

Abert Solar (Off-Grid) Home



Electricity

Solar – 3120 watts 6@345w+6@175w photovoltaic panels
Wind – 3000 watt Whisper wind turbine on a 105 ft tower
Backup motor generator – Honda 6000 watt - runs on LP
12 2-volt storage batteries
Trace Inverter converts 24 volt DC to 110 volt AC

Domestic Hot Water

Solar collectors on roof preheat water in tank.
Boiler boosts pre-heated water to 120° F if needed

Passive Solar Heating

South window area larger than glazing on other three sides
Overhangs provide shade in the summer, full sun in winter
Slab-on-grade and massive masonry hearth provide heat sink

Super insulation

Double stud walls with cotton insulation @ R-40
Cellulose in attic @ R-60
Triple glazed windows
House is bermed into hill on north side

Active Heating

Parlor wood stove for fall and spring
Gas fired (LP) boiler with radiant 1st floor, baseboard 2nd

Passive Air Conditioning

Slab on grade, massive hearth, masonry sheathing
and north side berming result in
natural air conditioning in summer
of between 10° and 15° F.

Efficient Refrigerator

Sunfrost - uses about 1/6 the energy of average fridge.

History

The house was built in 1993
The wind tower was added in 1995. This is the fourth
wind machine; the first 3 were destroyed by high winds.
Technology here is vintage of a computer running DOS!