

**National Solar Tour**  
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**Williamson Energy Efficient Home**

**A. Solar Electric**

- 4 kilowatt photovoltaic system, grid tie (connected to SCE grid).
- 2 kilowatt photovoltaic, grid tie plus battery back-up for essential utilities during a black-out. Both systems installed by [www.eesolar.com](http://www.eesolar.com)
- Sharp architectural panels (from Japan)
- 25 year warranty
- the first solar cell from Bell Laboratories still operates, after 50 years, at 80% of its original output
- Today's Cost: \$30,000 (after rebates and tax incentives)
- \$467 credit (from March 2005 to November 2005, electric bill on display)
- Time of use billing (40 cents per kilowatt hour in summer, and 18 cents during winter, during peak hours, 10:00 a.m. to 6:00 p.m. During "off-peak" hours, we pay 8 cents per kilowatt hour, compared to standard, domestic rate of 13 cents ) maximizes credit
- We generate the bulk of electricity during peak hours at the 18/40 cents per kilowatt hour (see previous)
- **Solar Electric operates entire house (heating, cooling) and charges electric vehicle**

**B. Solar Thermal**

- Electric hot water heater as opposed to a natural gas system
- Active solar hot water heating system

**C. Insulation**

- All exterior walls filled with R19 cellulose (paper product) insulation
- Ceiling and roof insulated with R30 according to industry standard
- Roof sheathing with thermal, reflective barrier, keeps heat inside during winter, keeps heat outside during summer

#### **D. Whole House Fan System**

- For cooling attic and ceilings (hot air rises!)
- Manually controlled for late afternoon cooling, during hot summer months

#### **E Winter Solar Heat Re-Circulation**

- Thermostatically controlled
- Located in attic
- Absorbs passive heat from roof
- Pushes warm, fresh air (outside air) into cooler first floor rooms

#### **F. Windows**

- Low “E” (emissivity) – prevents solar heat from penetrating house
- Dual glazed thermal barrier keeps heat out during summer, and keeps heat in during winter
- Living room “picture” window has standard gloss, allowing winter sun to warm up front of house

#### **G. Skylight**

- Low “E”, dual pane
- Allows ventilation
- Has external, retractable screen, which keeps sun out during summer months
- During winter months, allows solar heat to warm up entry way

#### **H. Solar Tube in Guest Bathroom**

- Illuminates dark room with natural light
- Eliminates use of electric lights

#### **I. Compact Fluorescent Bulbs**

- Energy efficient, use only 10% of normal incandescent bulb
- Through-out entire house
- Do not produce heat

#### **H Heat Pumps**

- “Mr. Slim” by Mitsubishi
- Split type heat and air-conditioning system
- Three units, one in den, one in dining room, one in master bedroom
- Zone cooling and heating
- Eliminated need for natural gas heater and low-efficiency central air conditioner

#### **I. Zero Emissions Electric Vehicle, 2002 Toyota RAV4 EV**

- Electrically charged by solar panels
- Drives 100 to 120 miles per charge
- Charge at home while we sleep
- Easily accelerates to 70 mph
- No smog checks
- No muffler, gasoline port
- Equipped with heat, air, power windows, CD stereo