**Dageforde House Characteristics:**

Year Built: 2010  
House Style: Raised ranch  
Lot size: 4.5 acres  
Square feet: 1941 main floor, 928 partially finished basement  
Bedrooms: 3 bedroom  
Baths: 2 bath  
Construction Cost (including wells, PV panels, fresh air tube, 4-car garage, landscaping, road): $253,616.37

**Envelope:**

Construction Type: Reward Wall Insulated Concrete Form (ICF) Walls, Lite-Form Concrete Floor  
Exterior Finish: Mastic Home Exteriors Quest Vinyl Siding  
Roof: Decra Steel shingle, 30 yr asphalt shingle  
Window Types: Pella Impervia Fiberglass Casement (0.29 U-Factor) Energy Star rated  
Wall/attic Insulation Type & R Value: Exterior walls: Insulated Concrete Form (ICF) R-22; Attic: Blow-in fiberglass, R-50

**Energy Characteristics:**

HERS: unknown  
HVAC System Description & Age: Bosch 5-ton (ran at partial load – EER 19.8, COP 3.0) Ground Source Water to Water Heat Pump, feeding a radiant heating and cooling system in the concrete floors, 2010; Geothermal Fresh Air System, 2010, passive solar designed house  
Fuel Source: Electric; 18 Rec Solar 230 Watt Solar PV panels  
Thermostat type: White Rogers programmable  
Hot Water System Type/Size: Bosch 3-ton (ran at partial load – EER 20.6, COP 3.1) Ground Source Water to Water Heat Pump with 40 gallon insulated storage tank  
Lighting Description & Special Features: Mix, CFL & incandescent; Huge windows for natural light during day  
Appliance Description & Age: All appliances are electric. 2007 Amana Refrigerator Energy Star rated; 2010 GE Dishwasher Energy Star rated; 2012 Whirlpool Front Loading Washing Machine Energy Star rated; 2010 GE convection range; 1993 Maytag Electric Dryer (also use a clothesline and drying rack)

**Water Efficiency:**

Number of fixtures/Low flow fixtures: 7 total fixtures including toilets, all low-flow fixtures, front-loading washing machine  
Lawn & landscape description: fescue, rain garden

**Features:**

Solar PV panels – provided 61% of energy in first year of operation. Total annual energy cost - $530  
Passive solar design – aids heating needs  
Lots of natural light  
Geothermal fresh air system - 160 feet of buried tube with automated fan/valve system providing fresh air, humidity control, and 55 – 65 degree air year-round reducing heating/cooling needs  
Concrete house (Insulated Concrete Form) R-22  
Radiant heating/cooling  
Ceramic tile flooring - allowing lower radiant temperatures to heat/cool house resulting in huge energy efficiency (also having no carpet - reduces allergens)  
Geothermal water to water heat pumps for heating and cooling and hot water generation  
Domestic water intake pipes embedded in concrete floor - resulting in free cooling and warmer water temperature in hot water generation intake reducing energy needed  
Insulated hot water pipes  
Fiberglass windows that do not expand or contract to break any seals  
Radon Gas removal system that pulls air from the drain tile system and granular fill below the basement slab  
Built into a hill  
Zero VOC paints  
No combustion appliances

**Results for first year of operation:**

| Total KWH Produced: | 6,892 | Total KWH used for: |  
| Total KWH Purchased: | 4,382 | Home hot water: | 2,103  
| Total supply: | 11,274 | Home heating: | 3,806  
| | | Fresh air makeup: | 146  
| | | Home cooling: | 67  
| | | Other misc: | 5,152  
<p>| | | Total used: | 11,274 |</p>
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<tr>
<th>Month</th>
<th>Basic service charge to be hooked up to OPPD</th>
<th>Energy purchased cost from OPPD</th>
<th>Total OPPD Bill</th>
<th>Total Propane/Gas Bill</th>
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