


SolarRay's "FAMILY" System: Example uses

Appliance	Qty.	Run Watts	Hours /Day	Days /Week	W-hours /Day	Percent of Total	NOTES
Fluorescent & halogen Lights	5	35	6	7	1050.0	15.8%	
Heating System	1	600	2	7	1200.0	18.0%	non electric gas wall heaters
Blender	1	350	0.1	2	10.0	0.2%	
18 cu. ft. Refrigerator	1	125	8	7	1000.0	15.0%	Energy Star Rated over/ under
Microwave Oven	1	900	0.25	7	225.0	3.4%	
Toaster	1	600	0.08	7	48.0	0.7%	
Fan (Kitchen, Bed, Bath)	1	50	4	7	200.0	3.0%	4 hrs/ day only
Coffee Maker	1	800	0.1	7	80.0	1.2%	Carafe style, no hot plate
25" regular Television	1	175	3	7	525.0	7.9%	turned off with powerstrip
VCR or DVD player	1	30	2	1	8.6	0.1%	when not in use
Satellite receiver	1	30	3	7	90.0	1.4%	
Component Stereo/ CD	1	25	5	7	125.0	1.9%	
Desktop Computer	1	175	3	7	525.0	7.9%	
Computer Printer	1	30	0.5	7	15.0	0.2%	
Power Tool	1	750	0.25	2	53.6	0.8%	Circular Saw or Big Drill, etc.
Washing Machine	1	200	1	7	200.0	3.0%	7 loads/ week
Sewing Machine	1	80	0.25	1	2.9	0.0%	
Clothes Iron	1	1000	0.5	1	71.4	1.1%	
Small Vacuum Cleaner	1	650	0.5	1	46.4	0.7%	
Hair Dryer & curling iron	1	1000	0.25	5	178.6	2.7%	
AC 1&1/2 HP Well Pump	1	2000	0.5	7	1000.0	15.0%	150Gal/ day from 400 ft. well
Total Daily Average Watt-hrs					6654.4		

The "FAMILY" System can run most normal household appliances just like on grid. The Coffee Maker, and refrigerator are still specially chosen high efficiency models. . A large sinewave inverter can run larger appliances like a deep well pump, etc..

<b>PV System Worksheet</b>		Customer: Family Example			Solar Ray PO Box 2228 Taos, NM 87571 (505) 737-9553
© 1999 by Dankoff Solar Products		Date: Oct. 31, 2005			
See Instruction File		Prepared by: Ray			
Version 2.0 8/99 adapted by SolarRay					
 Yellow boxes are for your changes & input					
			TOTAL		
			<b>LOAD =</b>	<b>6654</b>	<b>Watt-Hours per Day</b>
EFFICIENCY ESTIMATES (See Instruction File)		Battery Average Efficiency	<b>88%</b>	7562	
		Inverter Average Efficiency	<b>92%</b>	8219	
		Wiring & Distribution Efficiency	<b>98%</b>	8387	
<b>Energy to Be Generated</b>				<b>8387</b>	<b>Watt-Hours/Day</b>
DC System Voltage	<b>48</b>	Season of max. energy use	<b>Winter</b>		
Avg. Peak Sun Hrs/Day	<b>6</b>	PV:Battery mismatch + loss factor	<b>100%</b>		
Solar Tracker Gain ?	<b>0</b>	<b>PV Array Required</b>	<b>1398</b>	<b>Watts (peak rating)</b>	
<b>PV ARRAY - Select size &amp; quantity of PV modules</b>					
Full Array would be	<b>8</b>	<b>175</b>	<b>- Watt Modules =</b>	<b>1400</b>	Watts
Proposed Array of	<b>8</b>	<b>Modules = total rated ---</b>		<b>1400</b>	Watts
Array voltage	<b>48</b>	Module voltage	<b>48</b>		
<b>BATTERY BANK</b>					
Days of Energy Storage	<b>5</b>	At Maximum Depth of Discharge	<b>100%</b>		
		Batt Capacity at Low-Temp	<b>90%</b>		
		<b>Requires Battery Bank of</b>	<b>971</b>	<b>Amp-Hours</b>	
Battery amp-hr rating	<b>963</b>	Required number of batteries =	<b>8.1</b>		
Battery nom. Voltage	<b>6</b>	Proposed number of batteries =	<b>8</b>		
		for a Battery Bank of	<b>963</b>	<b>Amp-Hours</b>	
		Proposed Days of Storage	<b>5.0</b>		
<b>BACKUP SYSTEM</b>					
Battery Charger Amps (rated)	<b>45</b>	Load Generator to	<b>90%</b>	<b>80%</b>	Power at Altitude (- 2 to 3% d
Trace DC Charging Efficiency	<b>50%</b>	<b>Minimum Generator Rating =</b>	<b>6,000</b>	<b>Watts</b>	
<b>Generator Running Time per</b>					
when peak sun per day is	<b>4.5</b>	Hours -- Generator Must Run	<b>8.2</b>	<b>Hours/Week</b>	
when peak sun per day is	<b>1</b>	Hours -- Generator Must Run	<b>20.0</b>	<b>Hours/Week</b>	