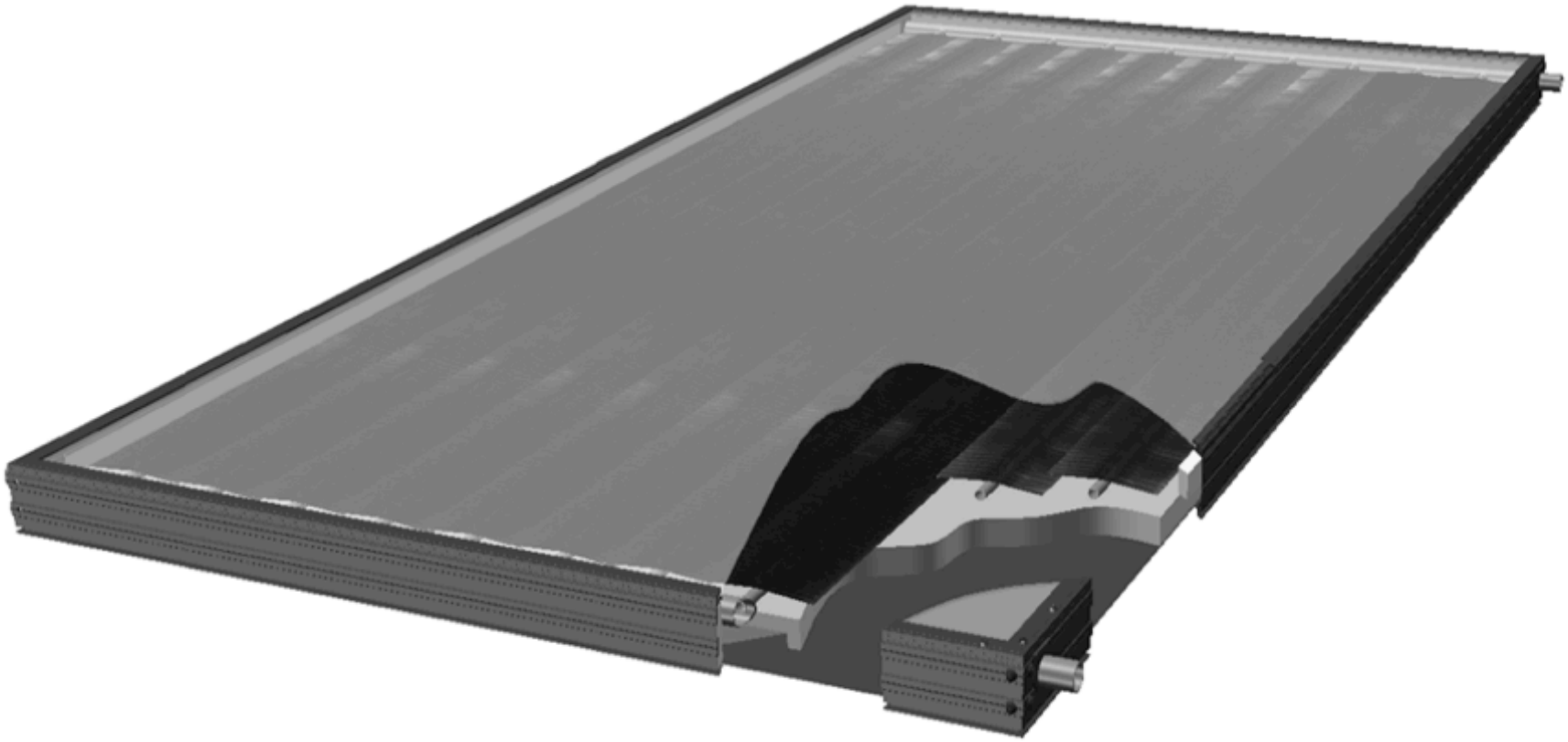
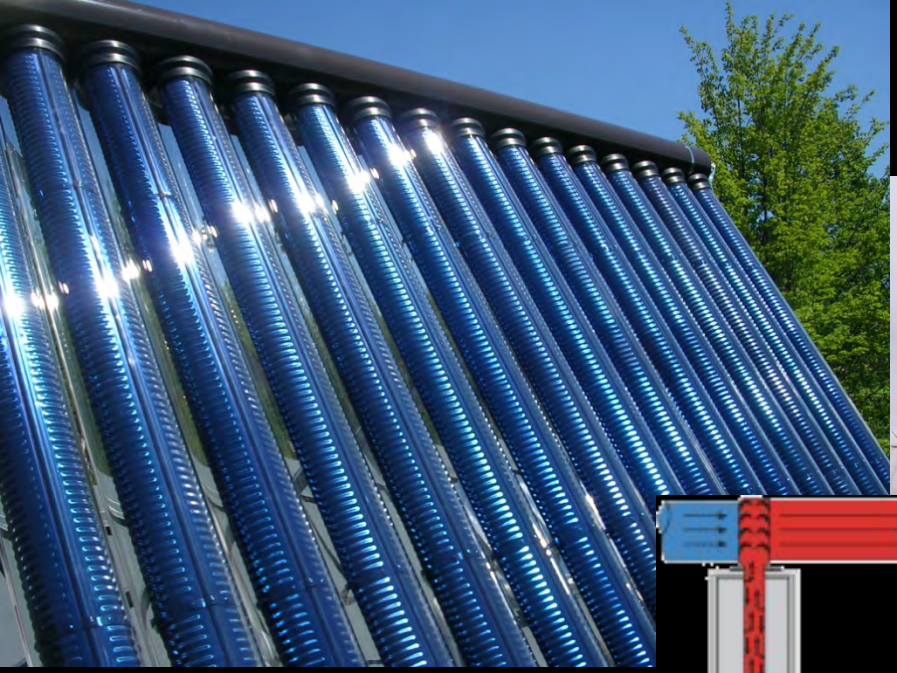
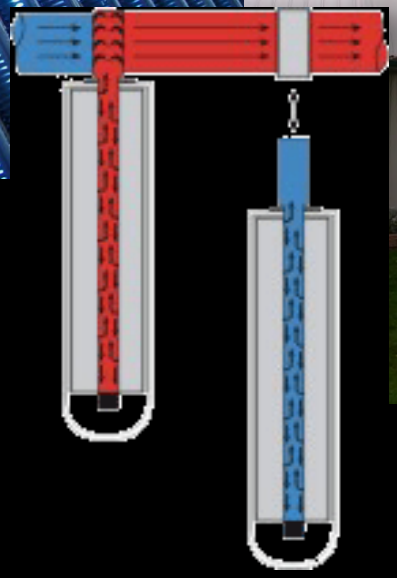
Modern Solar Thermal Panel

