY STAR Qualified Homes, Version 3 (Rev. 06)
Water Management System Builder Checklist [1,2,3]

Home Address: _____ City: _____ State: ____

1. Water-Managed Site and Foundation	Must Correct	Builder Verified	Rater Verified	N/A
1.1 Patio slabs, porch slabs, walks, and driveways sloped ≥ 0.25 in. per ft. away from home to edge of surface or 10 ft., whichever is less. [4]	☐	☐	☐	☐
1.2 Back-fill has been tamped and final grade sloped ≥ 0.5 in. per ft. away from home for ≥ 10 ft. See footnote for alternatives. [4]	☐	☐	☐	☐
1.3 Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using either: ≥ 6 mil polyethylene sheeting, lapped 6-12 in., or ≥ 1" extruded polystyrene insulation with taped joints. [5]	☐	☐	☐	☐
1.4 Capillary break at all crawlspace floors using ≥ 6 mil polyethylene sheeting, lapped 6-12 in., and installed using one of the following three options: [5]				
1.4.1 Placed beneath a concrete slab; OR,	☐	☐	☐	☐
1.4.2 Lapped up each wall or pier and fastened with furring strips or equivalent; OR,	☐	☐	☐	☐
1.4.3 Secured in the ground at the perimeter using stakes.	☐	☐	☐	☐
1.5 Exterior surface of below-grade walls finished as follows: • For poured concrete, concrete masonry, and insulated concrete forms, finish with damp-proofing coating. • For wood framed walls, finish with polyethylene and adhesive or other equivalent waterproofing.	☐	☐	☐	☐
1.6 Class 1 vapor retarders not installed on the interior side of air permeable insulation in exterior below-grade walls. [6]	☐	☐	☐	☐
1.7 Sump pump covers mechanically attached with full gasket seal or equivalent.	☐	☐	☐	☐
1.8 Drain tile installed at the footings of basement and crawlspace walls, with the top of the drain tile pipe below the bottom of the concrete slab or crawlspace floor. Drain tile surrounded with ≥ 6 in. of ½ to ¾ in. washed or clean gravel and with gravel layer fully wrapped with fabric cloth. Drain tile level or sloped to discharge to outside grade (daylight) or to a sump pump. [7]	☐	☐	☐	☐
2. Water-Managed Wall Assembly				
2.1 Flashing at bottom of exterior walls with weep holes included for masonry veneer and weep screed for stucco cladding systems, or equivalent drainage system.	☐	☐	☐	☐
2.2 Fully sealed continuous drainage plane behind exterior cladding that laps over flashing in Item 2.1. Additional bond-break drainage plane layer provided behind all stucco and non-structural masonry cladding wall assemblies. [8]	☐	☐	☐	☐
2.3 Window and door openings fully flashed. [9]	☐	☐	☐	☐
3. Water-Managed Roof Assembly				
3.1 Step and kick-out flashing at all roof-wall intersections, extending ≥ 4" on wall surface above roof deck and integrated with drainage plane above. [10]	☐	☐	☐	☐
3.2 For homes that don't have a slab-on-grade foundation and do have expansive or collapsible soils, gutters & downspouts provided that empty to lateral piping that deposits water on sloping final grade ≥ 5 ft. from foundation or to underground catchment system ≥ 10 ft. from foundation. [11]	☐	☐	☐	☐
3.3 Self-sealing bituminous membrane or equivalent at all valleys & roof deck penetrations. [12]	☐	☐	☐	☐
3.4 In 2009 IECC Climate Zones 5 and higher, self-sealing bituminous membrane or equivalent over sheathing at eaves from the edge of the roof line to > 2 ft. up roof deck from the interior plane of the exterior wall. [12]	☐	☐	☐	☐
4. Water-Managed Building Materials				
4.1 Wall-to-wall carpet *not* installed within 2.5 ft. of toilets, tubs, and showers.	☐	☐	☐	☐
4.2 Cement board or equivalent moisture-resistant backing material installed on all walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints. Paper-faced backerboard shall not be used. [13]	☐	☐	☐	☐
4.3 In Warm-Humid climates, Class 1 vapor retarders not installed on the interior side of air permeable insulation in above-grade walls, except at shower and tub walls. [8]	☐	☐	☐	☐
4.4 Building materials with visible signs of water damage or mold *not* installed. [14]	☐	☐	☐	☐
4.5 Interior walls *not* enclosed (e.g., with drywall) if either the framing members or insulation products have high moisture content. [15]	☐	☐	☐	☐

