

Phone charger

Total

0

5

0

0

0

0

RV SALES SOLAR WORKSHEET

COLD Months)	_				_					_
DC Loads	Amps	Volts	X qty appliances	X run hours/day	Total Watt hours per day	Total AH Daily (=WH/12v)	Notes	V*A=P(watts)			
LED Lights	0.1	12	8	8	77	6.4		Volts	Amps	Solved Watts	(V*A)
Water pump	10	12	10	0.25	300	25.0	2 showers, dishwashing	38.5	8	308	
12v TV	2.75	12	1	0	0	0.0	Movie/TV; amps per manufacturer				
Bathroom Fan	2	12	1	0.25	6	0.5	2 showers; max fan uses 2 amps on high, 0.7 on low. (2 Amps on High, 0.7 on Low)	Watts	Amps	Solved Volts	(W/A)
Furnace Fan					0	0.0	(Cold months, 50% cycle time, while in camper)	250	8.8	28.40909091	
Refrigerator (propane mode)	1.9	12	1		0	0.0	(33% duty cycle estimated; when running on propane)				
Propane CO Alarm	0.2	12	1	24	58	4.8		Volts	Watts	Solved Amps	(W/V)
CPAP	35	12	1	1	42	35	330 WH actual based on actual home use measure (using heated hose and humidifier); actual usage is 70 W.	38 5	275	7 142857143	
Phone charger	2.5	5	2	8	160	12.2	2 phonos charged daily	50.5	2/5	7.142057145	+
Liquid tank heating pad	5.0	12	3	8	1440	120.0	On at 45°, off at 65°; very rough estimate of duty cycle				-
Charge eBike battery	2.5	12	1	8	240	20.0	Full charge from empty				
Total					2322	193.5	Note: Bluetti AC200 capacity 1700 WH; solar production capacity 2100 WH in 5h day				
WARM Months	>	-		_				_			
12v DC Appliances	Amps	Volts	qty appliance	erun hours/d	Total Watt hours per day	Total AH Daily	Notes				
LED Lights	0	12	0	0	0	0.0	Probably less light usage in summer				
Water pump	0	12	0	0	0	0.0	2 showers, dishwashing				
12v TV	0	12	0	0	0	0.0	Per manufacturer				
Bathroom Fan	0	12	0	0	0	0.0	Summer cooling venting (on high, 0.7 on low)				
Furnace Fan	0	12	0	0	0	0.0	(Cold months, 50% cycle time)				
Refrigerator (propane mo	0	12	0	0	0	0.0	(50% duty cycle estimated)				
Propane Alarm	0	12	0	0	0	0.0					
СРАР		0	0		0	0.0	Per manufacturer, when using climate line and				

humidifier

0.0

0.0

	Using Cold Se	ason Numbers Higher Power		l								
Watt Hour Needs (total, and Lithium; Carried from Daily Needs Tab)	2322	Notes		1								
Watt Hours Battery Bank (lead acid)	4645	(= 2x the WH needs, given lead acid and only drawing to 50% charge)		1		Input V Panel Input A Panel W To Battery V To Battery A Sumia Used Panels Imput V 31 9 279 14.5 19.2413731 Sumia Used Panels Imput V 18 11.1 200 14.5 13.79310345 Nen 200 W panels. each Imput V each 0 14.5 13.79310345 Nen 200 W panels. each Imput V IMatts x0h charge day % of my Whited Imput V Imput V Imput V 90 0.77 424 2117.5 91% Imput V Imput V 90 0.77 221 1155 50% Imput V Imput V 90 0.77 208 1560 66% Imput V Imput V 91 0.77 208 1560 66% Imput V Imput V 92 0.77 208 1560 66% Imput V Imput V						
Divided by voltage	12			1							each	
Amp hour bank need (AKA-Number of batteries needed)	194	Lithium, at 100 discharge										
2 6v 235 AH batteries (lead acid) Cost	\$260.00	5-7 year life	To 50% discharge = 1 day use really should plan for 2 day use, but									
	Going with more source managements for upgrade battery bank iter.											
200 AH lithium iron phosphate Cost	\$800	~20 year life		1								
Minimum solar array size = needed watt hours / 5 hours of charge time per day on werage	775	Watts solar]								
					Panel Input V	Panel Input A	Panel W	To Battery V	To Battery A			
actor in efficiency/de-rated values from green table at right					31	9	279	14.5	19.24137931	Suniva Used Panels		
50 W* 0.77 panel and charger derating (common from forum)	424	Reasonable expectation			18	11.1	200	14.5	13.79310345	New 200 W panels, each		
nd *5h per day	2118	Expected generated Watt hours per day										
					De-rated	De-rated Factor	De-rated W	Watt hours	% of my WH Need			
					Panel Watts			x5h charge day	(cell B3)			
harge controller sizing					200	0.77	154	770	33%			
anel specs approximately 9 Amps					550	0.77	424	2117.5	91%		FI	
	Panel Watts Available Amps at 12 V			300	0.77	231	1155	50%		-		
	550	61.1			400	0.77	308	1540	66%			
	450	50.0									+	
	400	44.4									+	
											+	
											⊢	

