

1600 Guaranteed Performance Affordable Homes



BEST 1 Conference 2008
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▶ Background: 2000 Concept Goal

- ▶ Improve the energy efficiency in every home in North Carolina receiving public or charitable funding to the EPA Energy Star level plus *improving* the home in terms of:
 - ▶ Health & Safety
 - ▶ Comfort
 - ▶ Durability
 - ▶ Affordability
 - ▶ Environmental Impact

▶ Added Incentive

- ▶ Financially back a 2 year guarantee covering:
 - > Heating and cooling energy used
 - in example a 1400 ft² house with approx \$34/ month
 - > Comfort
 - defined as a temperature difference of no more than 3° F from the thermostat anywhere in the house

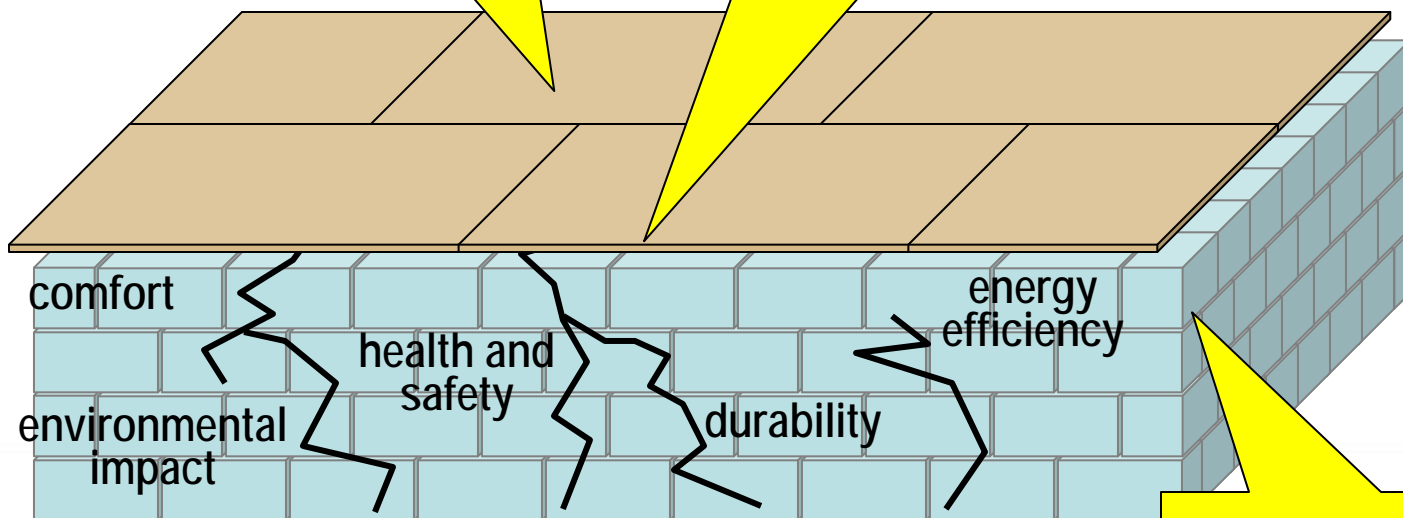
▶ Background: Process Goal

- ▶ *Institutionalize* a new base platform for affordable housing that is:
 - ▶ Not the “greenest” or “healthiest” etc.
 - ▶ Achievable
 - ▶ Cost-effective

► The Foundation of Good Homes

Guaranteed Performance Program

The Building Code



The Building Code

▶ Energy Star “Plus” Standards

1. House Air-Tightness
2. Ventilation and Moisture Management
3. Insulation and Windows
4. HVAC Sizing and Installation
5. Pressure Balancing
6. Energy Star Lights and Appliances
7. Combustion Safety

Good Intentions:
Wonderful, but not sufficient



▶ Background: Barriers Assessment

- ▶ What are the barriers?
- ▶ Study results
 - > Institutional
 - > **Monetary**
 - > Market
 - > Knowledge (or Lack Thereof)

▶ Overcome the Barriers

- ▶ Funding for upgrades from statewide organizations tied to:
 - ▶ Mandatory Standards
 - ▶ Technical Assistance Package
 - ▶ Marketing Package.

▶ Mandatory Standards

- ▶ Moneys for energy efficiency computer modeling
- ▶ Moneys for energy efficiency upgrades of off the shelf materials

▶ Technical Assistance

- ▶ Plan review
- ▶ Contractor/Subcontractor training
- ▶ On-site quality assurance
- ▶ Performance testing



