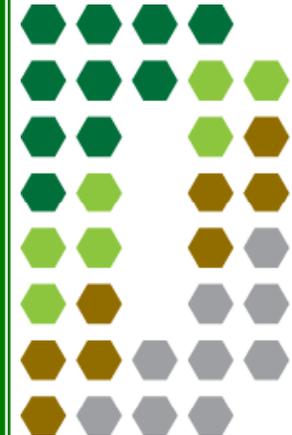
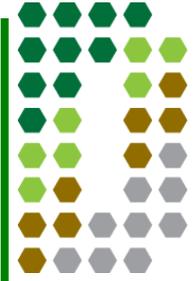




## Project Profile

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

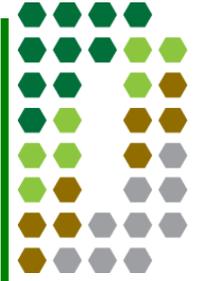




## Project Specifics *(identical for each home)*

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

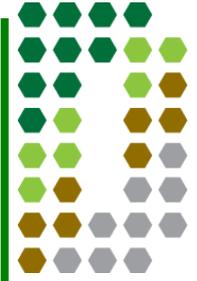




---

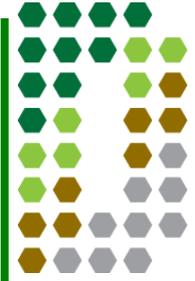
## Monitoring Equipment *(identical for each home)*

- Hobo Micro Station Data Logger
- Hobo Temp/RH Sensor
- SolarStream Xceiver
  
- Website Access for Data;
  - Foam Insulated Home
    - <https://datagarrison.com/users/5083010645/5083010640/plots.php>
  - Fiberglass Insulated Home with Solar Board
    - <https://datagarrison.com/users/5083010645/5083010645/plots.php?plot=2>



## 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)



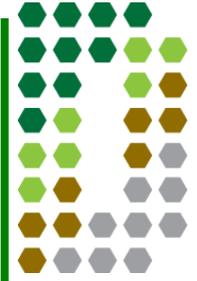
## Insulation

- **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:

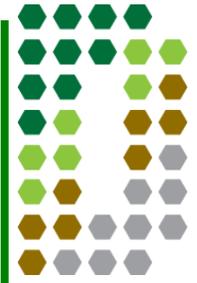
- Significantly reduces the thermal load on the HVAC system
- Allows the use of a smaller HVAC unit