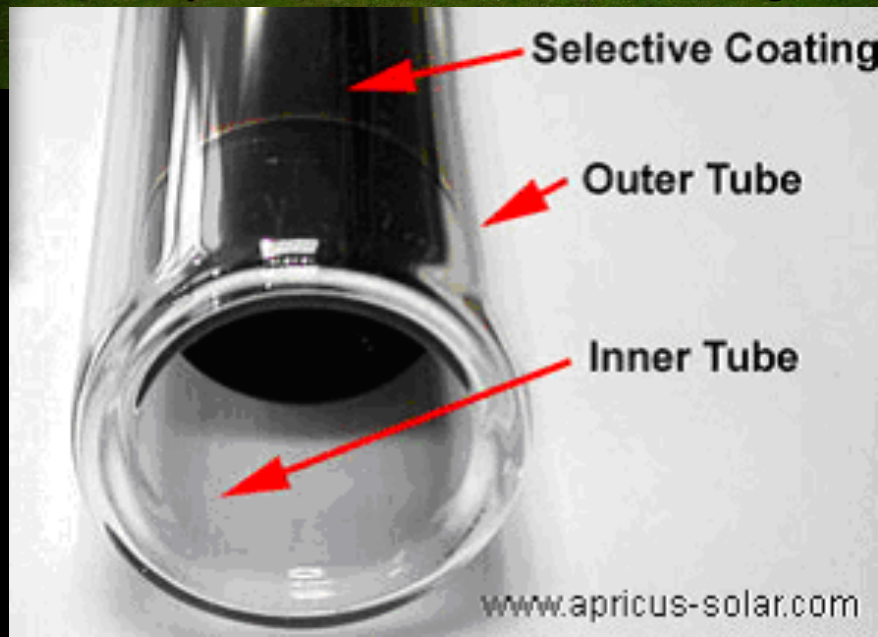


Glazed Flat Plates





Courtesy of Conservation Technologies

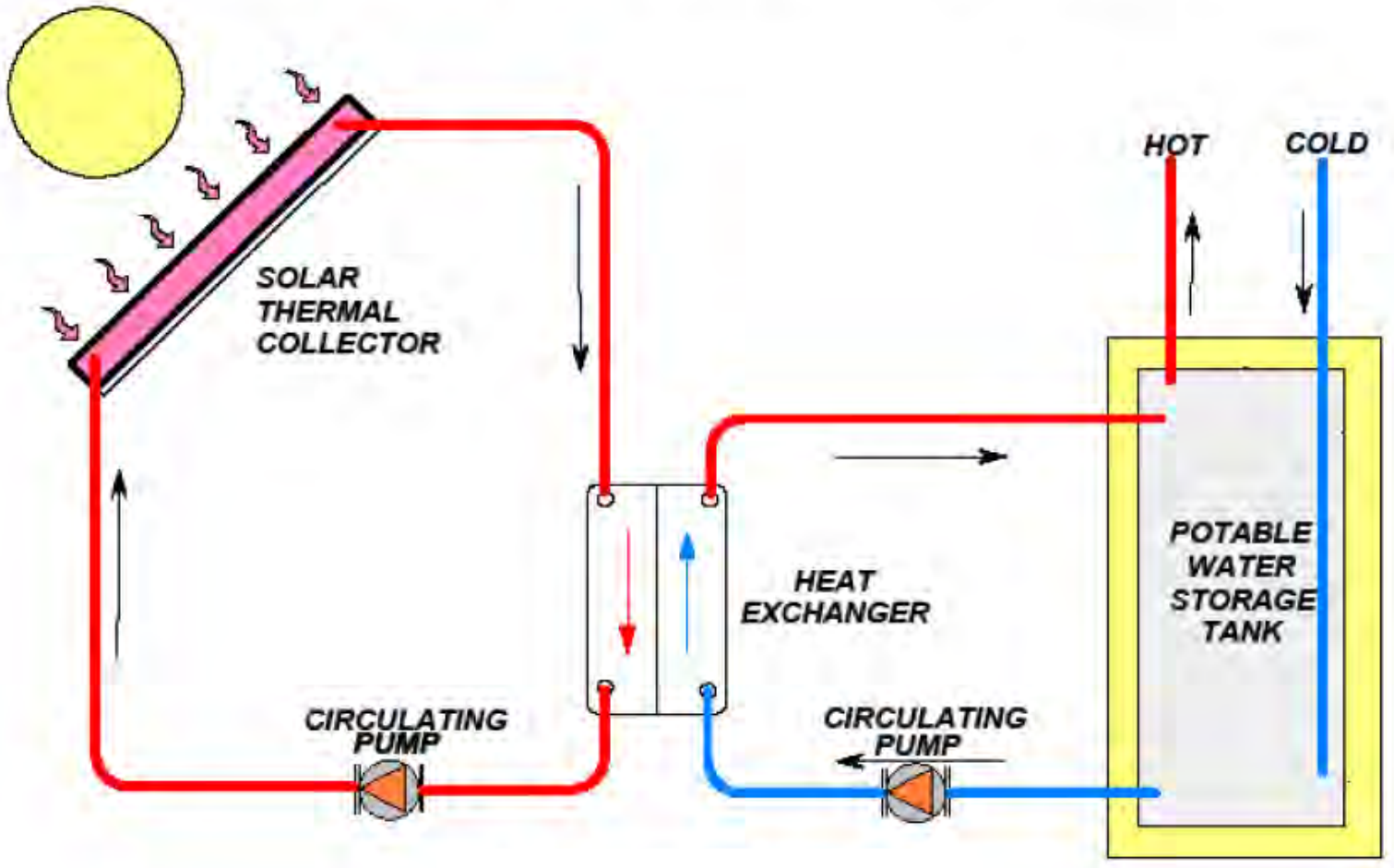


Evacuated tubes

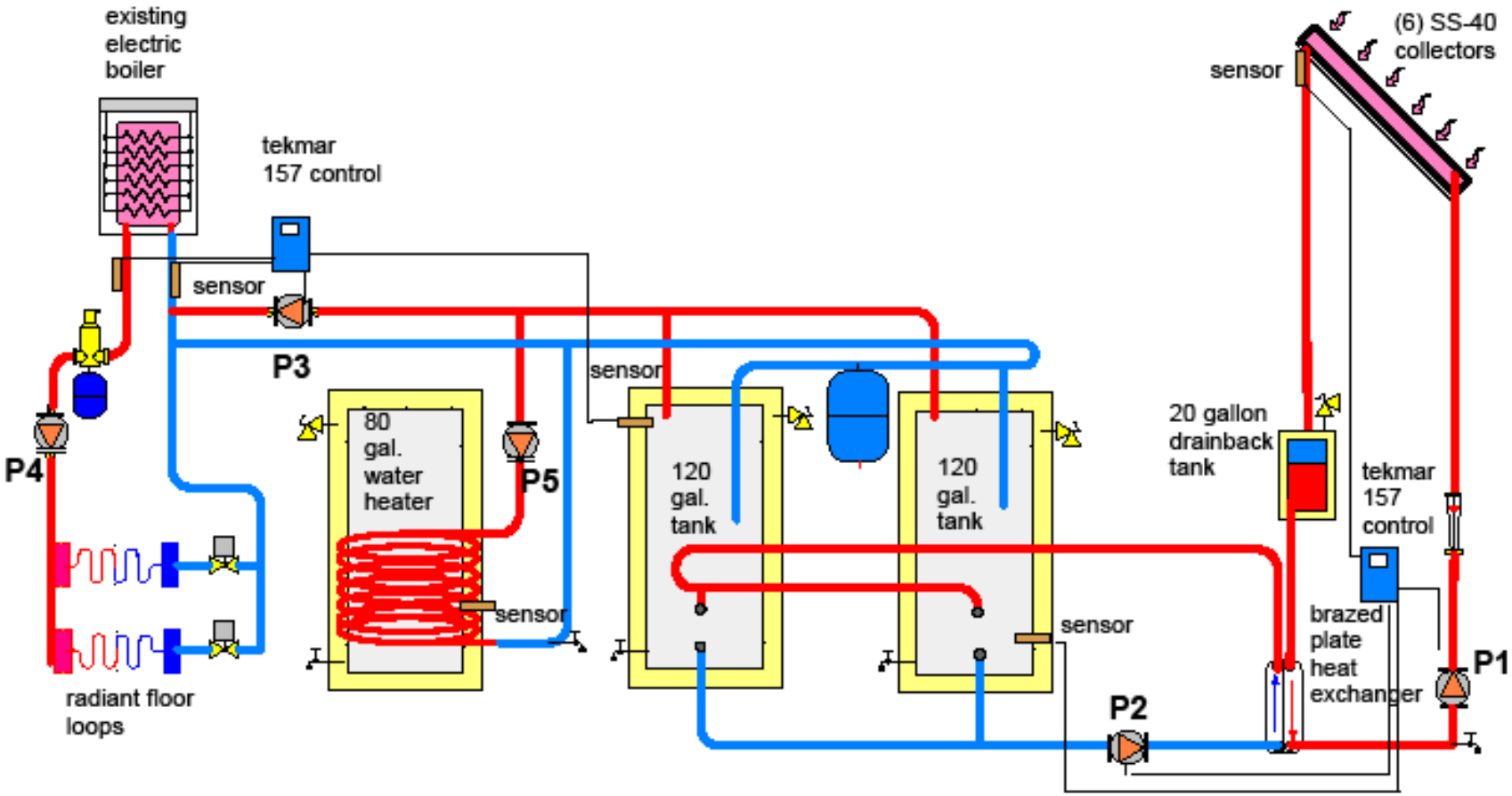
SYSTEM TYPES

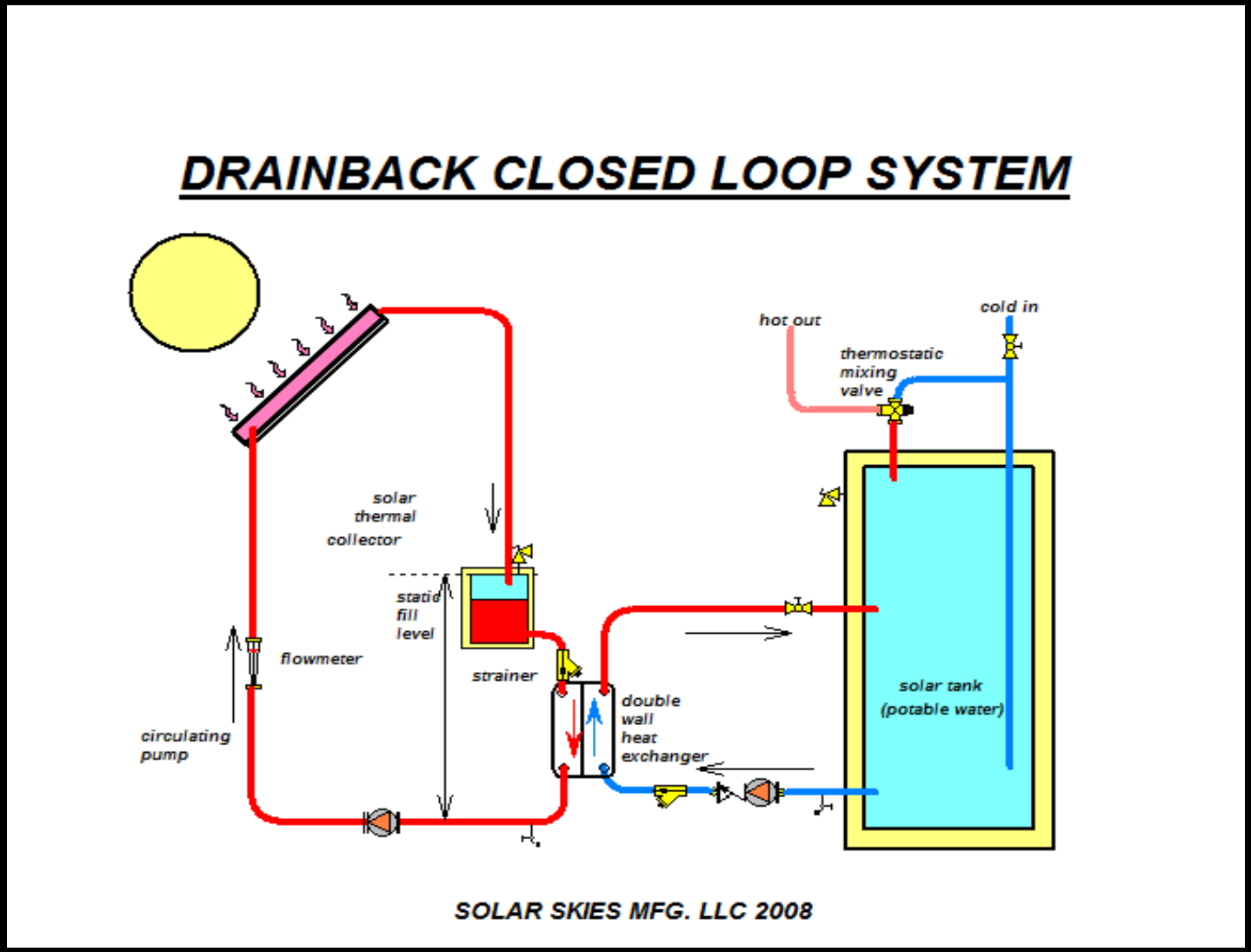