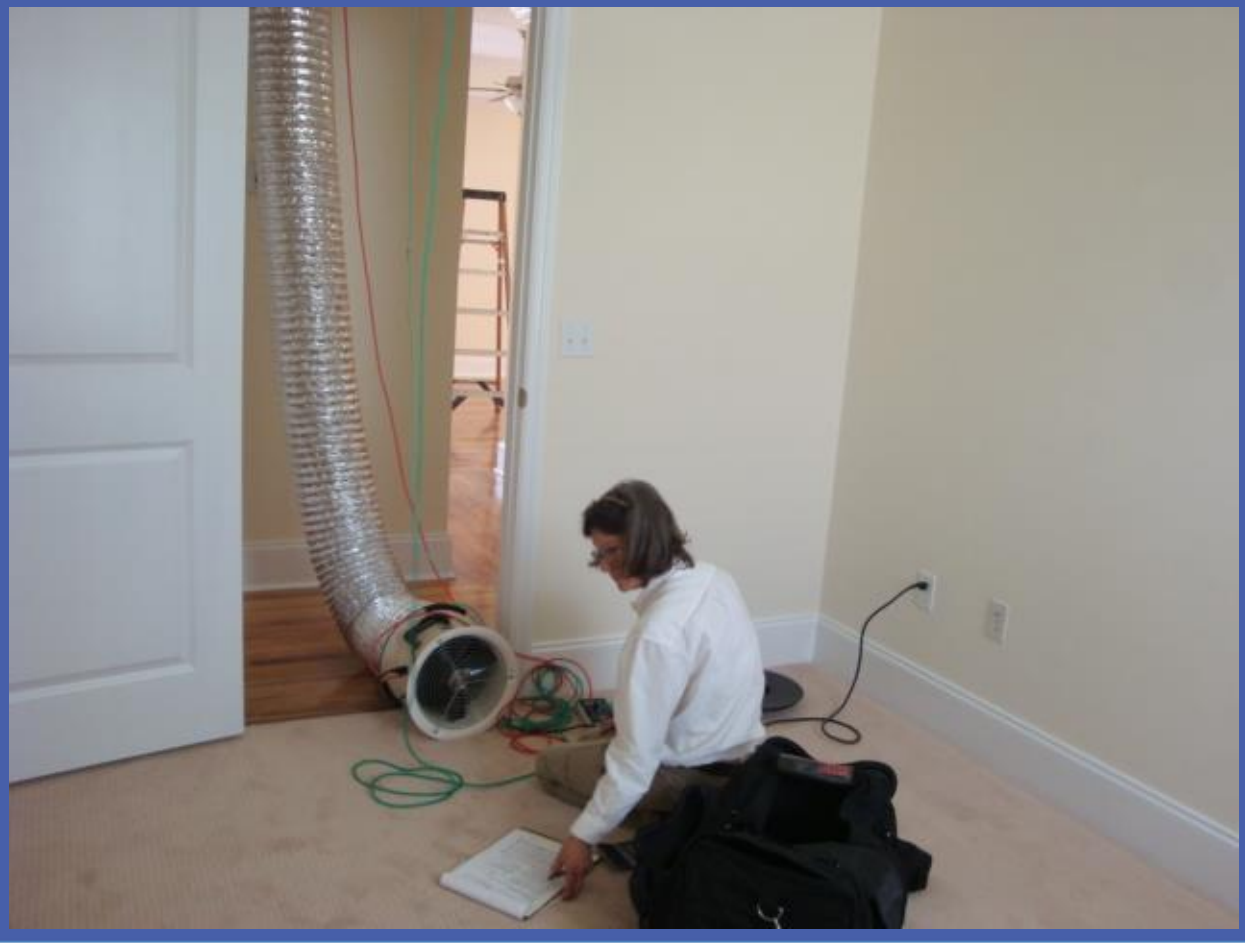
Builder Employee: _____
Builder Signature: _____ Date: _____

Builder has completed Builder Checklist in its entirety, except for items that are checked in the Rater Verified column (if any) [2]
Rater Signature: _____ Date: _____

Effective for homes permitted starting 11/10/2012 Revised 9/10/2012 Page 15 of 16

