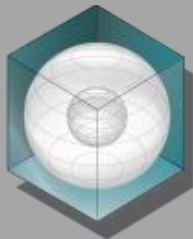


Energy Consumption Analysis of the Habitat For Humanity Homes at Frazier Court Dallas, Texas

Jaya Mukhopadhyay
Zi Liu
Juan-Carlos Baltazar
Jeff Haberl
Cynthia Lewis
Bahman Yazdani



Energy Systems Laboratory
Texas A&M University System
August 2010



Source: http://www.greenhomesstl.org/2009tour_Habitat.html

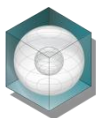
STRUCTURE

BACKGROUND

BASE-CASE HOUSE VS. HABITAT HOUSE

RESULTS

CONCLUSIONS

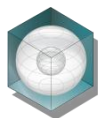


BACKGROUND

The study is part of the EPA's Sustainable Skylines Project

A set of houses belonging to the Habitat for Humanity Housing Project at Frazier Court, Dallas, Texas were to be examined for **Energy Efficiency & Resultant Emission Reductions**

The houses were designed and constructed to meet and exceed the **IECC 2004**



BACKGROUND

The study is part of the EPA's Sustainable Skylines Project

IC3 code compliance software was used to carry out the analysis for energy consumption

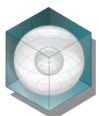
Home Energy Rating System (HERS) assessment was performed on the proposed homes

eCALC software was used to calculate the resultant emission reductions for NO_x, SO_x and CO₂



e²CALC EMISSIONS & ENERGY CALCULATOR
The Energy Systems Laboratory
A Division of TEES: The Engineering Agency of the State of Texas

IC3 International
CODE
COMPLIANCE
CALCULATOR

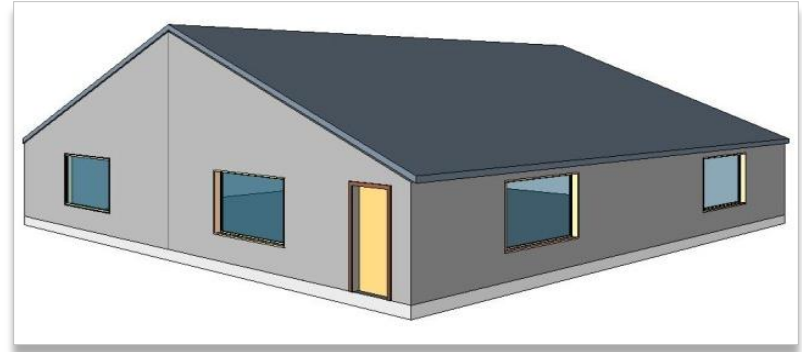


Energy Systems Laboratory @2010

BASE CASE vs. HABITAT HOUSE

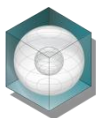
Two sets of simulation models were constructed:

The IECC 2004 compliant **Base-Case** house



The **Habitat Houses** as per specifications provided to us

- 1285 sq ft
- 873 sqft



BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems.

BUILDING ENVELOPE FOR BASE-CASE

For Above Grade Walls:

- Wood frame type
- Gross area same as that of the proposed house
- U-factor - 0.082 (R-11.8)
- Solar absorptance - 0.75 & Emittance - 0.90

For Ceiling and Roof:

- Wood frame, insulation on ceiling
- Area same as that of the proposed house
- U-factor - 0.035 (R-27.8)

For Roof:

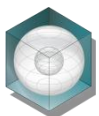
- Composition shingle on wood sheathing,
- Gross area same as that of the proposed house
- Solar absorptance - 0.75 & Emittance - 0.90



Source: <http://www.buildingscience.com/documents/case-studies/cs-ma-westford-hfh>



Source:
http://www.wiscnews.com/baraboonewsrepublic/news/local/article_6832401c-45e9-11df-badf-001cc4c002e0.html



BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from customer.

