# North Carolina Energy Efficiency Alliance

www.ncenergystar.org
ncenergystar@gmail.com
828-262-8331

Appalachian® STATE UNIVERSITY


# North Carolina Energy Efficiency Alliance

**A Partnership Between:**

Appalachian State University

NORTH CAROLINA SOLAR CENTER

SOUTHERN ENERGY MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

Advanced ENERGY

Funded by the American Reinvestment and Recovery Act

North Carolina Energy Office energync.net
ENERGY

ENERGY STAR PARTNER

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# The NCEEA has 3 primary goals:

- To make the construction of ENERGY STAR homes a *profitable* alternative to building conventional, code-built homes.
- Increase the number of ENERGY STAR qualified new homes by *2,980* from now thru March 2012.
- To make the NCEEA a *self-sustaining* organization, contributing to the increase of ENERGY STAR qualified homes in the marketplace.

# What does the North Carolina Energy Efficiency Alliance do?


- Training for Builders
  - ENERGY STAR V3 training
  - Individual consulting
  - Technical assistance in building science and energy-efficient construction
  - Sales and marketing techniques
- Realtor Education
  - Understanding energy efficiency training for new homes
  - C.E. credits training
  - "Greening" the MLS
  - Sales and marketing tools
- Homebuyer Education
  - Consumer outreach
  - Targeted marketing to stimulate demand for ENERGY STAR homes

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# What does the North Carolina Energy Efficiency Alliance do?

- Training for Appraisers
  - Valuation of energy efficiency
  - Continuing Education credits


- Mortgage Lending Advocacy
  - Promoting lending incentives
  - Increasing awareness of energy-efficient mortgages

- Utility Provider Partnerships
  - Teaming up for education
  - Hosting Utility Incentives on our website
  - Supporting continued incentives

- Professional Networking
  - Hosting a website with valuable resources for stakeholders
  - Networking and promoting concerned industry professionals
  - Hosting events to collaborate across industries

