

# Energy Report

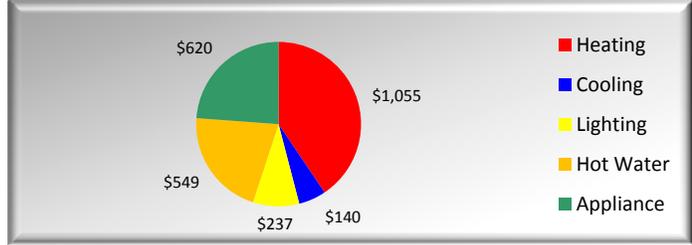


Performance Comparison of Baseline vs. FG Improved vs. FG Optimized

**Plan Name:** Modern Ranch  
**Number:** #08\_001  
**Location:** Newark, NJ

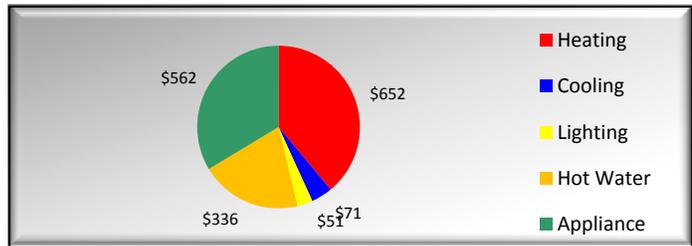
## Baseline Energy Consumption by Type

Load by type	Electricity (kWh)	Natural Gas (Therms)	Annual Cost
Heating	-	733	\$ 1,055
Cooling	1,325	-	\$ 140
Lighting	2,234	-	\$ 237
Hot Water	-	381	\$ 549
Appliance	5,846	-	\$ 620
Solar <sup>1</sup>	-	-	\$ -
<b>Total</b>	<b>9,404</b>	<b>1,114</b>	<b>\$ 2,600</b>



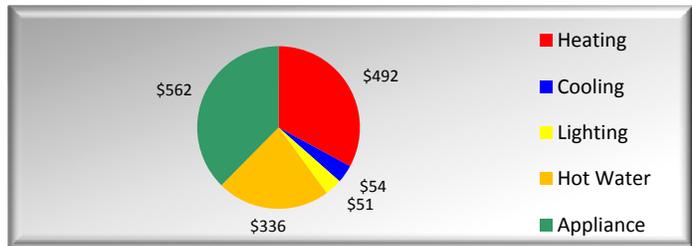
## FreeGreen Improved Energy Consumption by Type

Load by type	Electricity (kWh)	Natural Gas (Therms)	Annual Cost
Heating	-	453	\$ 652
Cooling	668	-	\$ 71
Lighting	484	-	\$ 51
Hot Water	-	234	\$ 336
Appliance	5,306	-	\$ 562
Solar <sup>1</sup>	-	-	\$ -
<b>Total</b>	<b>6,458</b>	<b>687</b>	<b>\$ 1,673</b>



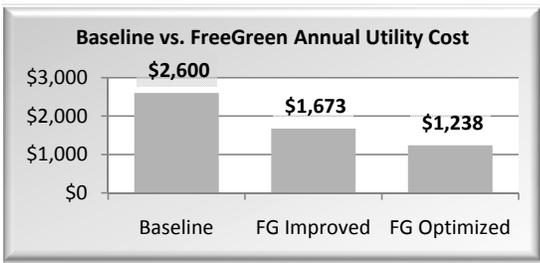
## FreeGreen Optimized Energy Consumption by Type

Load by type	Electricity (kWh)	Natural Gas (Therms)	Annual Cost
Heating	-	342	\$ 492
Cooling	510	-	\$ 54
Lighting	484	-	\$ 51
Hot Water	-	234	\$ 336
Appliance	5,306	-	\$ 562
Solar <sup>1</sup>	(2,436)	-	\$ (258)
<b>Total</b>	<b>3,864</b>	<b>576</b>	<b>\$ 1,238</b>



The Baseline projection represents the performance that this home model would have if it were built to code (2006 International Energy Conservation Code).

The FG Improved and the FG Optimized, use 37% and 51% less energy and save 36% and 53% on the annual utility bill, respectively.



	Electricity (kWh) Used	Natural Gas (Therms) Used	Annual Utility Bill
Baseline	9,404	1,114	\$ 2,600
FG Improved	6,458	687	\$ 1,673
FG Optimized	3,864	576	\$ 1,238

<sup>1</sup> Negative amounts indicate production credits and assume net metering at retail electricity rates  
 For detailed assumptions, see *Energy Model Specifications*

# Energy Model Specifications



**Plan Name:** Modern Ranch  
**Number:** #08\_001

	Baseline <sup>5</sup>	FG Improved	FG Optimized
<b>Wall Construction and Insulation</b>			
2x6 Wall Construction with 5.5" Fiberglass Batt (R-19)	X		
2x6 Wall Construction with 5.5" Low-Density Spray Foam (R-19)		X	X
2x8 Staggered Stud Wall Construction with 7.25" Low-Density Spray Foam (R-28)			
<b>Roof Construction and Insulation</b>			
2x12 Roof Construction with 11.25" Fiberglass Batt (R-38)	X		
2x12 Roof Construction with 11.25" Low-Density Spray Foam (R-38)		X	X
<b>Windows</b>			
U-value	0.6	0.29	0.17
Solar Heat Gain Coefficient	0.4	0.3	0.25
<b>Infiltration</b>			
0.45 Air Changes per Hour	X		
0.25 Air Changes per Hour		X	X
<b>Thermostat</b>			
Non-Programmable Thermostat <sup>1</sup>	X		
Programmable Thermostat <sup>1</sup>		X	X
<b>Heating</b>			
AFUE 78 Gas Furnace	X		
AFUE 90 Gas Furnace		X	
AFUE 95 Gas Furnace			X
<b>Cooling</b>			
SEER 13 Air Conditioner	X		
SEER 15 Air Conditioner		X	
SEER 19 Air Conditioner			X
<b>Ventilation<sup>3</sup></b>			
Ventilation System w/o Energy Recovery <sup>3</sup>	X		
Heat Recovery Ventilator		X	X
<b>Water Heating<sup>4</sup></b>			
0.54 EF Gas Water Heater, 50 gallons	X		
0.85 EF Gas Tankless Water Heater		X	X
<b>Lighting</b>			
All Incandescent Bulbs	X		
1/3 Incandescent and 2/3 Compact Fluorescent Lighting		X	X
<b>Appliances</b>			
Conventional Appliances	X		
Energy Star Appliances		X	X
<b>Solar Array</b>			
1.95 kW PV Array			X

**Assumptions:**

1. Setpoint for Non-programmable Thermostat: 70°F Heating, 75°F Cooling
2. Setpoints for Programmable Thermostat: Heating: 70° F occupied, 62° F unoccupied; Cooling: 75° F occupied, 83° F unoccupied; 14 hours/day occupied
3. Ventilation: 75 Cubic Feet per Minute, 16 hrs/day
4. Hot Water Use: 88 gallons/day (22 gallons/person-day)
5. Baseline defined as 2006 International Energy Conservation Code
6. Fuel Cost Assumptions: Natural Gas - \$1.26/therm; Electricity - \$0.112/kWh