1. DRAINBACK
2. CLOSED-LOOP PRESSURIZED ANTI-FREEZE

BASIC SOLAR THERMAL SYSTEM



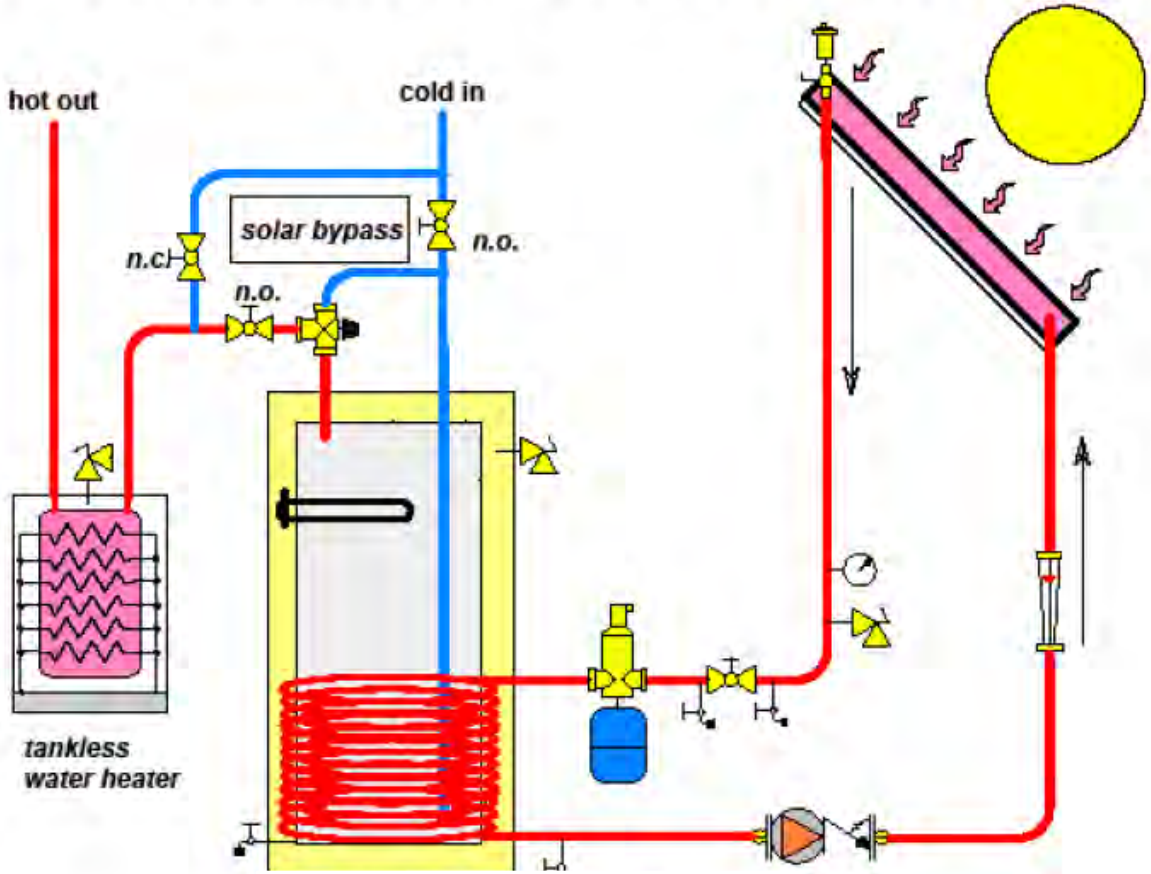
DRAINBACK HEAT and DOMESTIC HOT WATER





Drainback Schematic

SOLAR TANK W/ WRAP AROUND HEAT EXCHANGER PRESSURIZED SYSTEM