Energy

Energy



Energy

CATEGORY 1: ENERGY				
Category Minimum 30 / Category Maximum 75				Version 9 Revised 12/18/12
	Points Achieved	Points Possible	Criteria	
HERS Index - Energy Rating				**Certifying Agent Notes**
E1.1	0	3 - 75	Confirmed Florida HERS Rating - 3 points for each HERS Index point below 80	
			N/A :Does the Home have a confirmed HERS Index	
			:Confirmed HERS Index	
Design, Finishes, Amenities				**Certifying Agent Notes**
E2.1	-	1	Thermal Bypass Inspection	
E2.2	-	1	Ductwork joints sealed with mastic	
E2.3	-	1	Ductwork smoke tested allowing leaks to be sealed prior to drywall	
E2.4	-	1	Cross vent and ceiling fans code credit	
E2.5	-	1	Roofed porch, Min 100ft^2 AND meets cross-ventilation requirements	
E2.6	-	1	Passive solar space heating system	
E2.7	-	1	Passive solar day-lighting	
E2.8	-	1	Deciduous trees on south	
E2.9	0	1 - 4	House shaded on east and west by trees	
			% of the designated wall areas (average of east and west walls) that are shaded by trees.	
E2.10	-	1	Washer and dryer outside of conditioned space	
E2.11	-	1	Floor joist perimeter insulated and sealed	
E2.12	-	1	Light colored exterior walls (80% minimum)	
			Enter the Solar Reflecive Index (SRI) of Paint	
E2.13	0	1 - 2	Light colored interior walls, ceilings, carpet/floors	
			N/A all major living spaces wall and ceiling surfaces have a reflectance of at least 50%	
			Enter the Light Reflectance Value (LRV) of Paint	
			N/A bedrooms and all major living spaces have floors, walls, & ceilings are light-colored	
			Enter the Light Reflectance Value (LRV) of Paint	
E2.14	-	1	Max 100W fixtures in bathrooms	
E2.15	-	1	Pre-plumb for solar hot water	
E2.16	-	2	Install a State Certified rated solar hot water system	
E2.17	-	1	Compact hot water distribution	
E2.18	-	1	Insulate all hot water pipes	
E2.19	-	1	Energy-efficient clothes dryers	
E2.20	-	1	Energy-efficient ovens/ranges	
E2.21	-	1	Energy Star® clothes washers	
E2.22	-	1	Efficient well pumping	

FGBC FLORIDA GREEN BUILDING COALITION

1 of 2

Energy

E2.23	0	1	Efficient envelope volume	
		0	Total Gross Wall Area	
		1	Conditional Square Footage	
		1	Number of Stories	
E2.24	-	1	Dwelling unit attached, zero lot-line, row house	
E2.25	-	1 - 2	Ceiling Penetrations: No pentrations in ceiling (2 points), No penetrations in the themal envelope (1 point)	
E2.26	-	3	Energy Star® Advanced Lighting Package	
E2.27	-	2	Outdoor lights are energy efficient.	
E2.28	-	1	Install motion sensors on a minimum of 60% of the hard wired lighting fixtures	
	0	111	Total Possible Points	
	0		Total points for Category 1 (30 min / 75 max)	
			Name of HERS Rater:	
			Certifying Agent Category 1:	

A NOTE ABOUT ENERGY

As you review the FGBC Green Home Standard you may wonder why many energy saving features do not appear as line items. The FGBC has elected to use a whole-house, performance-based energy rating for points versus offering an exhaustive list of prescriptive energy saving alternatives. The performance-based Energy Rating is called a HERS Index. For information purposes the adjacent chart lists many of the inputs used to calculate a

Energy Gauge USA / HERS Index		
Envelope		
Floors	Windows	Roof
Foundation type	# & size of windows	Roof Configuration / Slope
Insulation value	Tint / U-factor	Roof Material / Color
Perimeter / Area	Type of Frame	Attic Details
Floor covering	Overhang details	Conditioned ceiling Area
Walls	Ceilings	Solar absorbance
Orientation	Ceiling style	Roof deck insulation level
Area	Insulation value	Radiant barrier system
Insulation value	Area	Attic Ventilation ratio
Doors	Garage	Infiltration
Door Area / U Value	Attached or not	Building envelope leakage
Equipment		
Hot Water	Ducts	Appliances and Lights
Type / location	Insulation value	Programmable Thermostat
Efficiency	Duct Location	Refrigerator
Daily usage	Air Handler Location	% fluorescent lighting
Set Temperature	Amount of leakage	Ceilings fans
Solar or heat recovery	Duct surface area	Dishwasher
Cooling	Heating	Photovoltaic's
System Type	System Type	Array
Capacity	Efficiency	Inverter
SEER	Capacity	Batteries

FGBC FLORIDA GREEN BUILDING COALITION

2 of 2

Energy

Verifying Energy Performance Review

- How is a home designed for energy efficiency?
- What is modeling?
- How are homes tested?

ENERGY STAR®

And the downright UGLY!

ENERGY STAR®

- Where we were
- Where we are
- What does Version 3.1, revision 7 really require?