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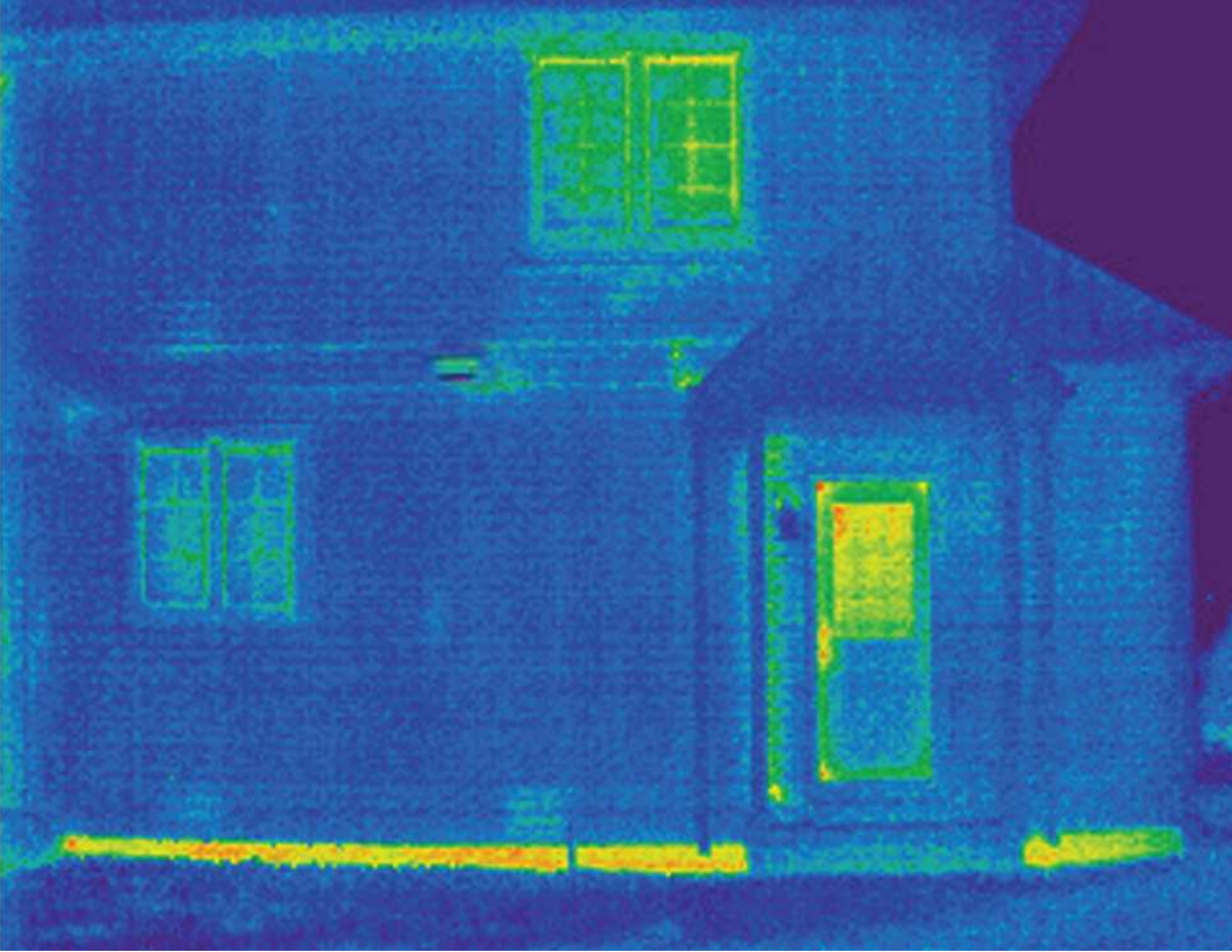
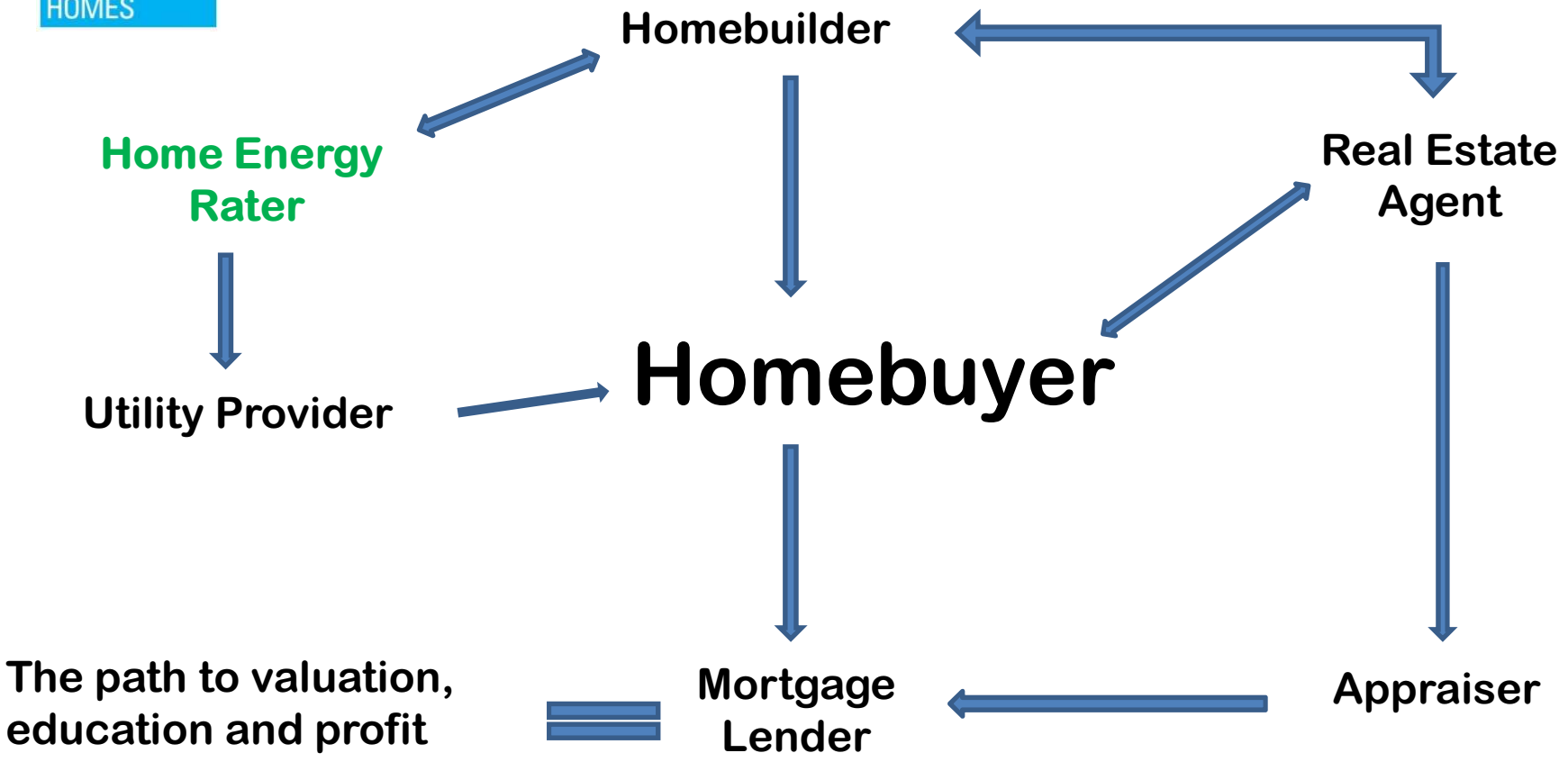
# So where is the proof?