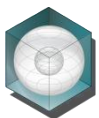
BUILDING ENVELOPE FOR HABITAT HOUSE

Exterior Walls:

- Gross area as per drawings provided
- Insulation value R-13

Ceiling and Roof:

- Sealed attic
- Ceiling has a gross area as per drawings
- Insulation on the roof - R-20



BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

BUILDING ENVELOPE FOR BASE-CASE

Fenestration:

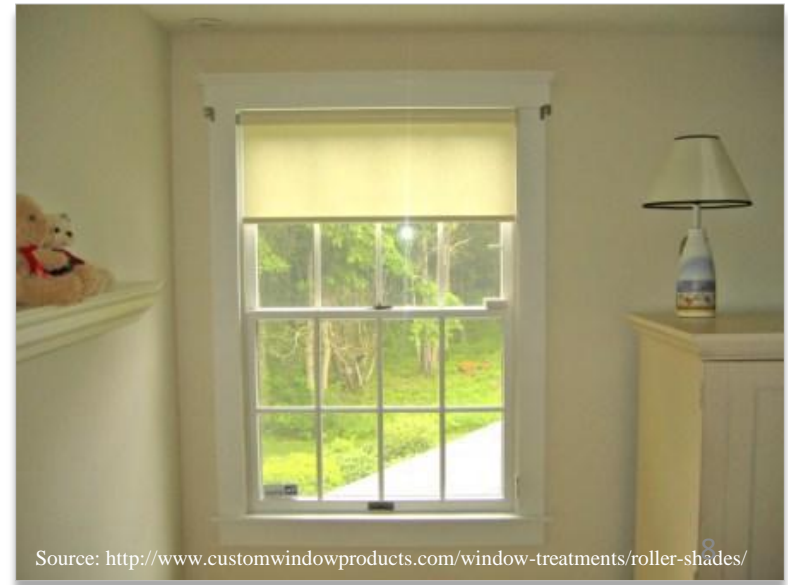
- 18% of conditioned floor area, equally distributed on four orientations
- U-factor - 0.65 & SHGC – 0.4

Doors:

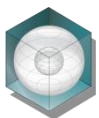
- The doors are oriented towards the north
- Area of 40 ft²
- U-factor of 0.65

Interior Shades:

- For summer - 0.70; & For winter - 0.85
- No external shading



Source: <http://www.customwindowproducts.com/window-treatments/roller-shades/>



BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from TexEnergy Solutions

BUILDING ENVELOPE FOR HABITAT HOUSE

Fenestration:

- The glazing has a total area and orientation as per drawings
- U-value of 0.35
- SHGC

For 1285 sq. ft. house SHGC - 0.27

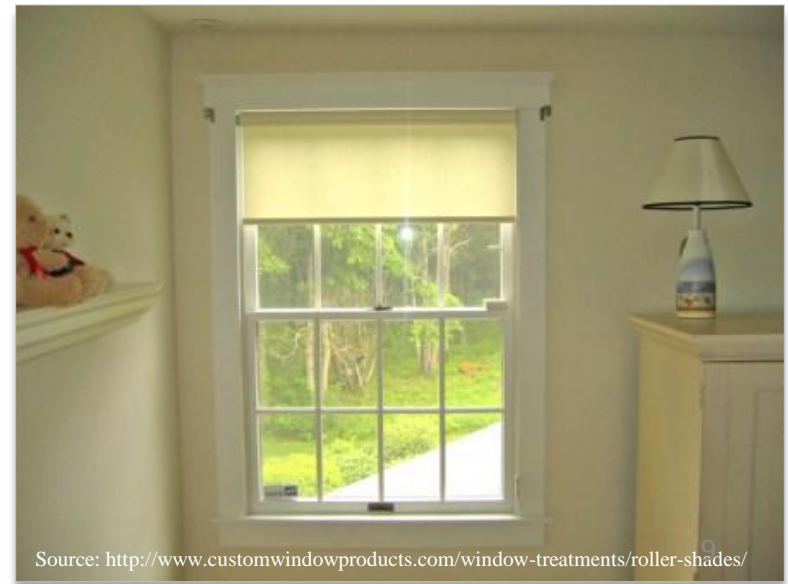
For 843 sq. ft. house SHGC - 0.31

Doors:

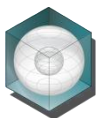
- Two doors with an area of 20 ft²
- Orientation on the front/back
- U-value of 0.329

Interior Shading:

- Same as that of the base-case



Source: <http://www.customwindowproducts.com/window-treatments/roller-shades/>



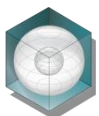
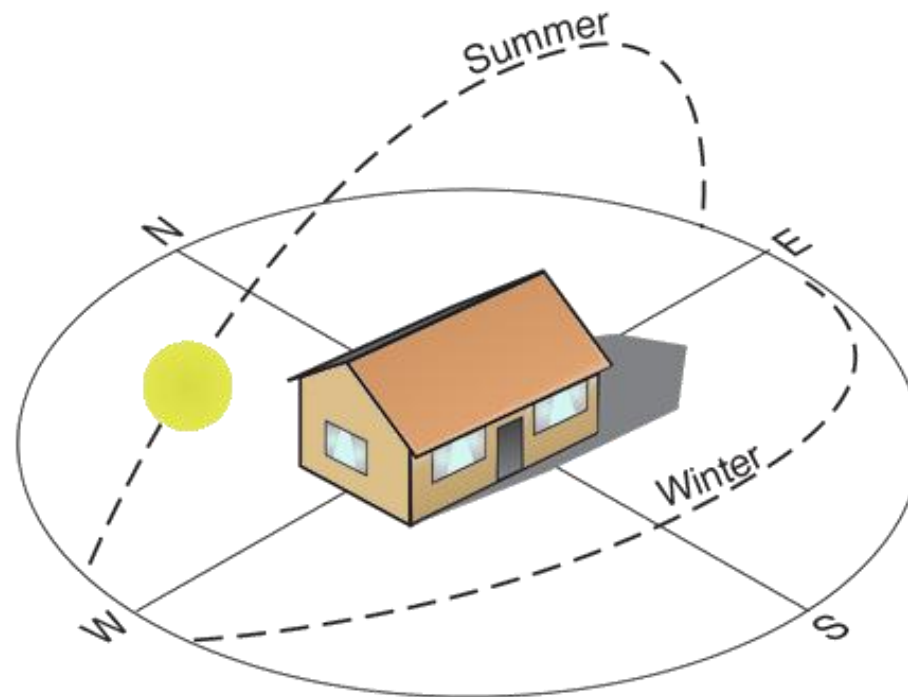
BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

BUILDING ENVELOPE FOR BASE-CASE AND HABITAT HOUSE

Orientation:

- Same as that of the proposed house.
For the 1285 sq.ft. house, the front faces the south
For the 863 sq.ft. house the front faces the north-west



BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

SPACE CONDITIONS FOR BASE-CASE

For Leakage Area of Attic:

- The attics are vented with 1 sq. ft. of leakage area per 300 sq. ft. ceiling area

Conditioned Space Leakage Area & Mechanical Ventilation:

- Specific leakage area – 0.00048 (assuming no energy recovery)

- The annual vent fan energy use :

$$\text{kWh/yr} = 0.03492 \times \text{CFA} + 29.565 \times (\text{Nbr} + 1)$$

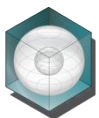
Where

CFA = Conditioned floor area

Nbr = Number of Bedrooms



Source: <http://energy.solutionsnm.com/services/blowerdoor/>



BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from TexEnergy Solutions

SPACE CONDITIONS FOR HABITAT HOUSE

For Leakage Area of Attic:

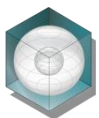
- The attic is sealed – infiltration set at zero

