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BATTERY Sizing

Use this worksheet to determine your battery requirements. We have included an example column and a column for your system.

1. Determine total watt-hours per day required from your load calculation.
2. Determine days of storage required. This approximates the greatest number of cloudy days in a row expected (3 to 7 is common, 7 to 14 for remote communications and monitoring sites).
3. Multiply line 2 by line 1.
4. Determine planned depth of discharge. 80% is the maximum for lead acid deep cycle batteries, 50% is a common amount for optimum longevity. Divide line 3 by .80 or .50, respectively.
5. Derate your battery for low temperatures by multiplying the answer in line 4 by the factors in the table below using the lowest expected weekly average temperature.
6. Find the watt hour capacity of your selected battery. This is voltage times ampere hour capacity. Example; Surrette S-460 deep cycle, 6 volts x 350 amp-hours = 2100 watt-hours
7. Divide line 5 by line 6. The result is the number of batteries required.
8. Round number of batteries to fit system voltage.
   Example; A 24 volt system requires sets of 2 when using 12 volt batteries; sets of 4 when using 6 volt batteries and sets of 12 when using 2 volt cells.

Rule of thumb: We recommend that your battery bank's watt-hour capacity (at the 20 hr rate) be at least 10 times more than your daily corrected watt-hour figure from the load evaluation form located earlier in this section.

Battery Temp. (F°)	Multiplier	Battery Temp. (F°)	Multiplier
80	1.00	40	1.30
70	1.04	30	1.40
60	1.11 (example)	20	1.59
50	1.19		

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Step	Example	Actual Figures
1	1000 watt-hour	
2	7 storage days	
3	7000 watt-hours	
4	7000 /0.50 = 14,000	
5	14,000 x 1.11 = 15,540	
6	2100 watt-hours	
7	7.4	
8	2.17	