Electrical Budget Worksheet (Ankle Biter Santa Cruz 27)

1 Calculate your DC Loads:

Lighting	Amps	Hours	AH/Day	Comments
Running Lights (LED, bicolor/stern)	0.2	10	2.0	
Masthead Tricolor Light			0.0	
Anchor Light			0.0	
Strobe Light	0.8	10	8.0	actually run these off of 6 volt lantern batteries, not the "house system"
Spreader Lights			0.0	
Cabin Light (small)	1.0	1	1.0	
Cabing Light (big incandescent)			0.0	
Cabing Light (flourescent)			0.0	
Instrument Lights	0.3	10	2.5	compass lights…in fact I probably won't run these
Handheld Spot Light	10.0	0	0.0	
Other			0.0	
	Lighting AH		**13.5**	**since strobes run off of 6 volt lantern batteries, should be 5.5**

Galley	Amps	Hours	AH/Day
Refrigeration			0.0
Prop Solenoid			0.0
Other			0.0
	Galley AH		**0.0**

Electronics	Amps	Hours	AH/Day	
Autopilot	1.8	18	31.5	
VHF (receive)	0.5	1.5	0.8	
VHF (transmit)	5.0	0.5	2.5	
SSB (receive)	1.5	1	1.5	
SSB (transmit)	28.0	0.3	8.4	
SSB Digital controller			0.0	
GPS			0.0	I have 3 handhelds, which run on AA batteries. I'm taking a lot of batteries.
Instruments			0.0	
Weather fax receiver			0.0	
Radar (standby)			0.0	
Radar (transmit)			0.0	
AIS			0.0	??? I don't have a NASA AIS, now, but might get one.
Energy Monitors			0.0	
Stereo			0.0	
Computer (screen off)	1.5		0.0	
Computer (screen on)	2.1	1	2.1	one hour every other day to send/receive e-mail
Computer (serial adapter)	0.5	1	0.5	
Other			0.0	
	Electronics AH		**47.3**	**this section is pretty accurate**

Plumbing	Amps	Hours	AH/Day	
Fresh Water Pump	8.0	0	0.0	Calculate using average water consumption.
Bilge Pump(s)	5.0	0	0.0	This should be zero unless the boat leaks.
Other			0.0	
	Plumbing AH		**0.0**	

Inverter	Watts	Hrs/day	AH/Day	All values assume inverter efficiency = 85%.
Microwave			0.0	Power factor may mess up this estimate.
Chargers (nicad)			0.0	
Other			0.0	
	Inverter AH		**0.0**	

Gross Energy Consumption AH/Day	**60.8**	**actually should be 52.8 since I am using 6v. Lantern batteres on strobes**

2 Alternative Energy Sources

Device	Amps	Hrs/day	AH/day	
fixed Solar, avg	8.4	7	58.8	Two 40 watt and two 30 watt panels, 140 watts total
flexible, avg	0.0	0	0.0	
Water, avg.			0.0	
Contribution of AES AH/Day			**58.8**	

3 Net Energy Consumption, AH/Day	**2.0**	**So I'm going into the red about 2 amp/hours per day if run strobes from "house"**
4 Desired Hours Between Charging	**120**	**five days**
5 Range of Battery Use	**0.35**	For example, from 50-85% state of charge.
6 Recommended Battery Capacity	**28**	
7 Alternator Output, Amps	**30**	**30 amp portable gas generator: Target would be 25% flooded, 40% gel, of capacity.**
8 Charge Efficiency Factor	**0.85**	Gels = 95%, flooded cells = 85%
9 Minimum Minutes to Charge	**23**	**run the generator for 23 minutes every five days**

will likely run an electricity deficit during first 4 days, so run generator on day 4 or 5
I plan to use the windvane to steer the first few days, then switch to autopilot.

SOLAR PANEL ARRAY	type	amps	hours	amp/hrs	
	30 watt BP solar panel	1.8			
	40 watt Kyocera solar panel	2.4			
	30 watt BP solar panel	1.8			
	40 watt Kyocera solar panel	2.4			
	Total amperage of array	**8.4**	**7**	**58.8**	This is conservative. Lots of people tell me I'll get more than 7 hours charge a day.