SOLAR SERVICE
847-677-0950

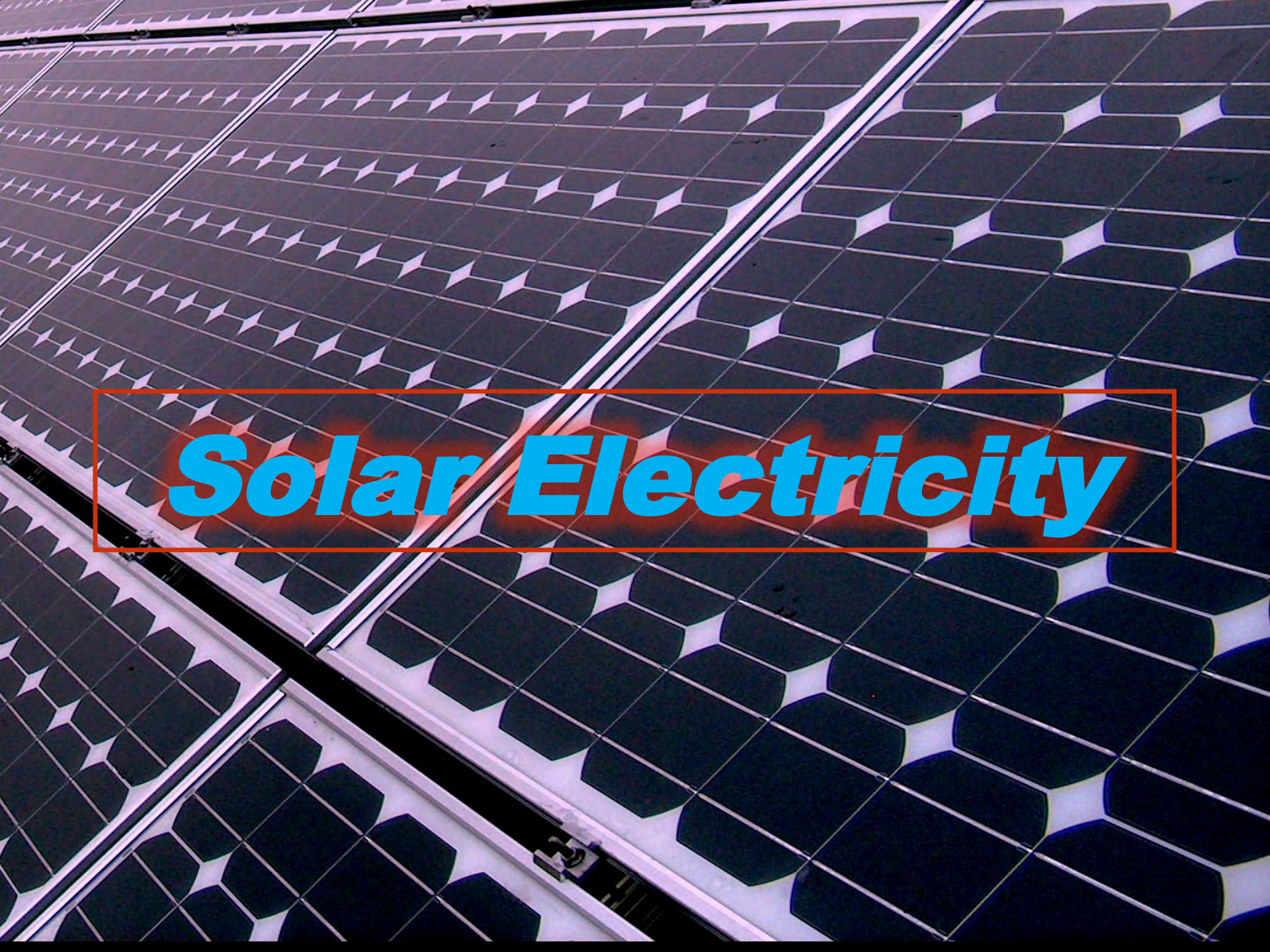
Solar Heat Sizing

Method 1

- Load Analysis for SDHW - # of gallons hot water/ day
- .75-1.0 square foot collector surface area / gallon

Method 2

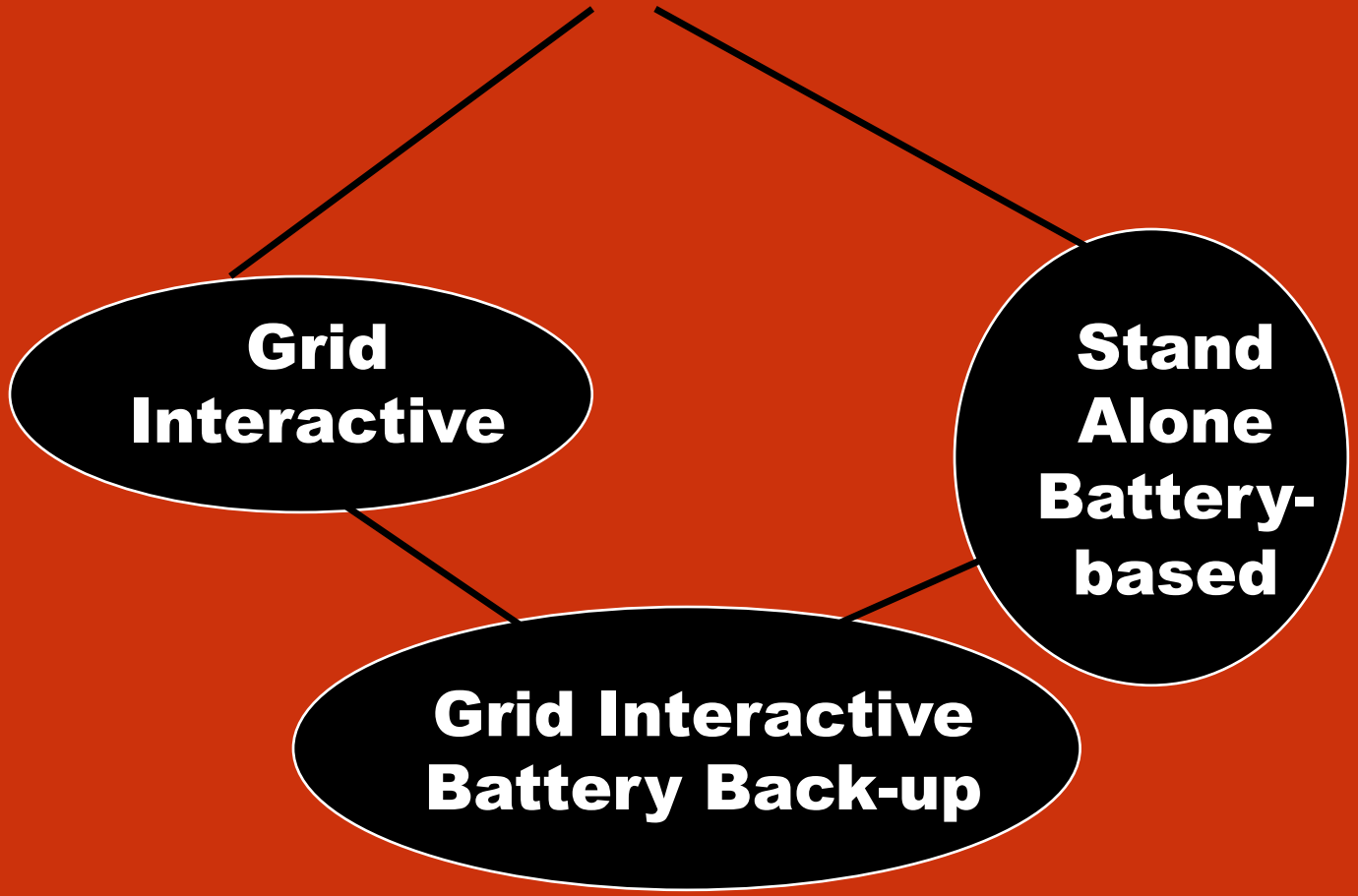
- Load Analysis
- (Wc) (Ts-Ti) (Cp) 8.33
- (65) (70) (1 BTU/lb. F) 8.33 = 37901.5 btus
- Array Sizing
- PSH (4.3) / 10.76 = .399 kWh / sq. ft. / day
- .399 x 3413 = 1361 BTUs / sq. ft. / day
- Match with thermal collector rating