ENERGY STAR®

V1

- 1996-2006
- High-performance windows
- Tight construction and ducts
- Efficient heating and cooling equipment
- Third-party verification by a certified Home Energy Rater.

ENERGY STAR®

V2

- 2006-2011
- Choose a pathway
- Pass the thermal bypass
- Meet the HERS Index
- Pass the duct leakage test ($Qn_{Out} \leq .06$)

ENERGY STAR®

V2.5

- April 1, 2011-July 1,2012
- Thermal Enclosure System Rater Checklist
- (Sections 3 and 5 enforced)
- HVAC Quality Installation Contractor Checklist
- HVAC Quality Installation Rater Checklist
- Water Management System Builder Checklist

ENERGY STAR®

V3

- Beginning July 1, 2012
- All checklists enforced
- Thermal Enclosure System Rater Checklist
- HVAC Quality Installation Contractor Checklist
- HVAC Quality Installation Rater Checklist
- Water Management System Builder Checklist

ENERGY STAR®

V3.1

- July 1, 2012
- Or February 1, 2013?
- Florida Specific Requirement

AND

- All 4 Checklists*

*now on revision 7 of these!

Confused?

- We all are…..or were

Good

Good

Insulated headers

Real Bad

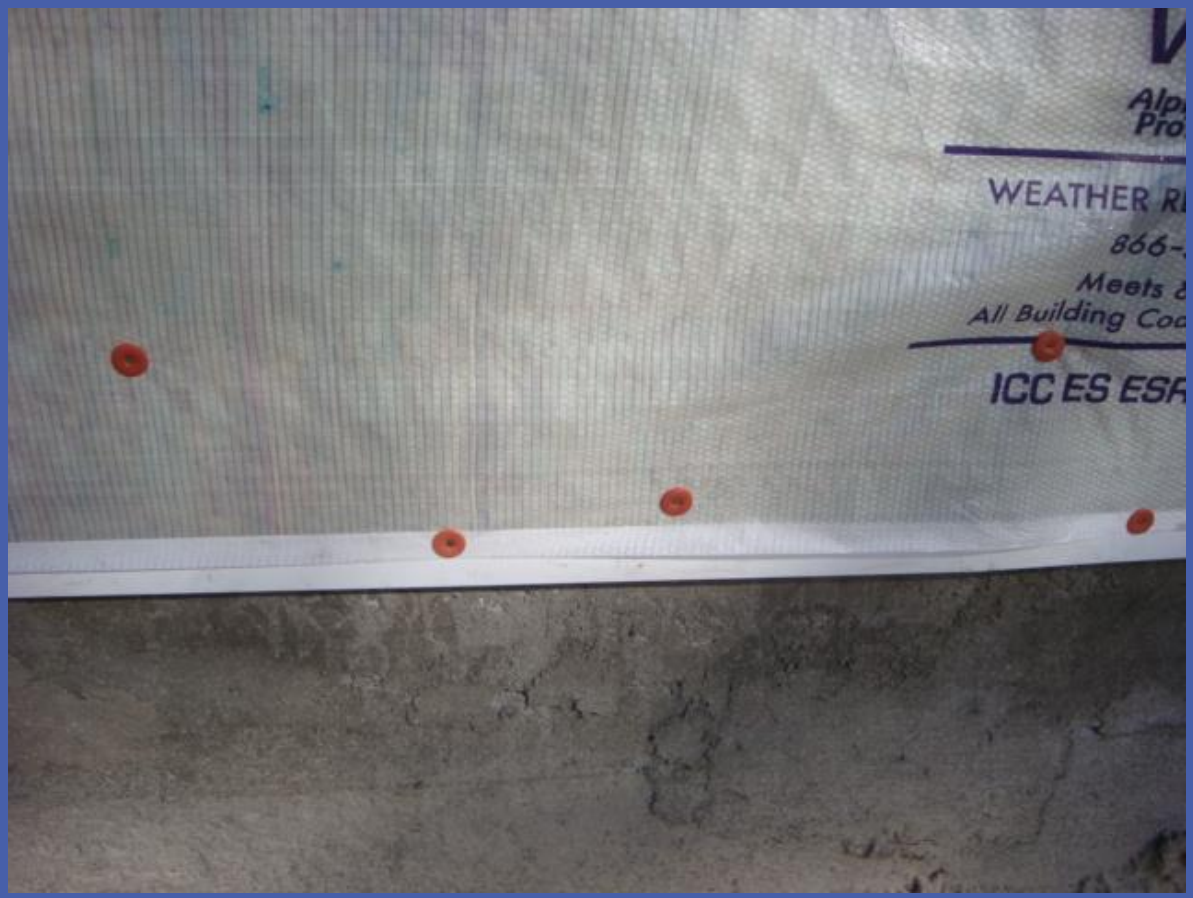
Ugly

Bad

Almost?