▶ Marketing

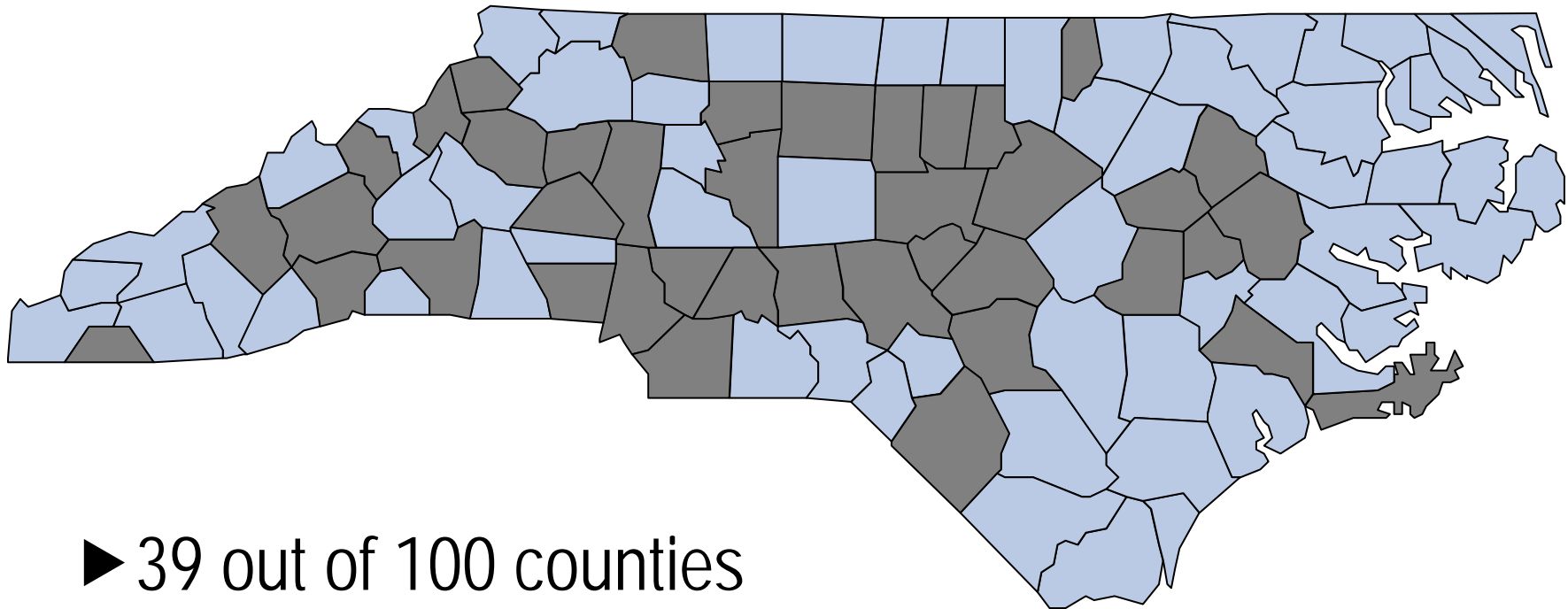
- ▶ Training
- ▶ Energy Star + 2 year guarantee certificates
- ▶ Servicing the guarantee

▶ Results to Date

- ▶ Started in 2001
- ▶ Over 1600 homes guaranteed
- ▶ Average 1 house certified per day
- ▶ 64 Developers
 - > 30 Habitat Affiliates
 - > 14 Community Dev. Corporations
 - > 4 Local Governments
 - > 3 Public Housing Authorities
 - > 13 Other Nonprofits



▶ North Carolina Counties Map



▶ 39 out of 100 counties

▶ Results to Date: Training

- ▶ 64 Developers
- ▶ 34 General contractors (+ 30 Habitats)
- ▶ 82 Mechanical contractors
- ▶ 28 Insulation contractors (+ Habitat Volunteers)
- ▶ 9 Energy Star testing building performance companies

▶ Results to Date: House Tightness

- ▶ 1994 100 NC house benchmark study:

Median = 0.44 CFM50*

Range = 0.19 to 1.46

- ▶ 2001-2008 program houses:

Median = 0.27

Range = 0.08 to 0.64

* square foot of envelope

▶ Results to Date: Duct Tightness

▶ Benchmark NC Houses:

Median = 19.5% CFM25*

Range = 4% to 79%

▶ Program Houses:

Median = 3.1%

Range = 1.1% to 12.7%

* as percentage of conditioned floor area

▶ Other On-Site Quality Assurance Checks

- ▶ Insulation
- ▶ Outside air ventilation
- ▶ Spot exhaust ventilation
- ▶ HVAC sizing to Manual J load calculation
- ▶ Combustion safety
- ▶ Pressure balancing

▶ Results to Date: Energy Savings

- ▶ 30% of Heating & Cooling; 15% of total energy used
- ▶ Approx. \$1,000,000 in utility bill savings by homeowners by mid-2008
- ▶ CO₂ emission reduction by ~5.7 million pounds annually



▶ Results to Date: Institutional

- ▶ Statewide organization committed funding in single-family housing in North Carolina
- ▶ Implemented program into single-family rehab - 2008
- ▶ Implemented program into all Supportive Housing - 2008
- ▶ Implemented Energy Star option in multi-family tax credit program - 2008

▶ Current and Future Process Goal

- ▶ Continue to institutionalize program for affordable housing by demonstrating that:
 - ▶ Not the “greenest” or “healthiest” etc.
 - ▶ Achievable
 - ▶ Cost-effective
 - ▶ Win-win

Thank You



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