**Third-party certification of an ENERGY STAR home is done by an independent Home Energy Rater.**

**This verification ensures proper construction techniques, high efficiency standards, homeowner comfort, and long-term durability!**



# Communication = Transfer of Information

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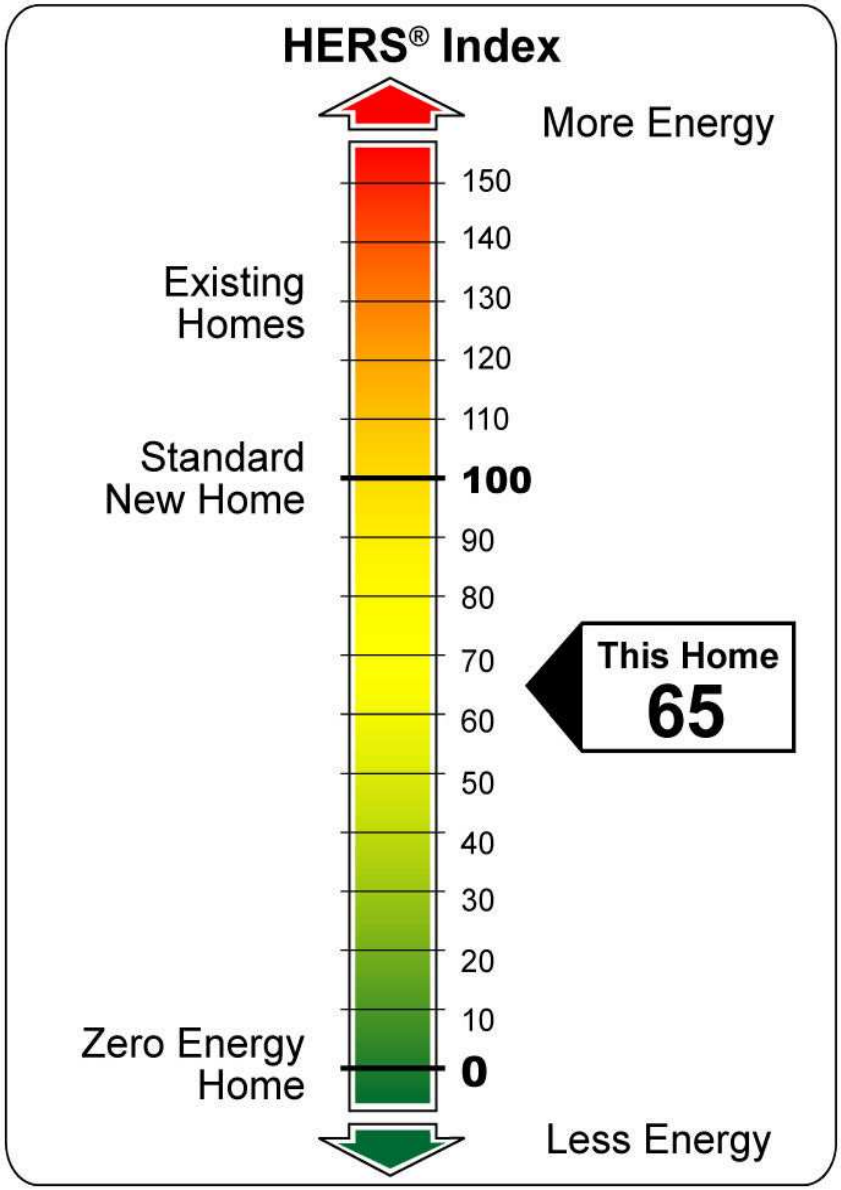