Conditioned Space Leakage Area & Mechanical Ventilation:

- Mechanical ventilation
- Outside air ventilation rate values :
 - For the 1285 sq. ft. house – 35 cfm
 - For the 843 sq. ft. house – 31 cfm
- The installation is set to provide ventilation for 10 minutes every 30 minutes
- The annual vent fan energy use is same as that of the base-case



Source: <http://energy.solutionsnm.com/services/blowdoor/>



BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

SPACE CONDITIONS FOR BASE-CASE

Internal Heat Gain:

- Internal heat gains calculated using the equation:

$$\mathbf{I_{gain} = 17,900 + 23.8 \times CFA + 4104 \times Nbr \text{ (Btu/day per dwelling unit)}}$$

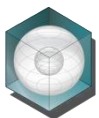
Where:

CFA = Conditioned Floor Area

Nbr = Number of bedrooms



Source: <http://blog.greencricket.ca/index.php/author/tsmith/>



BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from TexEnergy Solutions

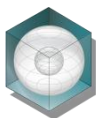
SPACE CONDITIONS FOR HABITAT HOUSE

Internal Heat Gain:

- For the 1285 sq. ft. house – 0.82 kW
For the 843 sq. ft. house – 0.44 kW



Source: <http://blog.greencricket.ca/index.php/author/tsmith/>



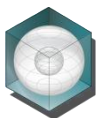
BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

HVAC SYSTEMS FOR BASE-CASE

Ducts:

- Located in the attic
- The duct leakage for the code house is set at 20%
 - 10% for supply duct
 - 10% for return ducts
- Supply duct & return duct insulation is set at R-8



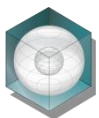
BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from TexEnergy Solutions

HVAC SYSTEMS FOR HABITAT HOUSE

Ducts:

- Located in the attic
- Supply duct insulation and return duct insulation are set at R-6



BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

HVAC SYSTEMS FOR BASE-CASE

Air Conditioner:

- Fuel type – Electric; Efficiency – SEER 13
- Capacity similar to that of the proposed house

Space Heating:

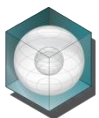
- Heat pump heating – 7.7 HSPF
- Capacity similar to that of the proposed house

Thermostat:

- Manual thermostat

Cooling temperature set point of 78^oF

Heating temperature set point of 68^oF



BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from TexEnergy Solutions

HVAC SYSTEMS FOR HABITAT HOUSE

Air Conditioner:

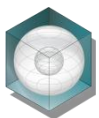
- Fuel type – Electric; Efficiency - SEER 14
- Capacity
 - For the 1285 sqft house – 2.5 ton
 - For the 843 sqft house – 2 ton

Space Heating:

- Heat pump heating – 8.2 HSPF

Thermostat:

- Same as base case

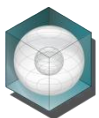


BASE CASE vs. HABITAT HOUSE

The 2004 IECC standard reference house is described in terms of the Envelope, Space Conditions and Systems

DHW SYSTEM FOR BASE-CASE

- Electric
- Efficiency:
EF for Electric DHW Heaters = $0.93 - 0.00132V$
Where V = Storage Capacity of the DHW Tank
- Hot Water usage is provided by the following equation
Usage = $30 + 10 \times \text{Nbr}$ (gal/day)
Where Nbr = Number of bedrooms
- The tank temperature is set at 120F

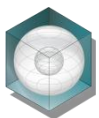


BASE CASE vs. HABITAT HOUSE

Specifications for the Habitat house are obtained from REMRate reports, Manual J reports and information from TexEnergy Solutions.