NewNewNewNewNewNewNewNewNewNewNewNewNew111 <th>Solar - Flooded Lead Ac</th> <th>d</th> <th>2x100 Amp hour</th> <th>s batteries gives a</th> <th>about 100 Amp hours if using max 50%</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Solar - Flooded Lead Ac	d	2x100 Amp hour	s batteries gives a	about 100 Amp hours if using max 50%							
And and and bAnd and		Number	Cost Each	Total Cost	Notes		Pros	Cons	Expected years of life	6		
Cape And	Dattories	2	\$130.00	\$260.00	6V 23 SAmp Hours batteries in series.		Inexpensive, basic.	Need to maintain electrolyte.	Cost per year	\$176.67		
	Charge Controller	1	\$300	\$300.00	MPPT. Need to handle either 20-30aAmp and 500 W input.			Pay attention to mobile uses.				
	Solar panels	2	\$150	\$300.00	275 W rated, expect approximately 200 W							
Image: Section of the sectin of the section of the	Add Inverter	1	\$200	\$200.00	For 110 outlet to run computer etc. Pure sine wave inverter with remote switch							
Autor Control Contro Control Control				\$1,050.00								
Best Halling Aussiling Aussiling <th></th>												
Image Image <th< th=""><th>Solar - Lithium batteries</th><th> BLUETTI AC</th><th>200, 175 OWH</th><th>WITH BUILT I</th><th>N MPPT CHARGE CONTROLLER, PURI</th><th>E SINE INVERTER</th><th></th><th></th><th>·</th><th></th><th></th><th></th></th<>	Solar - Lithium batteries	BLUETTI AC	200, 175 OWH	WITH BUILT I	N MPPT CHARGE CONTROLLER, PURI	E SINE INVERTER			·			
Kain I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Number	Cost Each	Total Cost	Notes		Pros	Cons	Expected years of life	20	1	
Barbon 1 10 <th1< th=""><th>Divets</th><th>1</th><th>\$1,200</th><th>\$1,200</th><th>Indigogo inexpensive Normally ~ \$1600.00</th><th></th><th>Long Me, full use of capacity.</th><th>Good to about 4° F. Doern't easily fit in all RV spaces space, needs to be ware for low temp concerns in cold sesson camping. Substantial inverter loss up to 4% per hour, and the system is either on or off no option for direct DC power to camper panel with the unit being powered off.</th><th>Coat per year</th><th>\$75.00</th><th></th><th></th></th1<>	Divets	1	\$1,200	\$1,200	Indigogo inexpensive Normally ~ \$1600.00		Long Me, full use of capacity.	Good to about 4° F. Doern't easily fit in all RV spaces space, needs to be ware for low temp concerns in cold sesson camping. Substantial inverter loss up to 4% per hour, and the system is either on or off no option for direct DC power to camper panel with the unit being powered off.	Coat per year	\$75.00		
Bar And 2 8 <t< th=""><th>Charge Controller</th><th>0</th><th>\$130</th><th>0</th><th>Bull-In</th><th></th><th>Capacity close to equal to 3 lead acid.</th><th></th><th></th><th></th><th>1</th><th></th></t<>	Charge Controller	0	\$130	0	Bull-In		Capacity close to equal to 3 lead acid.				1	
Alt loss I I I I I I I Control I I I I I I I I Control I I I I I I I I I Control I	Solar panels	2	\$150	\$300	275 W rated, expect approximately 200 W		Extremely low maintenance				1	
Image: state I	Add inverter	0	\$200	0	Bull-in 2000 W						1	
Control Notes Control (Notes) Notes				\$1,500							1	
Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Section 1 Control Section 1 Vertical Sectin												
Image	Generator											
Characterization No. No. No. No. No. No. No. No. No. State No.		Number	Cost Each	Total Cost	Notes		Pros	Cons	Expected years of life	15		
Name	Generator (dual fuel	1	\$500.00	\$500.00	Sealed deep-cycle lead acid		Extremely easy to use; reliable	Fuel cosumption, noise in camp	Cost per year	\$105.33	PLUS FUEL and maintenance	
Presented -	Secure lockable bracket to trailer	1	\$100.00	\$100.00			Allows AC and microwave use	Minor maintenance				
1 100 100 100 100 100 100 100 100 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200	Propane tanks 30 gal	2	\$100.00	\$200.00			Maximum flexibility					
And the second secon		6	\$130.00	\$780.00								
Constrainting Sector				\$1,580.00								
Case - Access Teal - Set With 12: A large L												
Internet	Solar - Lithium batteries	AmpereTime	2400 WH / 200	Amp Hour B	attery with pure sine inverter, Victron M	IPPT CHARGE CONTRO	DLLER					
Anne I Bin Space Spac		Number	Coat Each	Total Cost	Notes		Prox	Cons	Expected years of ite	20		
Charge Conder 1 Dot None Official UPT Market and and an antimative present and antime market present antime market present and antime market present antin present antime market present antime market present antin pre	Batteries .	1	\$800	\$800	Amperage Time = 200 Amp Hours		Long Mr. 5 year warranty; Infernal BMS; WH capacity well in excess of max daily power needs, and still can full sechange in one day on solar. Allows for simple battery to RV input for 12V power while inverter is off.	Good to about -41 F	Cost per year	\$79.00		
Gargendo 2 80 2 80 2 Manufactor	Charge Controller	1	\$300	\$300	Viction 50/100 MPPT. Need to be able to handle either 20-30 Amp, and 500 W input.		Bluetooth monitoring and settings					
Add instrum 1 100 1	Solar panels	2	\$150	\$300	275 W rated, expect about 200 W		Minimal maintenance; 25 year warranty					
Lee langeraler califi 1 \$10 \$10 down lange arear to bane dauge protection of the protecting protec	Add inverter	1	\$150	\$150	2000 W pure sine wave		ON switch to use large battery as ahore power (all but AC).					
33.00	Low temperature cutoff	8	50	\$30	Wolron temp sensor to connect to above charge controller; can set low temp charge protection on battery BMS							
				\$1,580								