## 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

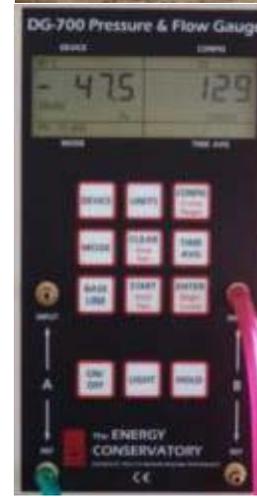
Home Leakage: 1,884 CFM



Foam

Pascal's: -47.5

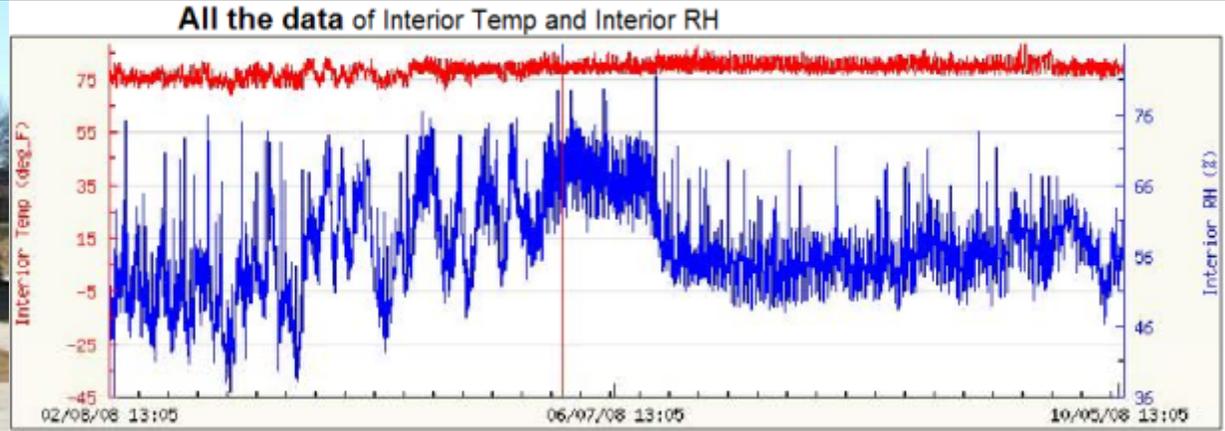
Home Leakage: 129 CFM