DHW SYSTEM FOR HABITAT HOUSE

- Electric
- Efficiency – 0.91
- The usage and tank water temperature similar to base-case house



RESULTS

HERS ratings and Emission Calculations are used to assess the Home Energy End-Use homes

BaseCase for 1285 sqft house

Conclusion

Results

BaseCase for 843 sqft house

House

Background

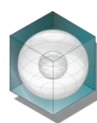
Address	ENERGY CONSUMPTION (MBtu)								
	Total	Lights	Equip	Heat	Cool	Pumps & Misc	Vent Fans	DHW	% Above Code
Base Case, 2004 IECC, FC3L, FC3R	49.0	9.3	13.2	6.6	6.9	0.2	2.3	10.5	0.0
2902 Clifford Jackson Street	43.5	10.2	14.4	3.4	4.2	0.3	1.1	9.9	11.2
2906 Clifford Jackson Street	43.9	10.2	14.4	3.6	4.3	0.3	1.2	9.9	10.4
2909 Clifford Jackson Street	43.4	10.2	14.4	3.3	4.2	0.3	1.1	9.9	11.4
2910 Clifford Jackson Street	43.3	10.2	14.4	3.3	4.1	0.3	1.1	9.9	11.6
2913 Clifford Jackson Street	43.7	10.2	14.4	3.5	4.2	0.3	1.2	9.9	10.8
2914 Clifford Jackson Street	43.9	10.2	14.4	3.6	4.3	0.3	1.2	9.9	10.4
2917 Clifford Jackson Street	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
2918 Clifford Jackson Street	43.8	10.2	14.4	3.5	4.3	0.3	1.2	9.9	10.6
2921 Clifford Jackson Street	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
2922 Clifford Jackson Street	43.2	10.2	14.4	3.2	4.1	0.3	1.1	9.9	11.8
2906 Lyons Street	43.2	10.2	14.4	3.2	4.1	0.3	1.1	9.9	11.8
2910 Lyons Street	43.3	10.2	14.4	3.3	4.1	0.3	1.1	9.9	11.6
2914 Lyons Street	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
2918 Lyons Street	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
4702 Spring Avenue	43.4	10.2	14.4	3.3	4.2	0.3	1.1	9.9	11.4
4706 Spring Avenue	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
4714 Spring Avenue	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
4722 Spring Avenue	43.6	10.2	14.4	3.4	4.2	0.3	1.2	9.9	11.0
Base Case, 2004 IECC, FC2	36.5	6.9	9.9	3.8	5.1	0.2	1.5	9.1	0.0
4702 Joseph Wiley Street	28.6	5.4	7.8	2.8	3.0	0.3	0.8	8.5	21.6
4720 Joseph Wiley Street	28.7	5.4	7.8	2.9	3.0	0.3	0.8	8.5	21.4
4708 Joseph Wiley Street	28.6	5.4	7.8	2.8	3.0	0.3	0.8	8.5	21.6
4714 Joseph Wiley Street	28.8	5.4	7.8	2.9	3.1	0.3	0.8	8.5	21.1
4804 Joseph Wiley Street	28.6	5.4	7.8	2.8	3.0	0.3	0.8	8.5	21.6
4712 Joseph Wiley Street	28.6	5.4	7.8	2.8	3.0	0.3	0.8	8.5	21.6
4802 Joseph Wiley Street	28.8	5.4	7.8	2.9	3.1	0.3	0.8	8.5	21.1
4706 Joseph Wiley Street	28.8	5.4	7.8	2.9	3.1	0.3	0.8	8.5	21.1
4716 Joseph Wiley Street	28.6	5.4	7.8	2.8	3.0	0.3	0.8	8.5	21.6
4718 Joseph Wiley Street	28.6	5.4	7.8	2.8	3.0	0.3	0.8	8.5	21.6