Solar Electricity

Types of PV Modules

1. Mono-crystalline Si
2. Poly-crystalline Si
3. Amorphous Si
4. CIGS
5. CdTe

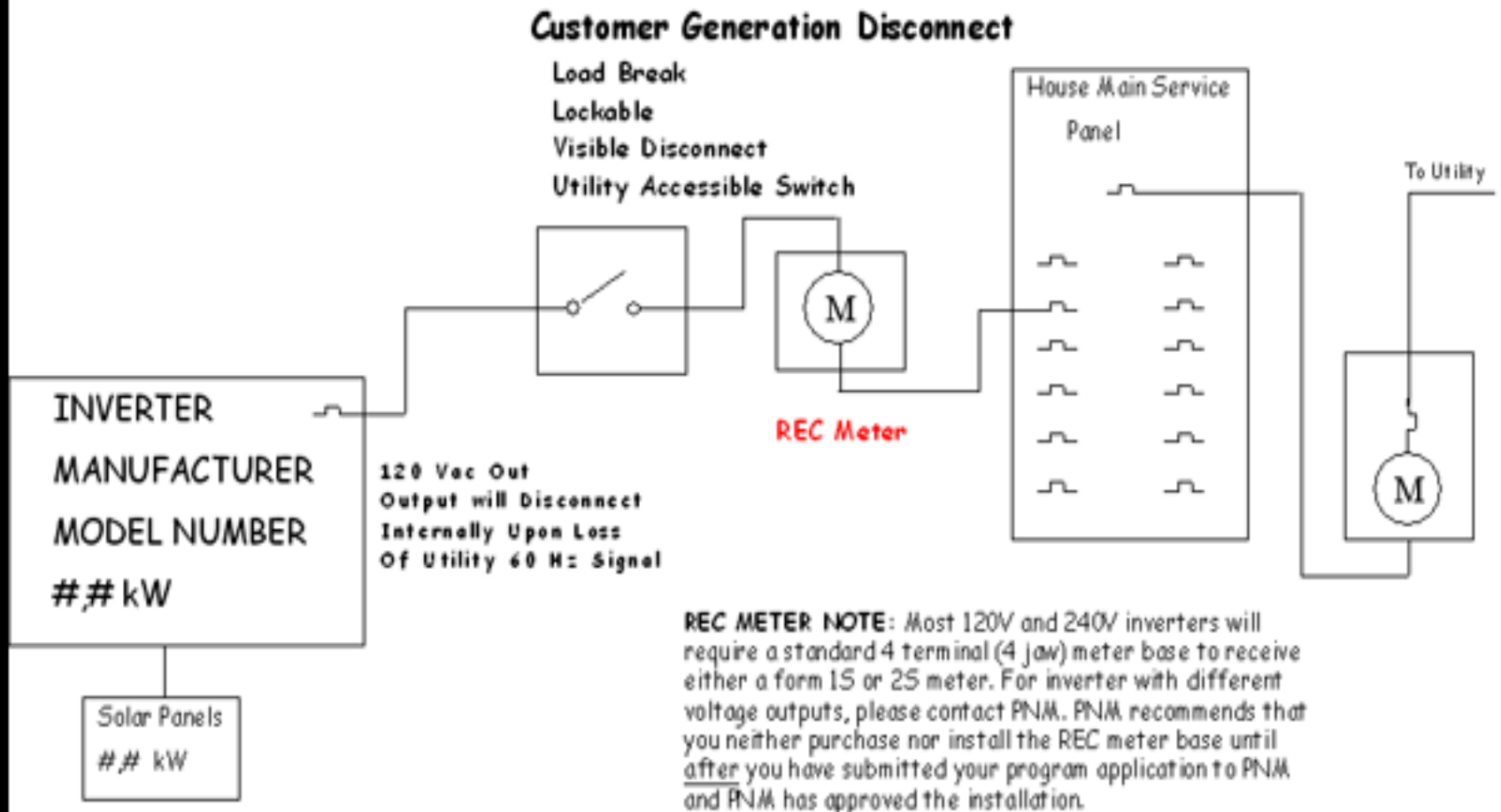
Types of Solar Electricity



Grid-Interactive Solar Electric System

- Rebates
- Battery Free
- Flexible budgeting

SAMPLE ONE-LINE DIAGRAM: GRID-TIED SYSTEM



REC METER NOTE: Most 120V and 240V inverters will require a standard 4 terminal (4 jaw) meter base to receive either a form 1S or 2S meter. For inverter with different voltage outputs, please contact PNM. PNM recommends that you neither purchase nor install the REC meter base until after you have submitted your program application to PNM and PNM has approved the installation.

If the grid goes down, so do you!