Good

Good



Good

Good/Ugly

Bad?

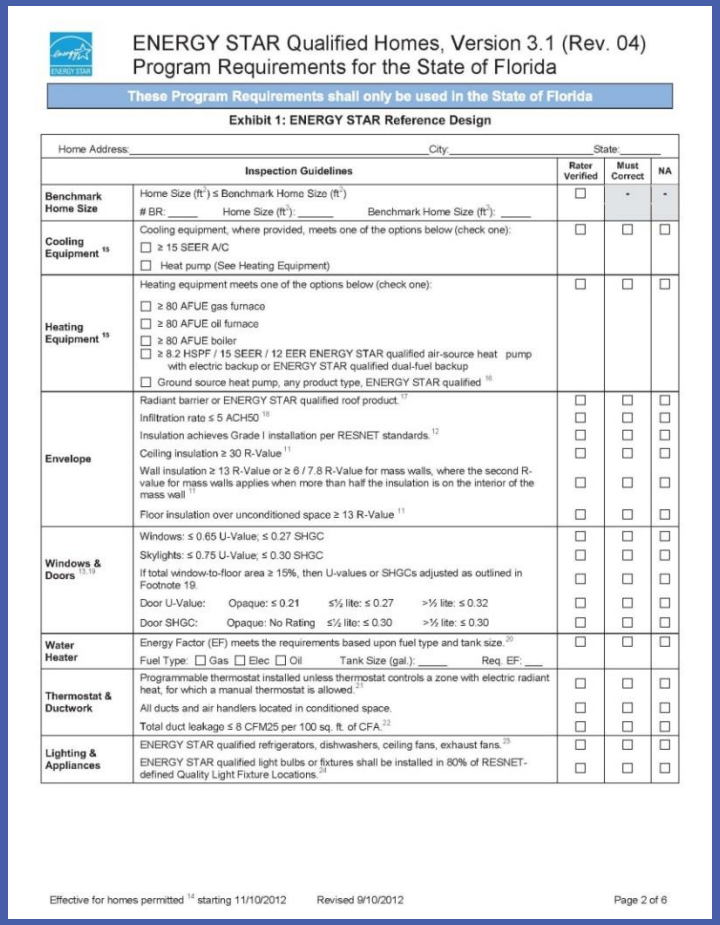
Version 3.1

- Received updated Energy Gauge December 1
- Prescriptive
- Performance

Prescriptive

- Because I said so, that's why!

Prescriptive



ENERGY STAR Qualified Homes, Version 3.1 (Rev. 04)
Program Requirements for the State of Florida

These Program Requirements shall only be used in the State of Florida

Exhibit 1: ENERGY STAR Reference Design

Home Address:_____ City:_____ State:_____

	Inspection Guidelines	Rater Verified	Must Correct	NA
Benchmark Home Size	Home Size (ft^2) ≤ Benchmark Home Size (ft^2) # BR: _____ Home Size (ft^2): _____ Benchmark Home Size (ft^2): _____	☐	-	-
Cooling Equipment [15]	Cooling equipment, where provided, meets one of the options below (check one): ☐ ≥ 15 SEER A/C ☐ Heat pump (See Heating Equipment)	☐	☐	☐
Heating Equipment [15]	Heating equipment meets one of the options below (check one): ☐ ≥ 80 AFUE gas furnace ☐ ≥ 80 AFUE oil furnace ☐ ≥ 80 AFUE boiler ☐ ≥ 8.2 HSPF / 15 SEER / 12 EER ENERGY STAR qualified air-source heat pump with electric backup or ENERGY STAR qualified dual-fuel backup ☐ Ground source heat pump, any product type, ENERGY STAR qualified [16]	☐	☐	☐
Envelope	Radiant barrier or ENERGY STAR qualified roof product.[17]	☐	☐	☐
	Infiltration rate ≤ 5 ACH50 [18]	☐	☐	☐
	Insulation achieves Grade I installation per RESNET standards.[12]	☐	☐	☐
	Ceiling insulation ≥ 30 R-Value [11]	☐	☐	☐
	Wall insulation ≥ 13 R-Value or ≥ 6 / 7.8 R-Value for mass walls, where the second R-value for mass walls applies when more than half the insulation is on the interior of the mass wall [11]	☐	☐	☐
	Floor insulation over unconditioned space ≥ 13 R-Value [11]	☐	☐	☐
Windows & Doors [13,19]	Windows: ≤ 0.65 U-Value; ≤ 0.27 SHGC	☐	☐	☐
	Skylights: ≤ 0.75 U-Value; ≤ 0.30 SHGC	☐	☐	☐
	If total window-to-floor area ≥ 15%, then U-values or SHGCs adjusted as outlined in Footnote 19.	☐	☐	☐
	Door U-Value: Opaque: ≤ 0.21 ≤½ lite: ≤ 0.27 >½ lite: ≤ 0.32	☐	☐	☐
	Door SHGC: Opaque: No Rating ≤½ lite: ≤ 0.30 >½ lite: ≤ 0.30	☐	☐	☐
Water Heater	Energy Factor (EF) meets the requirements based upon fuel type and tank size.[20] Fuel Type: ☐ Gas ☐ Elec ☐ Oil Tank Size (gal.): _____ Req. EF: ___	☐	☐	☐
Thermostat & Ductwork	Programmable thermostat installed unless thermostat controls a zone with electric radiant heat, for which a manual thermostat is allowed.[21]	☐	☐	☐
	All ducts and air handlers located in conditioned space.	☐	☐	☐
	Total duct leakage ≤ 8 CFM25 per 100 sq. ft. of CFA.[22]	☐	☐	☐
Lighting & Appliances	ENERGY STAR qualified refrigerators, dishwashers, ceiling fans, exhaust fans.[23]	☐	☐	☐
	ENERGY STAR qualified light bulbs or fixtures shall be installed in 80% of RESNET-defined Quality Light Fixture Locations.[24]	☐	☐	☐