Energy End-Use

% Above Code Calculations

10-12% Above Code

21-22% Above Code



RESULTS

HERS ratings and Emission Calculations are used to assess homes

Heating+cooling+ DHW for HERS rating calculations

BaseCase for 1285 sqft house

HERS Rating
100-(Heating + Cooling + DHW)%

Conclusion

Results

House

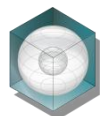
Background

Address	HERS Ratings			
	Heating + Cooling + DHW	% Above Code for Heat+Cool+DHW	ESL HERS	REM HERS
Base Case, 2004 IECC, FC3L, FC3R	24.0	0.0	100	
2902 Clifford Jackson Street	17.5	27.1	72.9	71
2906 Clifford Jackson Street	17.8	25.8	74.2	72
2909 Clifford Jackson Street	17.4	27.5	72.5	72
2910 Clifford Jackson Street	17.3	27.9	72.1	70
2913 Clifford Jackson Street	17.6	26.7	73.3	70
2914 Clifford Jackson Street	17.8	25.8	74.2	72
2917 Clifford Jackson Street	17.5	27.1	72.9	70
2918 Clifford Jackson Street	17.7	26.3	73.8	73
2921 Clifford Jackson Street	17.5	27.1	72.9	72
2922 Clifford Jackson Street	17.2	28.3	71.7	70
2906 Lyons Street	17.2	28.3	71.7	70
2910 Lyons Street	17.3	27.9	72.1	70
2914 Lyons Street	17.5	27.1	72.9	72
2918 Lyons Street	17.5	27.1	72.9	70
4702 Spring Avenue	17.4	27.5	72.5	71
4706 Spring Avenue	17.5	27.1	72.9	71
4714 Spring Avenue	17.5	27.1	72.9	71
4722 Spring Avenue	17.5	27.1	72.9	71
Base Case, 2004 IECC, FC2	18.0	0.0	100.0	100
4702 Joseph Wiley Street	14.3	20.6	79.4	78
4720 Joseph Wiley Street	14.4	20.0	80.0	78
4708 Joseph Wiley Street	14.3	20.6	79.4	77
4714 Joseph Wiley Street	14.5	19.4	80.6	78
4804 Joseph Wiley Street	14.3	20.6	79.4	81
4712 Joseph Wiley Street	14.3	20.6	79.4	77
4802 Joseph Wiley Street	14.5	19.4	80.6	81
4706 Joseph Wiley Street	14.5	19.4	80.6	78
4716 Joseph Wiley Street	14.3	20.6	79.4	77
4718 Joseph Wiley Street	14.3	20.6	79.4	79

REM RATE HERS rating

ESL HERS rating

Similar Trends for HERS rating from ESL & REM RATE



RESULTS

The resultant emissions reduction calculations are carried out using eCALC software

Conclusion

Results

House

Background

BaseCase for 1285 sqft house

BaseCase for 843 sqft house

Address	EMISSIONS REDUCTIONS From eCalc (ESL, 2006)			
	Energy Savings + Transmission Losses (kWh)	Nox (lbs)	SOx (lbs)	CO2 (lbs)
Base Case, 2004 IECC, FC3L, FC3R				
2902 Clifford Jackson Street	1725	2.1	1.6	1740
2906 Clifford Jackson Street	1599	2.0	1.5	1585
2909 Clifford Jackson Street	1756	2.1	1.7	1740
2910 Clifford Jackson Street	1787	2.2	1.7	1771
2913 Clifford Jackson Street	1662	2.0	1.6	1647
2914 Clifford Jackson Street	1599	2.0	1.5	1585
2917 Clifford Jackson Street	1693	2.1	1.6	1678
2918 Clifford Jackson Street	1631	2.0	1.6	1611
2921 Clifford Jackson Street	1693	2.1	1.6	1678
2922 Clifford Jackson Street	1819	2.2	1.7	1803
2906 Lyons Street	1819	2.2	1.7	1803
2910 Lyons Street	1787	2.2	1.7	1771
2914 Lyons Street	1693	2.1	1.6	1678
2918 Lyons Street	1693	2.1	1.6	1678
4702 Spring Avenue	1756	2.1	1.7	1740
4706 Spring Avenue	1693	2.1	1.6	1678
4714 Spring Avenue	1693	2.1	1.6	1678
4722 Spring Avenue	1693	2.1	1.6	1678
Base Case, 2004 IECC, FC2				
4702 Joseph Wiley Street	2477	3.0	2.4	2455
4720 Joseph Wiley Street	2446	3.0	2.3	2423
4708 Joseph Wiley Street	2477	3.0	2.4	2455
4714 Joseph Wiley Street	2415	3.0	2.3	2391
4804 Joseph Wiley Street	2477	3.0	2.4	2455
4712 Joseph Wiley Street	2477	3.0	2.4	2455
4802 Joseph Wiley Street	2415	3.0	2.3	2391
4706 Joseph Wiley Street	2415	3.0	2.3	2391
4716 Joseph Wiley Street	2477	3.0	2.4	2455
4718 Joseph Wiley Street	2477	3.0	2.4	2455

