1600 Guaranteed Performance Affordable Homes

BEST 1 Conference 2008
Jonathan Coulter
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 3º F from the thermostat anywhere in the house
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

- comfort
- health and safety
- durability
- energy efficiency
- environmental impact

The Building Code
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
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
Continue to institutionalize program for affordable housing by demonstrating that:

- Not the “greenest” or “healthiest” etc.
- Achievable
- Cost-effective
- Win-win
Thank You