Effective for homes permitted [14] starting 11/10/2012 Revised 9/10/2012 Page 2 of 6

Prescriptive Home Size

- CFA may not exceed benchmark home

Benchmark Home								
Bedrooms in home to be built	1	2	3	4	5	6	7	8
Conditioned floor area Benchmark home	1000	1600	2200	2800	3400	4000	4600	5200

Prescriptive Heat Pumps

- If using a heat pump, must be at least:
  - 8.2 HSPF
  - 15 SEER
  - 12EER
  - ENERGY STAR labeled

Prescriptive Envelope

- Radiant barrier
- $ACH_{50} \leq 5$
- Grade 1 insulation installation
- Ceiling insulation ≥ R-30
- Wall insulation ≥ R-13
- Floor over unconditioned space ≥ R-13

Prescriptive Windows

- Windows: ≤ .65 U-value, ≤ .27 SHGC
- Skylights: ≤ .75 U-value, ≤ .30 SHGC

Prescriptive Water Heater

Energy Factor (EF) meets requirements:

- To determine domestic hot water (DHW) EF requirements:
  - Gas DHW EF ≥ 0.69 - (0.002 x Tank Gallon Capacity);
  - Electric DHW EF ≥ 0.97 - (0.001 x Tank Gallon Capacity);

Prescriptive Thermostat and Ductwork

- Programmable thermostat
- All ductwork and air handlers located in conditioned space
- QnTotal ≤ 8/100 sq. ft.

Prescriptive Lighting and Appliances

- All refrigerators, dishwashers, ceiling fans and exhaust fans are energy star qualified
- ENERGY STAR qualified light bulbs or fixtures in
- ≥ 80% of RESNET designated qualifying locations

Performance

I won’t tell you how to do it, just do it!

Performance Home Size

CFA may not exceed benchmark home

Benchmark Home								
Bedrooms in home to be built	1	2	3	4	5	6	7	8
Conditioned floor area Benchmark home	1000	1600	2200	2800	3400	4000	4600	5200

Size adjustment factor (SAF)=

Benchmark Sq. Footage Allowed

Rated Home Sq. Footage

Performance Home Size

Example:

4 bedroom 3400 square foot home

SAF=2800÷3400

SAF=.82

Performance Home Size

Example:

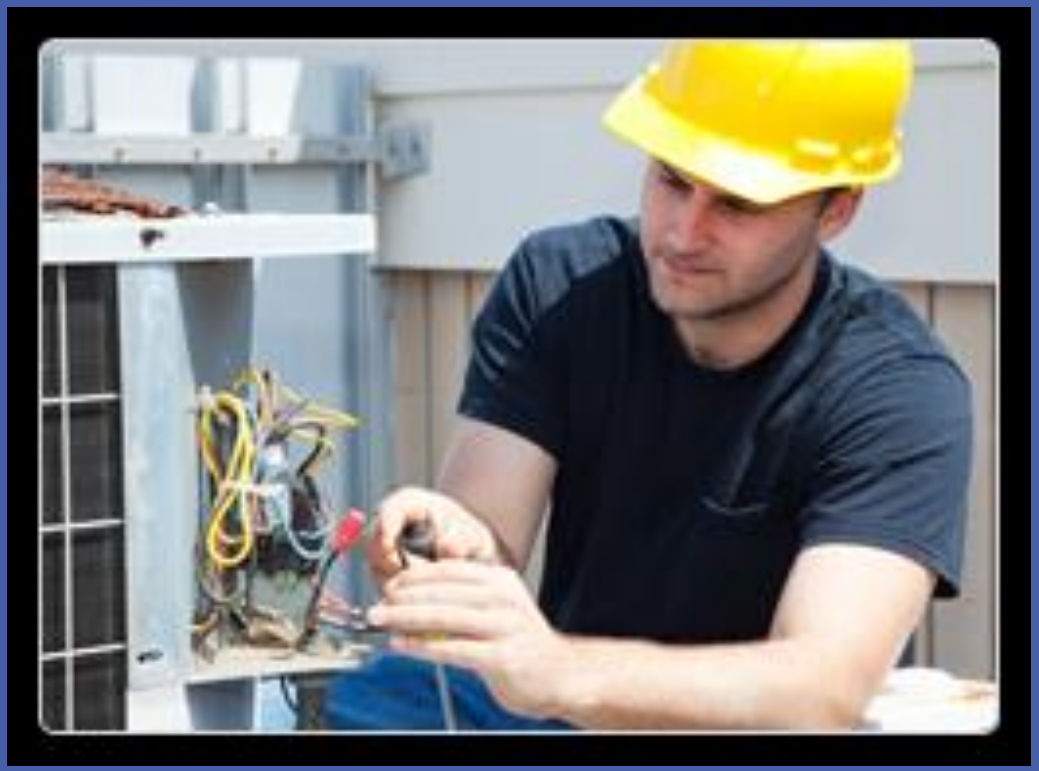
4 bedroom 3400 square foot home

SAF=.82

Benchmark HERS=72

Rated home HERS=72x.82=59

Do you have a very, very

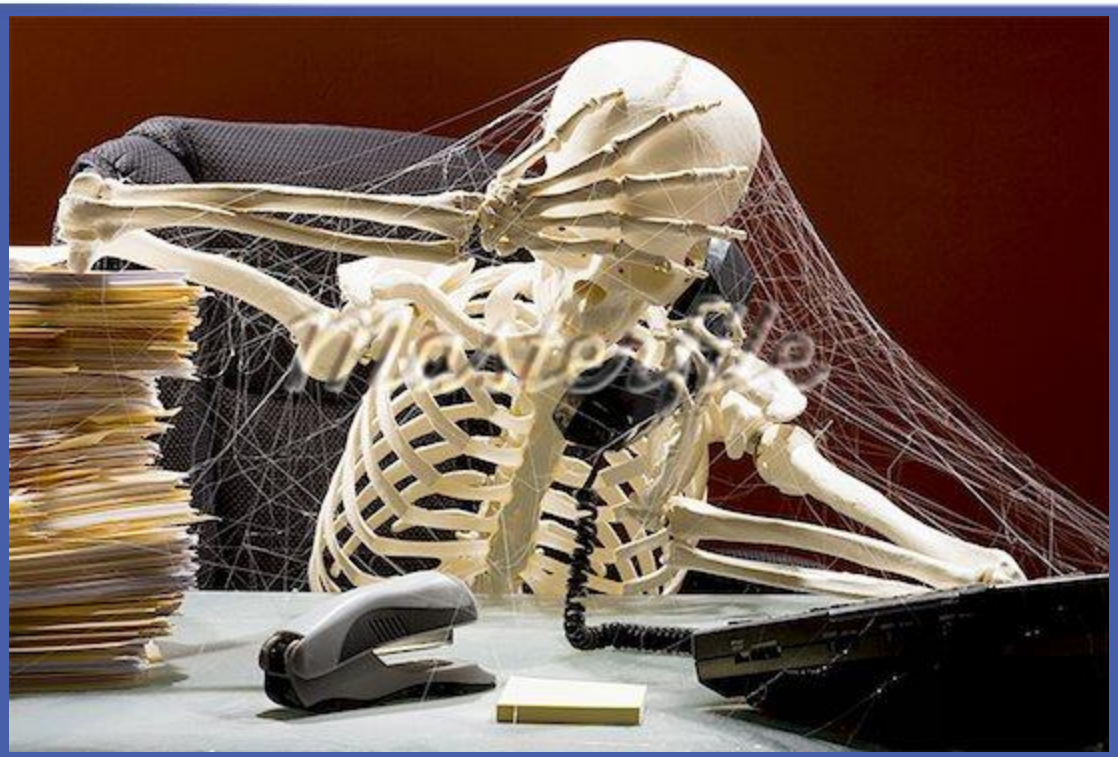


good relationship with your mechanical contractor?