# HIS or "HERS"?

# What's the "MPG"?

**Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home.**

**(Based on the 2006 International Energy Conservation Code)**

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# ENERGY STAR Qualified Homes, Version 3 (Rev. 02)
# 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] | Cont./Tech. Verified[5] | Rater Verified | N/A |
|---|---|---|---|
| 1.1 Ventilation system designed to meet ASHRAE 62.2-2010 requirements [6]. | ☐ | ☐ | - |
| 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[4,7]** - *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 ☐ ASHRAE 2009 ☐ Other: _____ | ☐ | ☐ | - |
| 2.2 Duct Design Method: ☐ Manual D ☐ Other: _____ | ☐ | ☐ | ☐ |
| 2.3 Equipment Selection Method: ☐ Manual S ☐ OEM Rec. ☐ Other: _____ | ☐ | ☐ | - |
| 2.4 Outdoor Design Temperatures:[8] Location:_____ 1%:_____°F 99%:_____°F | ☐ | ☐ | - |
| 2.5 Orientation of Rated Home (e.g., North, South): _____ | ☐ | ☐ | - |
| 2.6 Number of Occupants Served by System:[9] _____ | ☐ | ☐ | - |
| 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:[10] _____ | ☐ | ☐ | - |
| 2.10 Infiltration Rate in Rated Home:[11] 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: [12] _____CFM | ☐ | ☐ | - |
| 2.17 Design Duct Static Pressure:[13] _____ Inches Water Column (IWC) | ☐ | ☐ | ☐ |
| 2.18 Full Load Calculations Report Attached | ☐ | ☐ | - |
| **3. Selected Cooling Equipment, If Cooling Equipment to be Installed** | | | |
| 3.1 Condenser Manufacturer & Model: _____ | ☐ | ☐ | ☐ |
| 3.2 Condenser Serial #: _____ | ☐ | ☐ | ☐ |
| 3.3 Evaporator / Fan Coil Manufacturer & Model: _____ | ☐ | ☐ | ☐ |
| 3.4 Evaporator / Fan Coil Serial #: _____ | ☐ | ☐ | ☐ |
| 3.5 AHRI Reference #:[14] _____ | ☐ | ☐ | ☐ |
| 3.6 Listed Efficiency: _____EER _____SEER | ☐ | ☐ | ☐ |
| 3.7 Metering Device Type: ☐ TXV ☐ Fixed orifice ☐ Other: _____ | ☐ | ☐ | ☐ |
| 3.8 Refrigerant Type: ☐ R-410a ☐ Other: _____ | ☐ | ☐ | ☐ |
| 3.9 Fan Speed Type: [15] ☐ Fixed ☐ Variable (ECM/ICM) ☐ Other: _____ | ☐ | ☐ | ☐ |
| 3.10 Listed Sys. Latent Capacity at Design Cond.[16]: _____BTUh | ☐ | ☐ | ☐ |
| 3.11 Listed Sys. Sensible Capacity at Design Cond.[16]: _____BTUh | ☐ | ☐ | ☐ |
| 3.12 Listed Sys. Total Capacity at Design Cond.[16]: _____BTUh | ☐ | ☐ | ☐ |
| 3.13 If Listed Sys. Latent Capacity (Value 3.10) ≤ Design Latent Heat Gain (Value 2.12), ENERGY STAR qualified dehumidifier installed | ☐ | ☐ | ☐ |
| 3.14 Listed Total Cap. (Value 3.12) is 95-115% of Design Total Heat Gain (Value 2.14) or next nom. Size[17,18] | ☐ | ☐ | ☐ |
| 3.15 AHRI Certificate Attached [14] | ☐ | ☐ | ☐ |
| **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 | ☐ | ☐ | ☐ |

**"Bumper to bumper warranty:**
**150 point inspection checklist"**

Footer-to-Finish:

198 point inspection

- **Builder**
- **HVAC Contractor**
- **Home Energy Rater**
  - **4 total checklists**

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# So How Does ---------- Stack Up?