## Foam



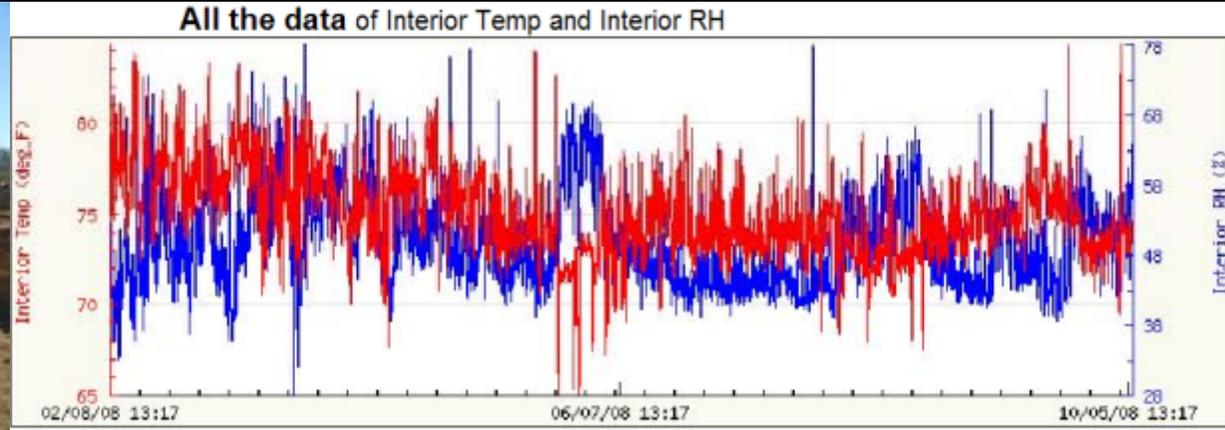
## Interior



## Fiberglass & Radiant Barrier

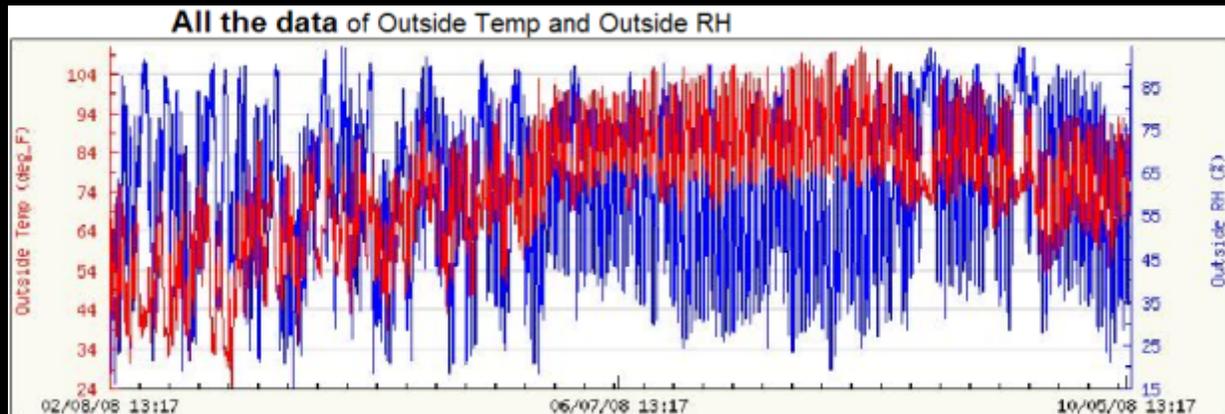


## Interior



## Ambient Conditions

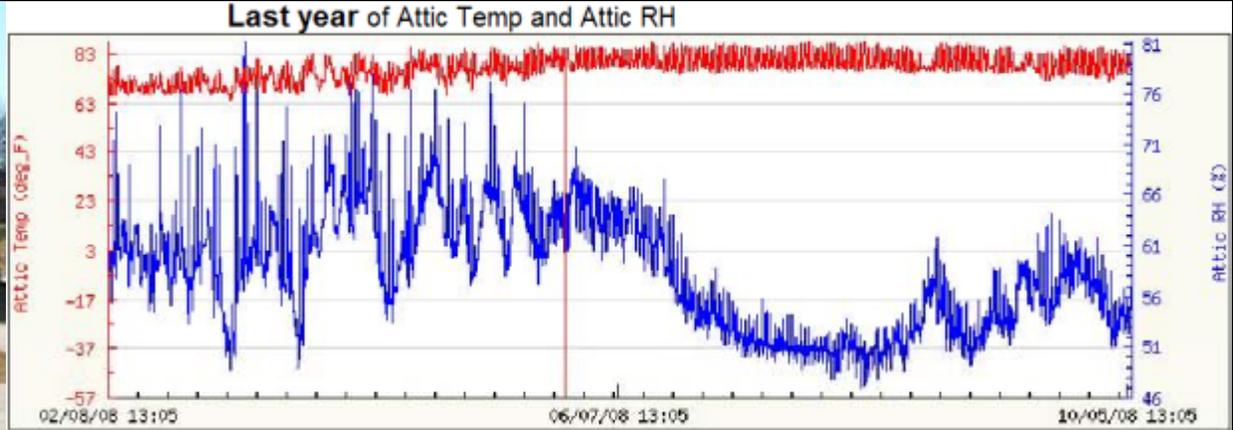
- Temperature
- Humidity



