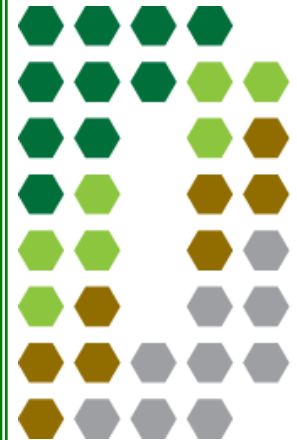




## Project Profile

Side by side comparison of two identical floor plans, one insulated with foam and one with fiberglass and solar board





## Project Specifics *(identical for each home)*

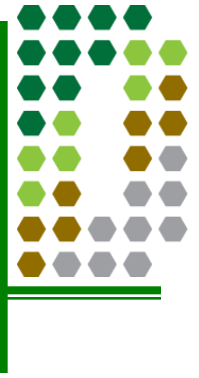
- Year Built: 2007
- Foundation: Slab on grade
- Floor Plan: Identical but reversed
- Square footage: 1,288, 4 Bedrooms
- Orientation: Northwest *(both homes)*





## Monitoring Equipment *(identical for each home)*

- Hobo Micro Station Data Logger
- Hobo Temp/RH Sensor
- SolarStream Xceiver



## Installation of Monitoring Equipment

- **Foam Insulated Home**
  - Hobo Data Logger – In attic near the access hatch
  - Sensor #1 – In hallway near door bell unit
  - Sensor #2 – Suspended approximately 12” from apex of roof deck
  - Sensor #3 – Installed between roof deck and foam
- **Fiberglass Insulated Home with Solar Board**
  - Hobo Data Logger – In attic near the access hatch
  - Sensor #1 – In hallway near door bell unit
  - Sensor #2 – Suspended approximately 12” from apex of roof deck
  - Sensor #3 – Installed under front porch (measures outside temperature)



## Insulation

- **Foam Insulated Home**

- Exterior Wall: 3.5 Inches of Sealection 500, open cell foam for an R-Value of 13
- Roof Deck: 5.5 Inches of Sealection 500, foam for an R-Value of 21
- Insulating the attic's roof deck created a closed attic assembly placing the air handler and ductwork within the thermal envelope.



The Closed Attic system does not allow conditioned air to leak outside of the thermal envelope:

- Significantly reduces the thermal load on the HVAC system
- Allows the use of a smaller HVAC unit



## Insulation

- **Fiberglass Insulated**
  - Exterior Wall: Fiberglass with an R-Value of 13
  - Attic Floor: Fiberglass with an R-Value of 38
  - Roof Deck: Solar Board





## Blower Door Results



**Fiberglass / Solar Board**

**Pascal's: -49.9**

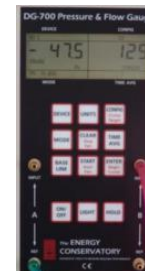
**Home Leakage: 1,884 CFM**



**Foam**

**Pascal's: -47.5**

**Home Leakage: 129 CFM**



Fiberglass house air leakage rate is more than 14 times higher than the foam house

**Spray Foam house has 95% less air leakage**



**Habitat for Humanity**<sup>®</sup>  
of Denton County



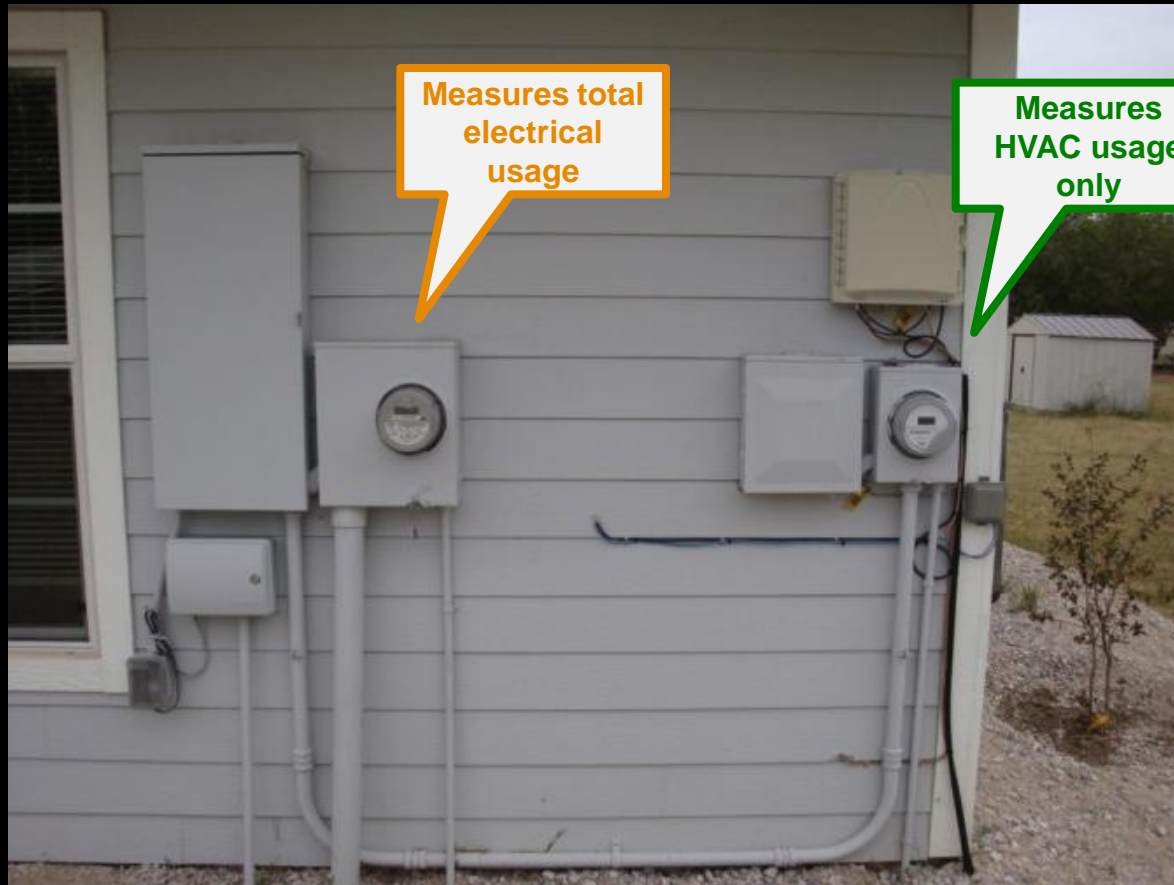








Sub-metered both HVAC Systems



Measures total  
electrical  
usage

Measures  
HVAC usage  
only



**Standard HFH Energy Star Construction**

*Fiberglass Insulation*

*14 SEER A/C, Standard Lighting*

**HFH Energy Star Construction**

*Foam Insulation*

*19 SEER A/C, 60% Fluorescent Lighting*

	Total Kwh	Total Cost	A/C Kwh	A/C Cost	Total Kwh	Total Cost	A/C Kwh	A/C Cost	Difference Total Elect	Difference Heat, A/C
Monthly Average	2248	258.03	1018.50	116.76	883	105.41	391.5	36.87	152.62	79.89

