

The House that Bruce Built Versions 1.0 – 6.0 **2006 12 11 through 2022 09 30**

1.0

The original all electric home with electric well pump [built 1996], as described in “The House that Bruce Built” article, which is comfortable, safe, durable, healthy, and efficient. It has a properly closed crawl space which includes foundation water proofing with exterior perimeter drain to daylight and dehumidifier. Dropped Time Of Use utility metering [2008]. Original dehumidifier replaced with Aprilaire model 1820 [2020].

1.2

Wood stove added with air tight construction and with outside air intake ducted into stove. Installed [2001] as heat source for use during power outages and special occasions.

Enhanced efficiency by expanding to 100% the use of compact florescent and LED lights and buying a new Energy Star refrigerator [2003] to replace a 1986 model.

Emergency supplies of drinking, cooking and washing water, lighting, and food [ongoing].

LP fired outdoor cooking grill [2004, replaced 2018].

2.0

Total Green Power Home: September 2006, we began the monthly purchase of green power to be put into the grid to equal or exceed our total electricity consumption. We chose to purchase NC Green Power even though it cost more because of our commitment to building NC capacity. \$44.00 additional cost per month added to our power bill. We were paying to have 13200 kWh of sustainably produced electricity put into the grid.

2.1 & 2.2

Additional Equipment Upgrades: Replaced original 13 SEER heat pump with 17.4 SEER, 9.75 HSPF 2-stage [1.5 & 2.0 ton] heat pump with heat strip locked out to 25 F [2007]. This reduced space conditioning costs by 25%. Replaced 28 year old top load washer with a front load Energy Star washer that is energy, water, and hot water efficient [2008]. Added 615 kWh to annual load by installing Energy Star upright, frost free, 17 cubic feet freezer [2012]. Replaced original ERV with Venmar Duo 1.2 thermal wheel ERV saving 427 kWh annually. It is amazing how much ERVs have improved over 17 years [2012]

3.0 & 4.0

Originally conceived as two steps [battery storage for power outages and small onsite power generation], these were combined into one step and completed **June 2011**. Pole mount, 15 panel, 3.5KW solar electric array with battery storage and controls. This system provides one third of the home’s total annual kWh. During power outages, with prudent use, it provides unlimited days of operation for refrigeration, water pump, lights, fan, computer, and all other general power circuits. Excluded during emergencies are – heat pump, water heater, range, and dryer, which are covered by backup systems listed above. During peak production, excess kWh is sent to the power grid through the available net metering option. Excess NC Green Power purchase continued to address other toes of our carbon footprint.

Replaced roof shingles with 50 year Solaris Santa Fe shingles that have a Solar Reflectance Index of 47 and added a roof mounted 3.4KW solar electric array that is also net metered. We have now reduced our NC Green Power purchase to 6000 kWh annually which more than meets our desire to maintain our **Scionwood Retreat** as a **Net Zero Energy Home** with maybe two of our other carbon footprint toes also covered [2015].

5.0

Replaced 1995 electric tank water heater with a Heat Pump Water Heater [2018], save kWh. Replaced gasoline engine car with a Chevy Bolt Electric Vehicle and added a Level 2 home charging station [2019], use kWh. But, we **noticeably reduced our carbon footprint**. Also, we are still maintaining our Net Zero Energy Home status.

6.0 – pending?

Increase capacity of onsite green power generation to provide total annual electricity needed.