## Foam



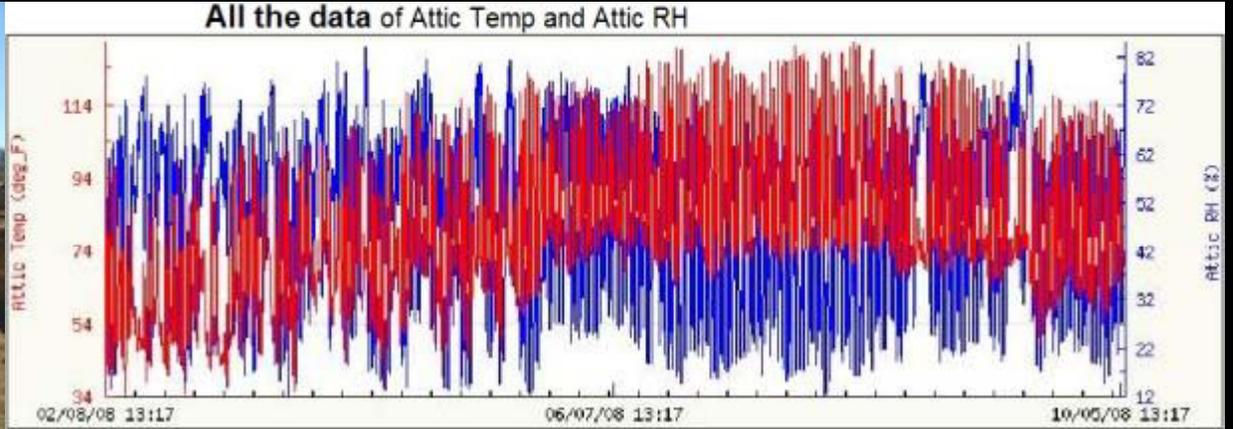
## Attic



## Fiberglass & Radiant Barrier

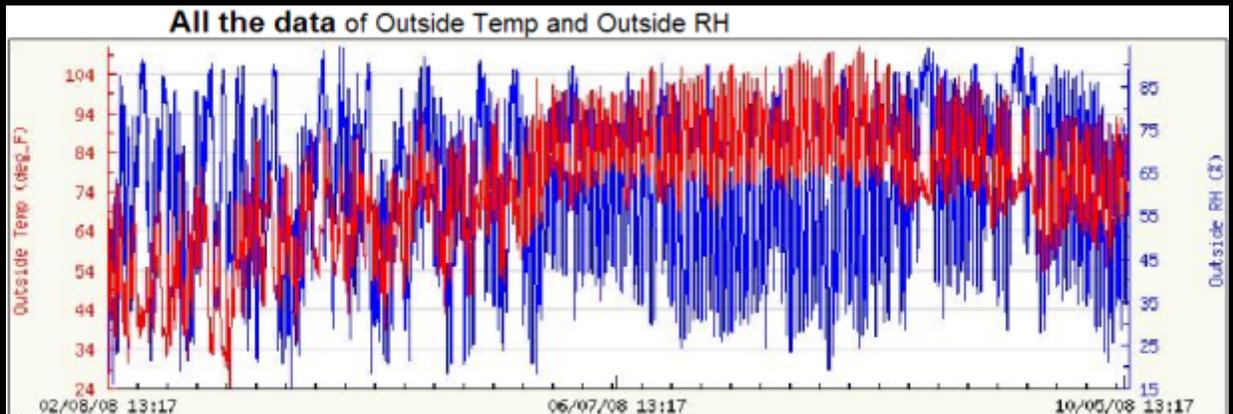


## Attic

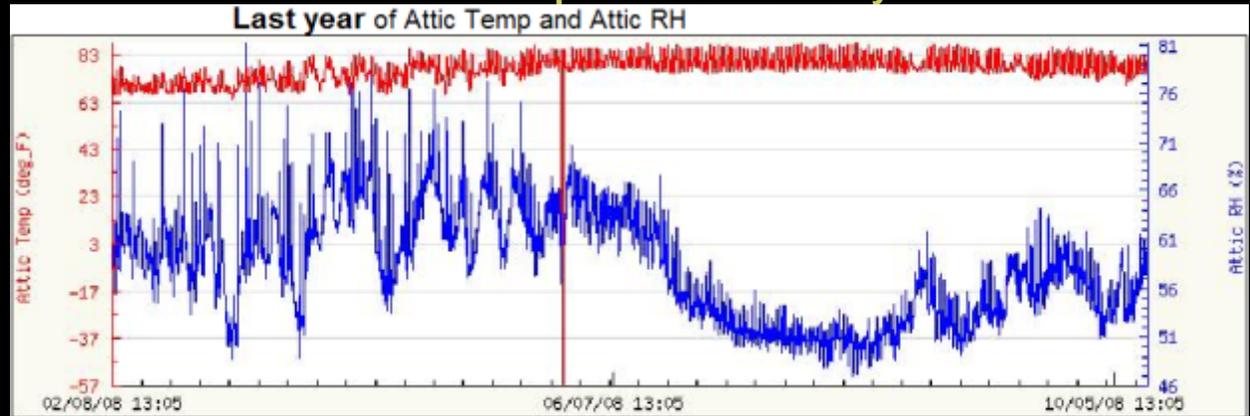


## Ambient Conditions

— Temperature  
— Humidity



