



Path to Net Zero Energy

1. Home Must Meet the Requirements of an R2000 Certified Home

- a. Home Modelled by Hot 2000 program for energy efficiency and energy needs requirements
- b. Building Science Consultants are hired to do the modeling / evaluation
- c. Best In Class Energuide 86 Rating
- d. High efficiency wall assemblies
- e. Energy Conservation being Paramount
- f. Air tightness must be less than 1 air change per hour (ACH) (Our Net Zero Energy home tested at 0.69 ACH)
- g. House must be designed / built as a system.
- h. Home requires a great deal of professional expertise and technical knowledge

2. Wall Assemblies

- a. R55 in exterior walls ~ 8" insulation and 2" exterior sheathing, R60 in attic spaces, R32 in basement walls
- d. All walls fully sealed
- e. Triple glazed Low-E Argon gas filled windows with UV rated coatings
- f. Air purifying drywall (Air Renew)

3. Energy Efficiency

- a. LED light fixtures
- b. CFL bulbs where LED was not possible
- c. High efficiency appliances meeting minimum KWH usages in accordance to energy modeling under Hot 2000
- d. Minimum amp usages except for heating and cooling
- e. Energy model loading

4. Mechanical Equipment

- a. Professional duct design complete with duct sizing to each room
- b. ERV ventilation all year complete with moisture exchange
- c. Air to air heat pump for domestic hot / cold air
- d. Air to water heat pump for domestic hot water
- e. Air handler for distribution of domestic air supply throughout the home
- f. In floor heating running off air to water heat pump for basement comfort
- g. Temperature zoning and return air sensors for damper controls in ductwork
- h. Constant, even temperatures distributed throughout the home



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5. Photovoltaic System

- a. Sizing requirements for panels - 11KW D/C system and 8KW A/C system
- b. 22 solar panels. 2 Arrays, each comprised of 11 solar panels
- c. 2 charge collectors per array
- d. 2 inverters ~ 1 per array sending power to circuitry of the home (100 amps)
- e. 12 long load batteries
- f. Backup power ~ 22KW Generac Unit

6. Rain Water Recovery

- a. Two 2500 liter storage tanks collecting rainwater from the roof (pre-softened by nature)
- b. Two filters complete with ultraviolet ray tubes for water purification
- c. Water used for flushing toilets and for exterior hose bib connections for watering lawns and gardens
- d. Possible routing of water to laundry facilities if desired
- e. Overflow protection so heavy storms are directed to storm water management systems
- f. Control of rainwater around the home, alleviating any potential drainage issues
- g. Pump and electronic controls arranged so the system is never without water and is under constant pressurization

7. Cost / Benefit Analysis

- a. Budget 20% - 25% of a premium over the standard energy star WrightHaven specifications
- b. Interest only carrying charges for approximately \$100,000 = \$245 /month on your mortgage (approx. \$3,000 /year)
- c. Energy savings on hydro bill usage rates. Minimum average of 35 KWH /day at 365 days equals to 12,775 KWH. Consumption at an average rate of \$0.107 /KWH, you'll save roughly \$1,367 per year minimum on hydro!
- d. Virtually no gas bills except for modern conveniences such as fireplaces and occasional backup generator costs. This gives an average conservation of approximately \$120 each month for a total of \$1,500 annually.
- e. Water savings of roughly \$35.00 /month gives an annual average of \$420.
- f. Home produces roughly 5000 kwh MORE energy than it needs in a year. This could be valued at a possible \$535 at an average of \$0.107 /KWH in income if the home was to feed back into the grid.
- g. Equivalent usage example - powering an electric car vs. fuel savings. An average conservation of \$60 in fuel per week x 50 weeks of commuting equals roughly \$3,000 annually.
- h. These cost efficiencies do NOT include for any available credits or rebates that may be available for energy conservation! You could save much more!

(NOTE: These approximate cost savings are based on a similar size and style of home as our Net Zero Energy home with a similar intended end use. Actual savings will vary based on included technologies and size / style of home considered)



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