Stand-alone Battery-Based System

Pros

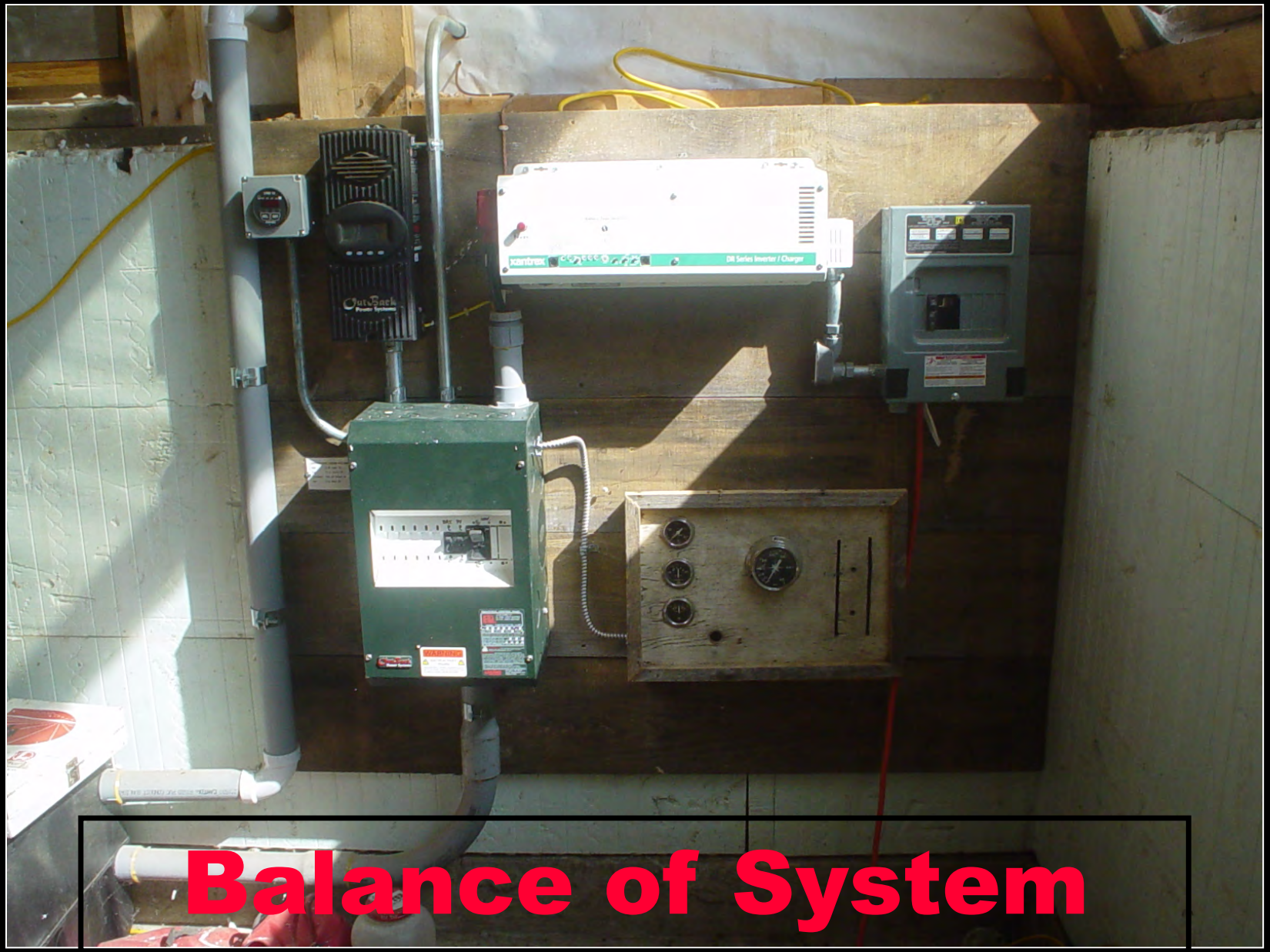
If grid power not available

Self-reliance

Cons

Batteries require maintenance and care

System sizing demanding



Balance of System

Grid-tie Battery Back-up Balance of System

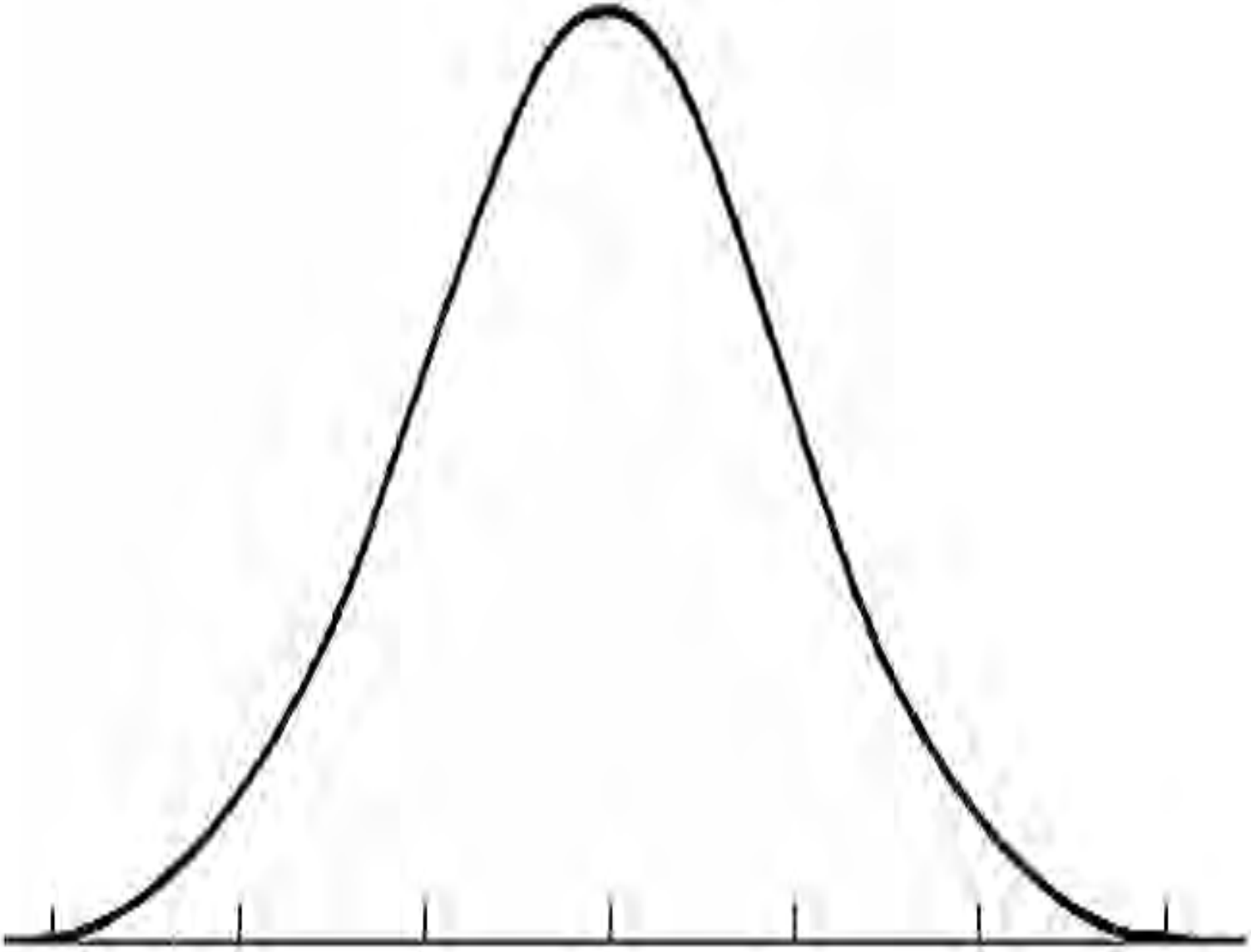
The Snowy Climate Reality Check

Reality Check:
Flush Mount and Snow

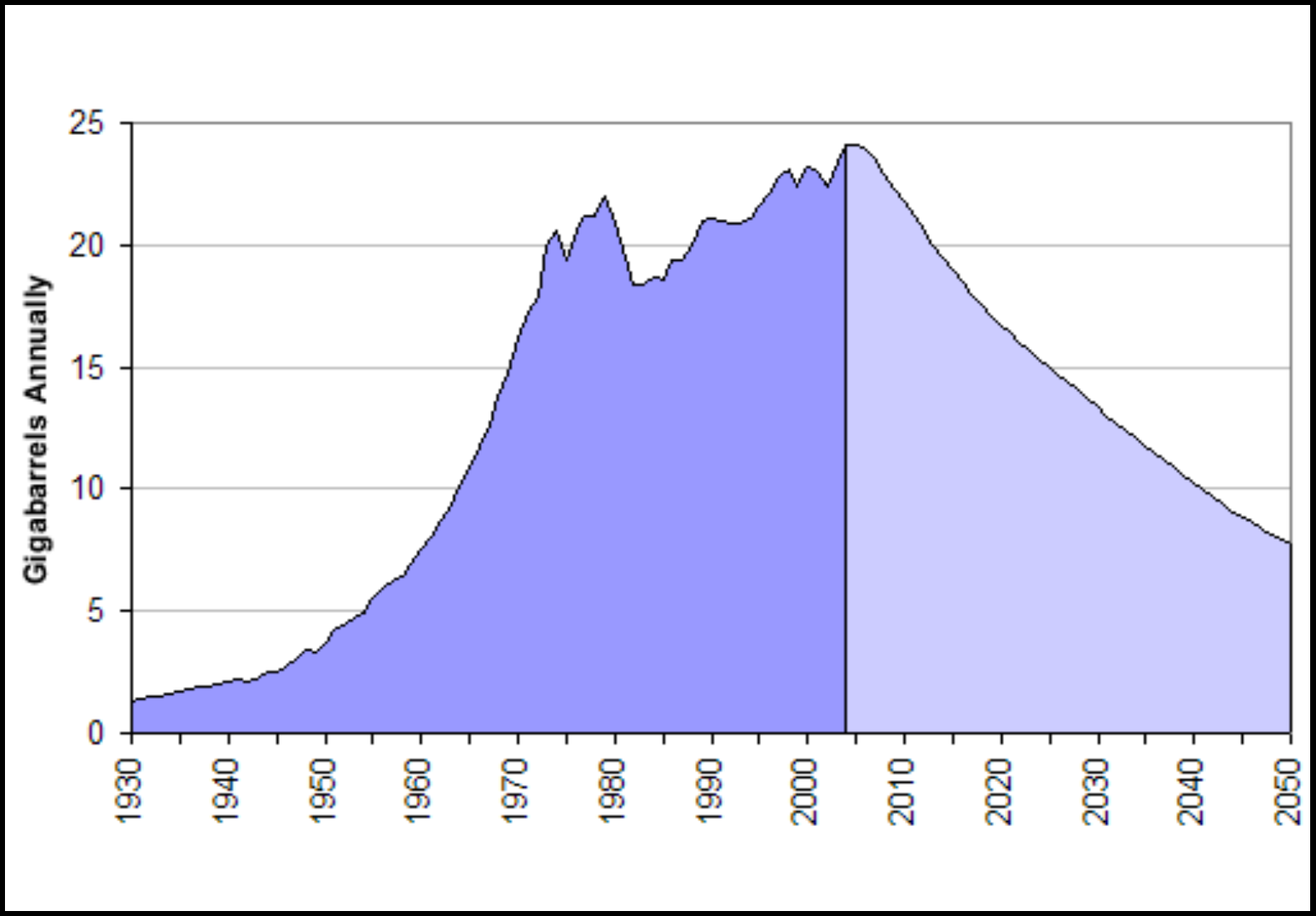

09/07/2012 PM 04:10

Solar Electric Sizing

- Load Analysis - Determine ADC (Average Daily Consumption)
- Site Analysis - Determine PSH (Peak Sun Hours)
- ADC / PSH = PV Array Size
- Determine PV Make and Model
- De-rate PV module for real world application (.7 multiplier)
- Determine # of modules necessary to meet array size



World Oil Production



Incentives for Solar

www.dsireusa.org

Database of State Incentives for Renewable Energy

Public Incentives for Residential Solar Power

- Federal Tax Credit of 30%!
- 1.5% Solar Standard (IOUs only)
- Community Solar Gardens
- Net Metering up to 1 MW
- Performance Based Incentive
- Value of Solar (PV) tariff
- Transmission & Storage Study
- Value of Solar Thermal Study
- PACE (20 year financing)