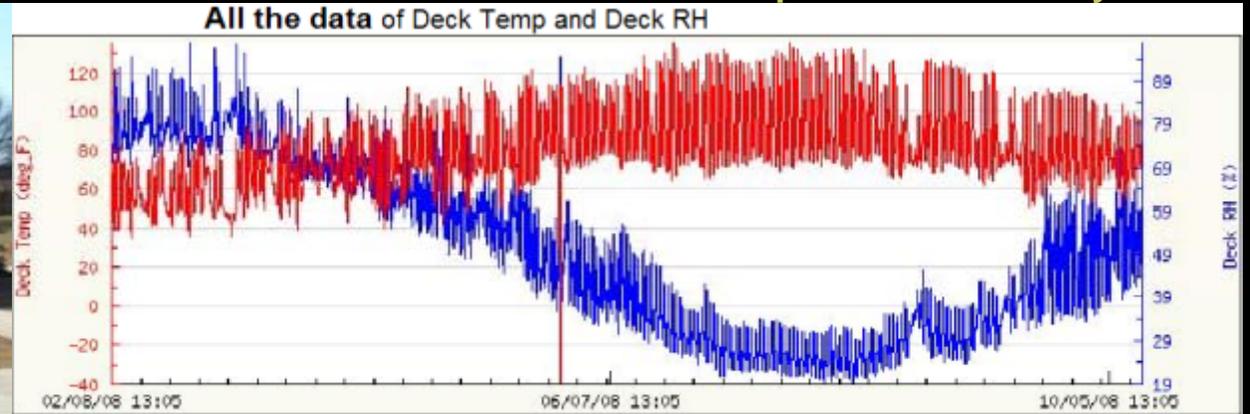
### Attic - Temperature / Humidity



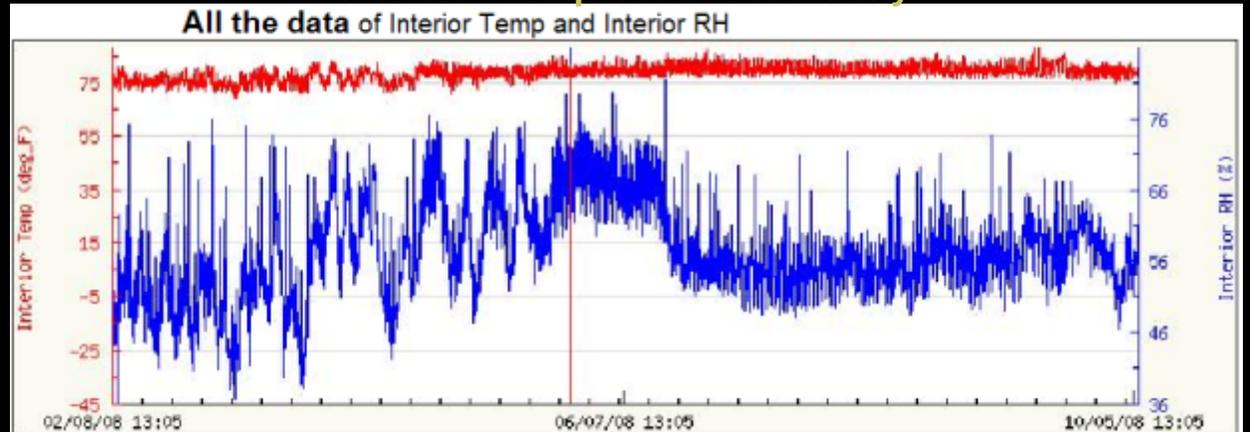
### Foam Home



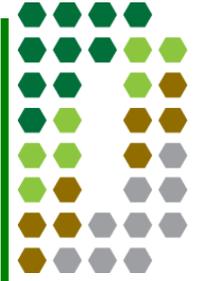
### Between Roof Deck and Foam - Temperature / Humidity

