

Solar Panel Specifications	Battery Specifications	Lights	Air Compressor	Power Needed
12 Volts	12 Volts	100 Lumens	120 Volts	Total Watts 300+32.4= 332.4 watts used a day
45 Watts	35 AH (amps per hour)	15 watts	.75 Amps	
12 Volts/45 Watts= 3.75amps	Volt*AH=Watts per hour	2hrs use	36 min use	Watts required / time of year sunshine hours = panel size
	420 W/H (Watts per hour)	10 Lights in total	1 air pump used	Winter
Solar Panel Power		Watt*Time Used=Watt used per day	Watt*Time Used=Watt used per day	332.4/2.99= 112 Watts total needed
Ave Hr of sunshine in MA		(15*10)*2=300 Watt per day	90*.36= 32.4 Watt used per day	Total Watt/ Watts of Solar Panel= # of Solar Pannels Needed
Winter				318/45≈8
2.99 Hours during winter days				
Watts*Ave Hr= Energy produced in watts				Summer
45*2.99=134.55				948/4.27= 223
				Total Watt/ Watts of Solar Panel= # of Solar Pannels Needed
Ave Hr of sunshine in MA				223/45≈5
Sumer				
4.27 Hours during summer day				
Watts*Ave Hr= Energy produced in watts				
45*4.27=192.15				