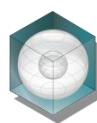
Energy Saving +
Transmission Losses

CO2 Emission
Reductions

SOx Emission
Reductions

NOx Emission
Reductions

**TOTAL EMISSION
REDUCTION FOR ALL
HABITAT HOMES**
68 lbs of NOx,
53 lbs of SOx
55,000 lbs of CO2



CONCLUSIONS

ENERGY SAVINGS ABOVE 2004 CODE

For the 1285 sq. ft. house: 10% - 15% above code

For the 843 sq. ft. house: 21 - 22% above code

HERS RATING (ESL RATINGS)

For 1285 sq. ft. house: 71-74

For the 843 sq. ft. house: 79-81

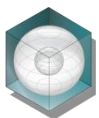
The HERS ratings and trends obtained from the simulation results are similar to those obtained from the RemRate calculations

TOTAL EMISSION REDUCTION

68 lbs of NO_x,

53 lbs of SO_x

55,000 lbs of CO₂





Thanks ...

Blower Door and Duct Blasters Test

	Street Address	Area	No. Bed	Original HERS	Current HERS	DB1	CFM per 100sqft	BD	NACH	ACH NACH * WF	cfm from inf	Duct Leakage	Duct Leakage for Sealed Attic	cfm from Mech vent	Total cfm for the house Mech + Inf	Eqv ACH	Eqv NACH	Cond Space SLA	Conditioned Space for Sealed Attic SLA
1	2902 Clifford Jackson Street	1285	3	69	71	39	3.04	650	0.17	0.15	25.62	0.02	0.0111	11.67	37.28	0.22	0.24	0.000245	0.000183385
2	2906 Clifford Jackson Street	1285	3	70	72	45	3.50	954	0.25	0.22	37.60	0.03	0.0129	11.67	49.27	0.29	0.32	0.000323	0.000242315
3	2909 Clifford Jackson Street	1285	3	70	72	68	5.29	474	0.12	0.11	18.68	0.04	0.0194	11.67	30.35	0.18	0.20	0.000199	0.000149267
4	2910 Clifford Jackson Street	1285	3	69	70	27	2.10	623	0.16	0.14	24.55	0.02	0.0077	11.67	36.22	0.21	0.24	0.000238	0.000178151
5	2913 Clifford Jackson Street	1285	3	69	70	21	1.63	841	0.22	0.19	33.15	0.01	0.0060	11.67	44.81	0.26	0.29	0.000294	0.00022041
6	2914 Clifford Jackson Street	1285	3	70	72	59	4.59	901	0.23	0.21	35.51	0.03	0.0169	11.67	47.18	0.28	0.31	0.000309	0.000232041
7	2917 Clifford Jackson Street	1285	3	69	70	43	3.35	680	0.18	0.16	26.80	0.02	0.0123	11.67	38.47	0.22	0.25	0.000252	0.0001892
8	2918 Clifford Jackson Street	1285	3	71	73	67	5.21	849	0.22	0.20	33.46	0.04	0.0191	11.67	45.13	0.26	0.30	0.000296	0.000221961
9	2921 Clifford Jackson Street	1285	3	70	72	62	4.82	644	0.17	0.15	25.38	0.04	0.0177	11.67	37.05	0.22	0.24	0.000243	0.000182222
10	2922 Clifford Jackson Street	1285	3	68	70	26	2.02	410	0.11	0.09	16.16	0.01	0.0074	11.67	27.83	0.16	0.18	0.000182	0.000136861