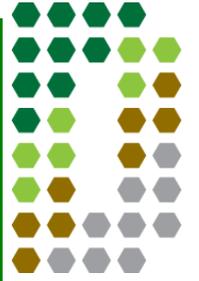


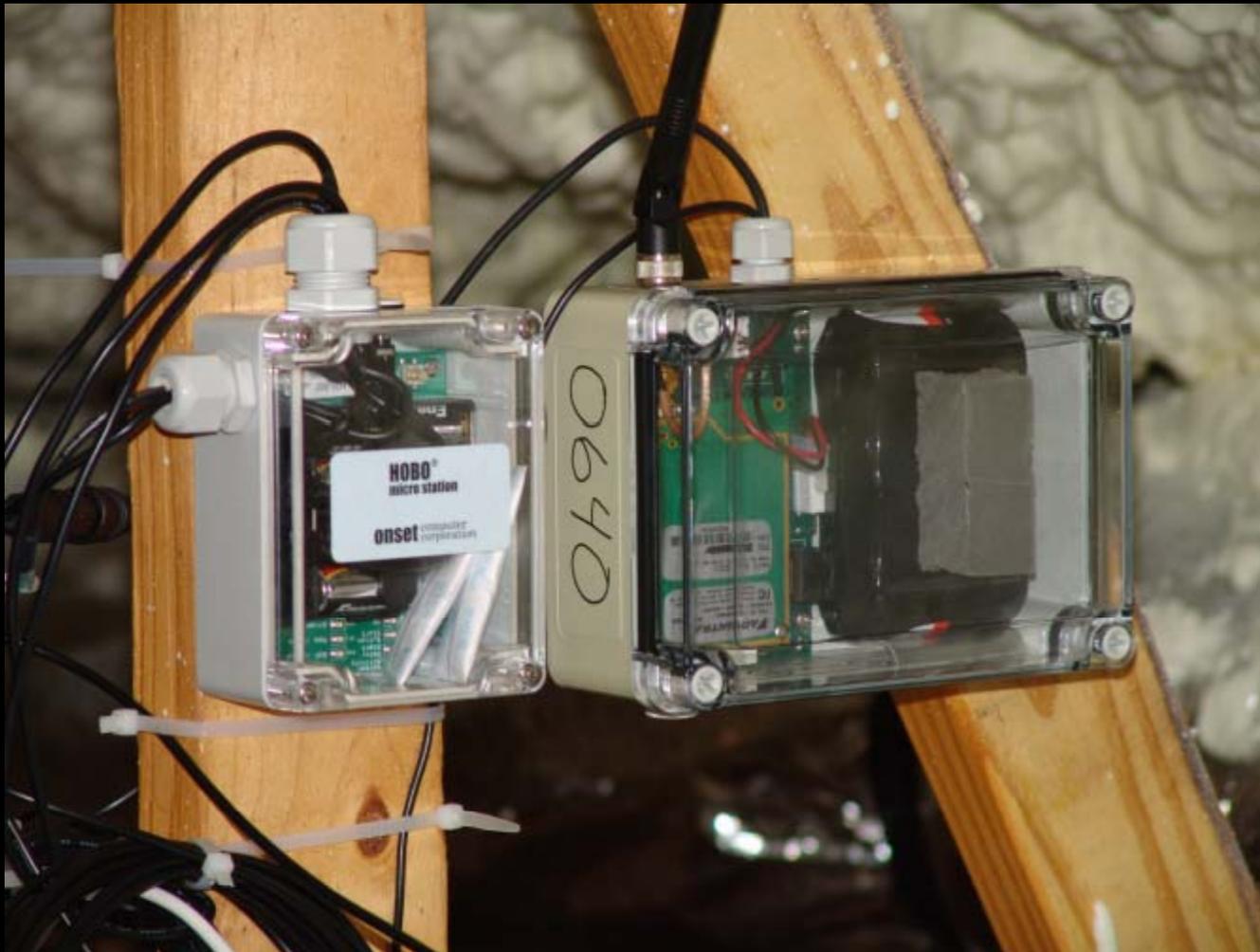
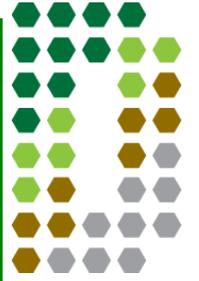
### Interior - Temperature / Humidity



