Electrical Budget Worksheet (Hecla - Hammerhead 54)

DC loads calculated for 12-volt system, single-handed, amp-hours per day

Lighting	Amps	Hours	AH/Day	
Running Lights LED			0.0	
Masthead Tricolor Light LED	0.3	9	2.7	
Anchor Light LED			0.0	
Strobe Light Xenon	0.8	9	7.2	
Spreader Lights			0.0	
Cabin Light LED	0.3	9	2.7	
Cabing Light (flourescent)	2.0	1	2.0	
Instrument Lights	0.3	9	2.3	
Handheld Spot Light			0.0	
Other			0.0	
	Lighting AH		**16.9**	

Galley	Amps	Hours	AH/Day	
Refrigeration	4.0	6	24.0	
Prop Solenoid			0.0	
Other			0.0	
	Galley AH		**24.0**	

Electronics	Amps	Hours	AH/Day	
Autopilot	3.0	20	60.0	
VHF (receive)	0.5	24	12.0	
VHF (transmit)	5.0	0.5	2.5	
SSB (receive)	1.5	2	3.0	
SSB (transmit)	28.0	0.5	14.0	
SSB Digital controller	0.2	2	0.4	
GPS chartplotter	1.2	24	28.8	
GPS backup	0.3	24	7.2	
Instruments	1.0	24	24.0	
Radar (standby)	3.0	8	24.0	
Radar (transmit)	4.0	1	4.0	
AIS	0.1	24	2.4	
Energy Monitors	0.0	24	0.5	
Stereo	1.5	10	15.0	
Computer (screen off)			0.0	
Computer (screen on)	2.1	3	6.3	
Computer (serial adapter)			0.0	
Other			0.0	
	Electronics AH		**204.1**	

Plumbing	Amps	Hours	AH/Day	
Fresh Water Pump	8.0	0.3	2.4	
Bilge Pump(s)			0.0	This should be zero unless the boat leaks.
Other			0.0	
	Plumbing AH		**2.4**	

Inverter	Watts	Hrs/day	AH/Day	Assume inverter efficiency = 90%.
Microwave			0.0	Power factor may mess up this estimate.
Coffee maker; 4 min/mug * 5	600.0	0.3	16.7	
Sandwich grill; 10 min/sandw * 2	700.0	0.3	19.4	
				Ex: pasta 2L water to boil = 0.2hr; boil 12
Cook pot	1000.0	1	92.6	min half power = 0.1hr
Chargers (nicad)	50.0	0.5	2.3	
Other			0.0	
	Inverter AH		**131.0**	

Gross Energy Consumption AH/Day			**378.3**	

Alternative Energy Sources				
Device	Amps	Hrs/day	AH/day	
Solar, avg	13.2	6	79.2	2 large panels with MPP regulator
Wind, avg	8.0	18	144.0	AIR-X Marine wind turbine
Water, avg.			0.0	
Contribution of AES AH/Day			**223.2**	

Net Energy Consumption, AH/Day			**155.1**	

Desired Hours Between Charging			**24**	

Range of Battery Use			**0.35**	From 50-85% state of charge.

Recommended Battery Capacity			**443**	Installed 2 x 4DA @ 210A-Hr = 420 A-Hr

Alternator Output, Amps			**105**	Target 40% AGM of capacity.

Charge Efficiency Factor			**0.90**	Gels = 95%, flooded cells = 85%

Minimum Minutes to Charge			**99**	Assumes alternator runs at full output.