11	2906 Lyons Street	1285	3	68	70	32	2.49	370	0.10	0.09	14.58	0.02	0.0091	11.67	26.25	0.15	0.17	0.000172	0.000129107
12	2910 Lyons Street	1285	3	69	70	32	2.49	540	0.14	0.12	21.28	0.02	0.0091	11.67	32.95	0.19	0.22	0.000216	0.000162061
13	2914 Lyons Street	1285	3	70	72	56	4.36	740	0.19	0.17	29.17	0.03	0.0160	11.67	40.83	0.24	0.27	0.000268	0.000200831
14	2918 Lyons Street	1285	3	69	70	39	3.04	741	0.19	0.17	29.20	0.02	0.0111	11.67	40.87	0.24	0.27	0.000268	0.000201025
15	4702 Spring Avenue	1285	3	69	71	47	3.66	558	0.14	0.13	21.99	0.03	0.0134	11.67	33.66	0.20	0.22	0.000221	0.00016555
16	4706 Spring Avenue	1285	3	70	71	51	3.97	684	0.18	0.16	26.96	0.03	0.0146	11.67	38.62	0.23	0.25	0.000253	0.000189976
17	4714 Spring Avenue	1285	3	70	71	44	3.42	732	0.19	0.17	28.85	0.03	0.0126	11.67	40.52	0.24	0.27	0.000266	0.00019928
18	4722 Spring Avenue	1285	3	69	71	43	3.35	701	0.18	0.16	27.63	0.02	0.0123	11.67	39.30	0.23	0.26	0.000258	0.000193271
1	4702 Joseph Wiley Street	843	2	77	78	37	4.36	420	0.18	0.16	17.85	0.03	0.0142	10.33	28.19	0.25	0.28	0.000282	0.000211332
2	4720 Joseph Wiley Street	843	2	77	78	20	2.36	620	0.26	0.23	26.36	0.02	0.0077	10.33	36.69	0.33	0.37	0.000367	0.000275075
3	4708 Joseph Wiley Street	843	2	76	77	15	1.77	485	0.21	0.18	20.62	0.01	0.0058	10.33	30.95	0.28	0.31	0.000309	0.000232049
4	4714 Joseph Wiley Street	843	2	77	78	14	1.65	665	0.28	0.25	28.27	0.01	0.0054	10.33	38.60	0.34	0.39	0.000386	0.000289418
5	4804 Joseph Wiley Street	843	2	80	81	15	1.77	550	0.23	0.21	23.38	0.01	0.0058	10.33	33.71	0.30	0.34	0.000337	0.000252765
6	4712 Joseph Wiley Street	843	2	76	77	19	2.24	466	0.20	0.18	19.81	0.01	0.0073	10.33	30.14	0.27	0.30	0.000301	0.000225993
7	4802 Joseph Wiley Street	843	2	80	81	19	2.24	665	0.28	0.25	28.27	0.01	0.0073	10.33	38.60	0.34	0.39	0.000386	0.000289418
8	4706 Joseph Wiley Street	843	2	77	78	19	2.24	665	0.28	0.25	28.27	0.01	0.0073	10.33	38.60	0.34	0.39	0.000386	0.000289418
9	4716 Joseph Wiley Street	843	2	76	77	14	1.65	509	0.22	0.19	21.64	0.01	0.0054	10.33	31.97	0.28	0.32	0.000320	0.000239698
10	4718 Joseph Wiley Street	843	2	78	79	37	4.36	408	0.17	0.15	17.34	0.03	0.0142	10.33	27.68	0.25	0.28	0.000277	0.000207508





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