

# Emergency Power, running the Ham Shack when the lights go out

## Battery Power

Types: Wet, AGM, Gelled (Deep Cycle only)

Acid - corrosive danger

Hydrogen Gas - explosive danger

Short Circuit – burns, fire/explosion danger

Circuit Breakers or Fuses Required to protect wires

Wire sized to minimize voltage drop

Table 1 – Amps Column is NEC Maximum Recommended

Table 1 – Voltage Drop per 20 feet at 20 Amps

Need 11 volts *minimum* for most radios

Voltage change under load causes distortion

Sizing the Battery Bank

Load (amps) X Duty Cycle X Hours = Amp-Hours

Table 2 – Approximate Peak and Average Tx current draw

Must estimate Duty Cycle

Figure 0.5A for receive

LED Lighting recommended

Inverter not recommended (power hog)

## System Design

Full-time System (PUD **and** Emergency, both available)

Automatic pick up

Stand-by System (PUD **or** Emergency, one or other)

Requires Isolation

Transfer Switch or Relay

Diode(s)

## Keeping the batteries charged

Power Company

Battery Charger

Don't transmit with battery charger on battery

Power Supply

Protect from Back Feed

Diode has 0.7-volt drop

Transfer Switch

Generator

Noisy

Must be outside – carbon monoxide exhaust danger

Fuel safety

Electrical Safety

Transfer Switch

Gen-verter

More likely to produce electrical hash (bothers HF more than VHF)

Jumper cables from vehicle

Alternative - Possible to have ham shack independent from PUD

Photovoltaic (Sharp 80W 12V \$449)

Wind (Air-X 400W/28mph 12V \$725)

Charge Controller mandatory

Great excuse to experiment with Alternative Power

## Vehicular Station

Self-contained and usually conveniently located

**Table 1.**

AWG	Amps	Ohms/Ft	V/20Ft
18	3	.006385	@20A
16	6	.004016	
14	15	.002525	1.01
12	20	.001588	.635
10	25	.000999	.400
8	35	.000628	.251
6	50	.000395	.158
4	70	.000249	.100
2	90	.000156	.062
0	125	.000098	.039
00	150	.000078	.031

**Table 2.**

Rig	Peak	Avg.
VHF FM	10A	10A
Packet	10A	10A
HF SSB	20-25A	14-16A
Pactor	20A	16A
CW	20A	9.6A