**2010: Average HERS score of 78. (ENERGY STAR 2.0)**

**2011: Average HERS score of 68. (ENERGY STAR 2.5)**
**(Modeled performance*, 5 home types)**

| Model | HERS Score: Standard | HERS 92 Annual Energy Cost | HERS Score: ENERGY STAR | ENERGY STAR Annual Energy Cost | Annual Savings | Monthly Savings |
|---|---|---|---|---|---|---|
| Home A | 92 | $ 2,325.42 | 68 | $ 1,921.00 | $ 404.42 | $ 33.70 |
| Home B | 92 | $ 1,606.27 | 74 | $ 1,292.00 | $ 314.27 | $ 26.19 |
| Home C | 92 | $ 2,341.46 | 71 | $ 1,807.00 | $ 534.46 | $ 44.54 |
| Home D | 92 | $ 3,044.24 | 67 | $ 2,217.00 | $ 827.24 | $ 68.94 |
| Home E | 92 | $ 3,258.22 | 65 | $ 2,302.00 | $ 956.22 | $ 79.68 |

*This information is ONLY a preliminary estimate based on REM/Rate computer models. *Actual performance will vary depending on homeowner.*

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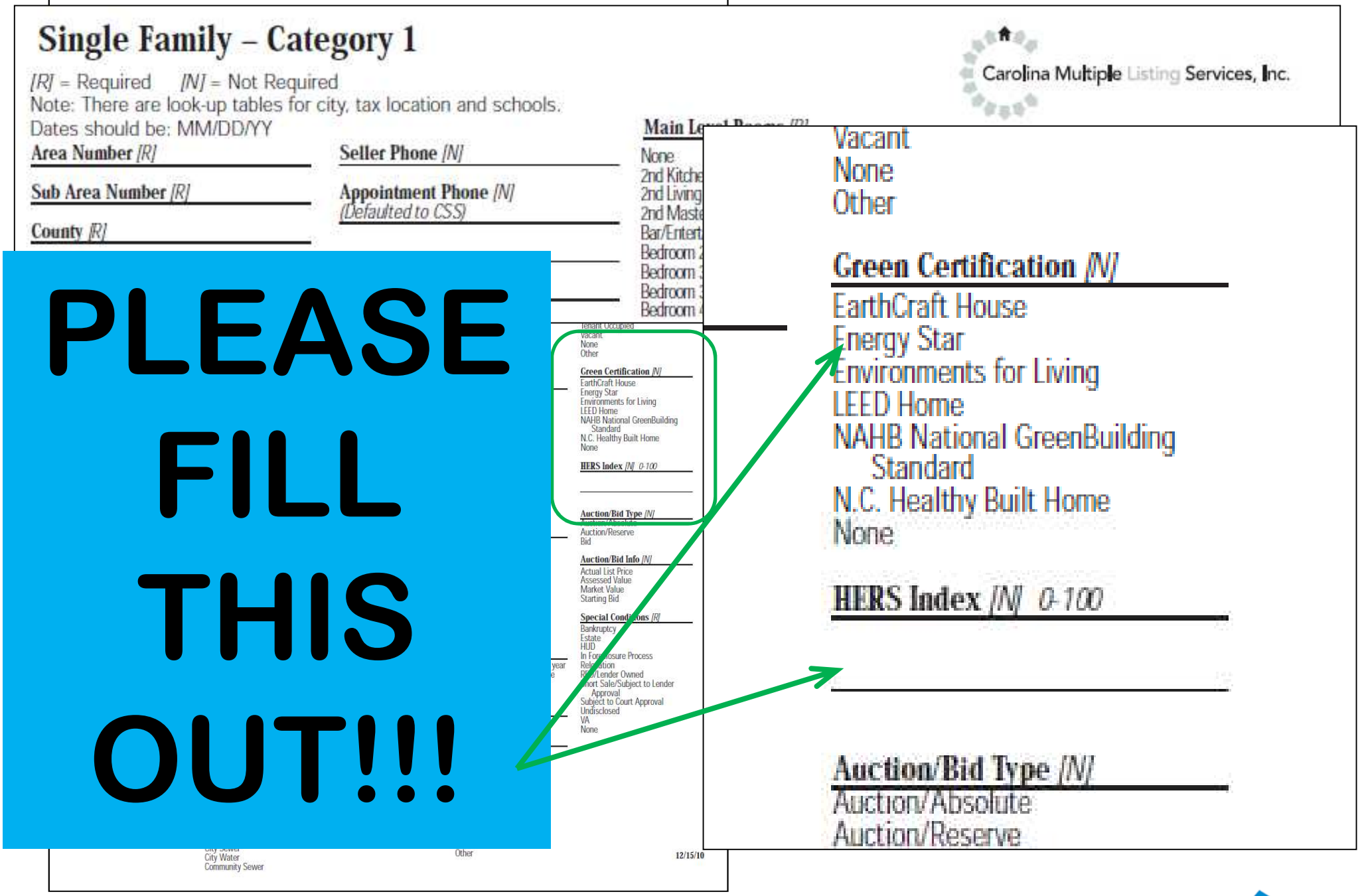


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