2 panels																temp config to batteries should be fine to cu 6 voltage drop at th RRENT FL 40A 50A 40A 50A 40A 50A 40A 50A 40A 50A 40A 50A	
If parallel (like to like) - add amps, volts stay same												Single panel for temp config Wire from Victron to batteries Amps out at 14v 5.357142857 Existing 10 AWG should be fine to lead acid. Could have a 10% voltage drop at distance					
If series (+ to -), add volts, amps stay same																> config atteries Id be fine to current tage drop at that NT FU 50A Amo Amo Amo Amo	
					2 pa	anels							Single	panel fo	r temp o		
2x 275w panels @ Open Circuit 38.5v 9.3a; Max Power 31.1v and 8.85 a					Wire	e from Vict	ron to ha	itteries					Wire fro	m Victre	on to bat	2	
0.00 0	Amne	Volte	Watte	De-rated W at 75%	Amp	ne out at 1	11/						Amps	ut at 14	,	Í	
Parallal autnut anan airauit	19.6 pominal	24.4	200	150	10.7	7	3% v	oltage dro	a				5.357142857				
raraner output open circuit	10.0 HOITIITIAI	34.4	200	150									Existing	10 AW(S should	config tteries d be fine to current age drop at that NT F1 S0A Atterior Atterior Atterior Atterior	
Series output open circuit	9.3 nominal	77 nominal	550	412.5	5 30 a	amps at 20	ft 6 AW	G for full	trailer run				lead ac	d.		ſ	
					30 a	amps at 6 f	eei 10 AV	VG if batt	eries at cl	harge (control	ler	Could h	ave a 10 a)% volta	je	
Wire in Parallel from roof to connector - 10 ga wire is fine for up to 30 amps more than 10 feet.																	
Pv to controller						CIE	CUIT	TYPE						CU	RREN	ñ	
						10% vo	TAGE DROP	3% volt	AGE DROP							1	
Controller specs up to 100V input,						Non C	ritical	Crit	ical	5A	10A	15A	20A 25	4 30A	40A	config tteries d be fine to curre age drop at that	
60A, and 700W, so can handle						0 to 20 ft.	0 to 6.1 M	0 to 6 ft.	0 to 1.8 M		16 AWG	14 AWG	14 12 AWG AW	10		1	
Series will vield lower amos that						30 ft.	9.1 M	10 ft.	3.0 M	16 AWG	14 AWG	12 AWG	AWG AWA	AWG	AWG	ľ	
will be fine for 10 AWG wire from						50 ft	15.2 M	15.0	4.6 M		12		10 8			1	
panels to controller												10 AWG	ANU AW	AWG	AWG	-	
Add isolator switch to cut pv input						65 ft.	19.8 M	20 ft.	6.1 M	AWG			AWG	6		_,	
to charge controller						80 ft.	24.4 M	25 ft.	7.6 M	12	10 AWG	8	6 AW		4	Ľ	
						100 ft.	30.5 M	30 ft.	9.1 M	AWG		AWG	AWG		AWG	1	
						Z 130 ft.	39.6 M	40 ft.	12.2 M					AWG		- 4	
						ш					Carto -				2		