— Temperature  
— Humidity

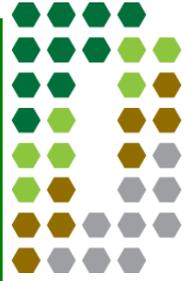






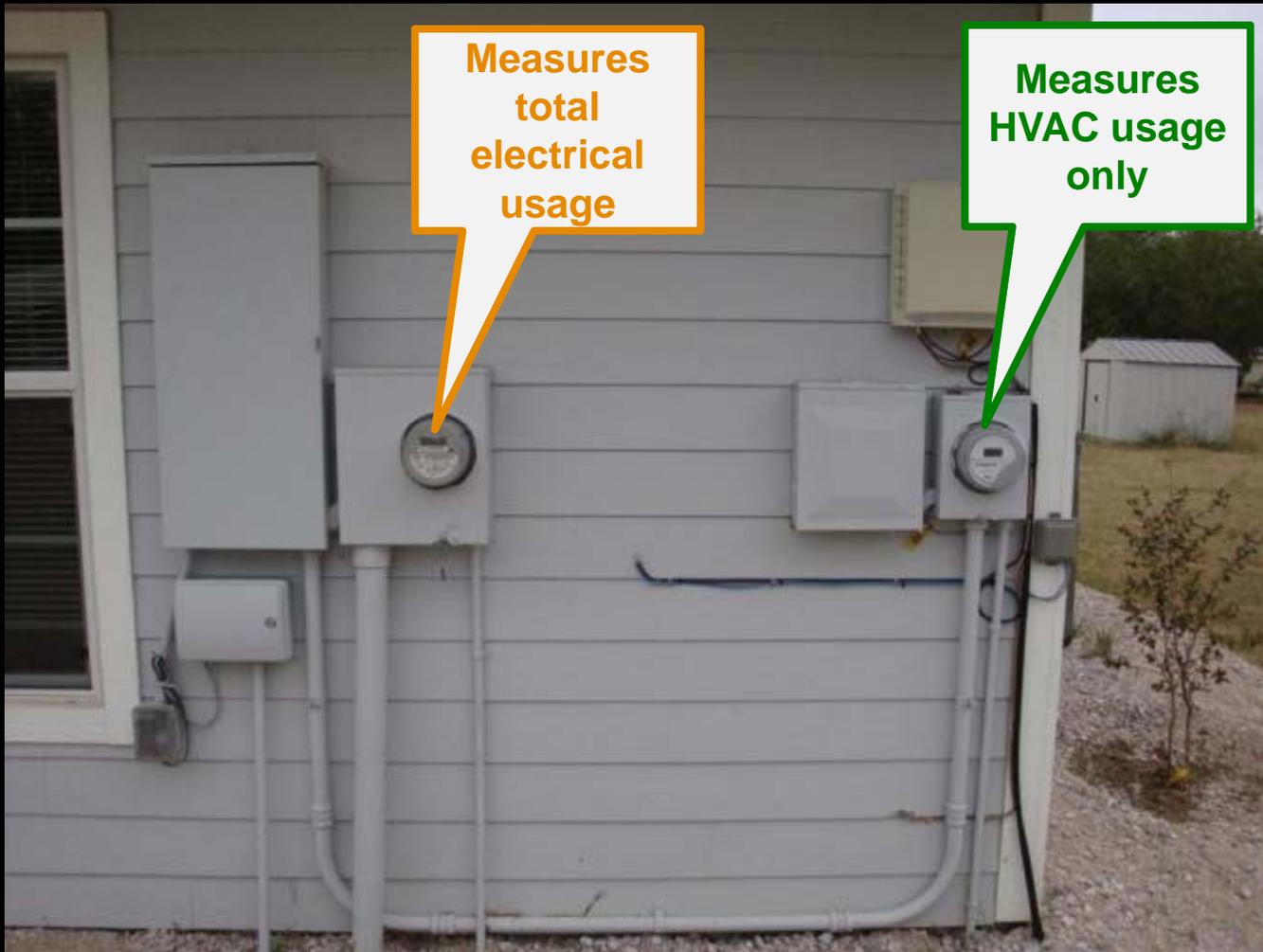


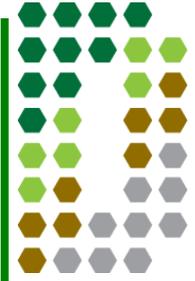
**Habitat for Humanity**<sup>®</sup>  
of Denton County



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**

**Sealection 500 Foam Insulation**

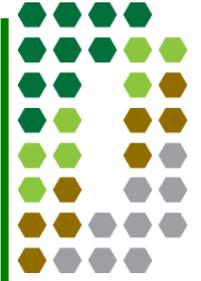
*19 SEER A/C, 60% Fluorescent Lighting*

Period	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
2/15 - 3/17	2433	189.78	356	27.77	1204	103.87	328	28.3	85.91	-0.53
3/17 - 4/16	1964	162.89	262	21.78	849	81.6	205	19.7	81.29	2.03
4/16 - 5/15	1703	159.5	314	29.41	824	84.39	211	21.61	75.11	7.8
5/15 - 6/16	2123	230.17	987	107.01	988	111.53	420	27.41	118.64	59.6
6/16 - 7/16	2373	285.89	1050	126.5	778	99.28	363	46.32	186.61	80.18

**547.56      149.08**

# Habitat for Humanity

Denton, Texas



# QUESTIONS