Mechanical Contractor

And is he or she comfortable with computers?

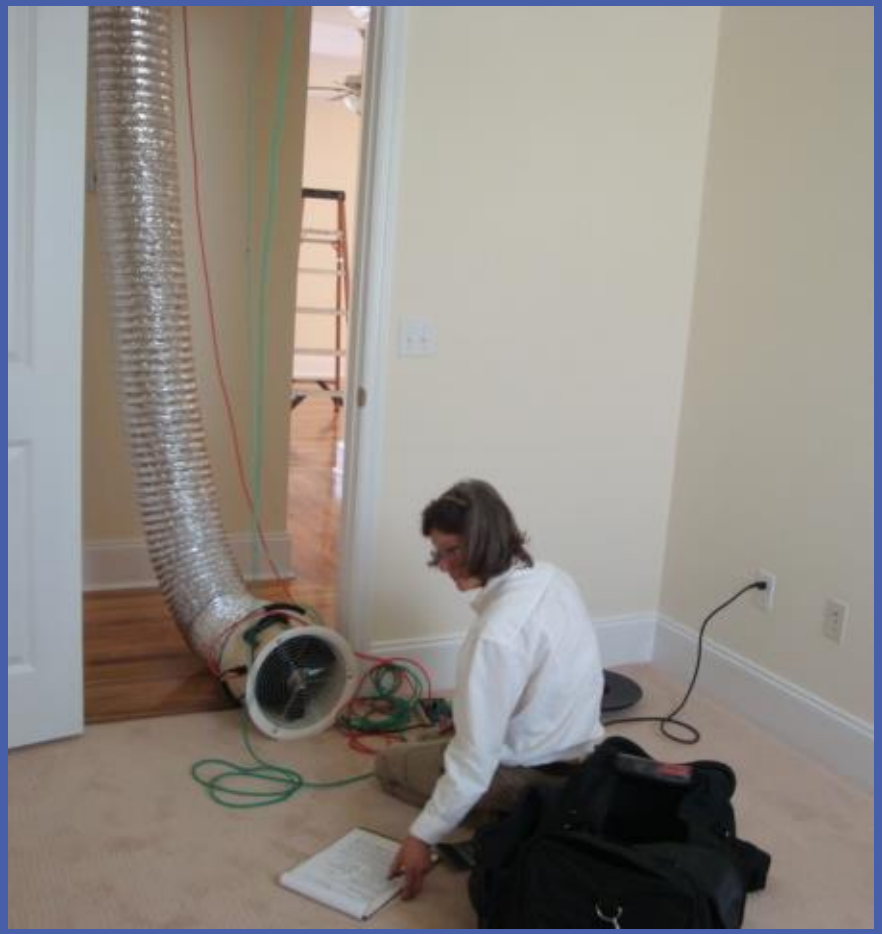
Mechanical Contractor



And with completing paperwork

in a timely manner?

Performance Duct Leakage



Performance Blower Door

Performance Right Sizing

Performance Right Sizing

Bath fans


SNAP the naturally sound absorbent molded plastic housing into the bracket.
WIRE the fan with the included wire nuts and strain relief.
YOU'RE DONE!
Model:
BFQ50
CFM: 50
Sones: 0.5
Perfect for Rooms: 45 to 60 sq. ft.
62.2
24


SNAP-IN INSTALLATION
ENERGY STAR
DIY
INSTALLATION

Poor Installation

Good Installation

ES Fan With Timer

Build Your Team

Building contractor, insulation contractor, mechanical contractor, framing contractor, and…

your rater

Pay Attention To Detail

ENERGY STAR V3.1

Energy

- Review – Energy Efficiency
  - Identify the critical factors for ensuring energy efficiency.
  - Describe the technical resources and considerations involved with designing and installing an energy efficient HVAC system.
  - Explain the important energy conservation features of lighting, appliance, and water heating components.

Energy

- Review – Energy Efficiency
  - What is the SEER, and why does it matter?
  - Higher SEER: more or less efficient?
  - What two tests comprise the performance test, and what does each measure?
  - What is a HERS index
  - What is the required HERS index for ENERGY STAR certification?
  - Florida is in what designated climate zone?

FGBC FLORIDA GREEN BUILDING COALITION

A Green Florida for a Blue Planet

You can download the Standards and search the Database at:

www.FloridaGreenBuilding.org

Thank You!