


CALCULATIONS

Country:	South-Africa		Cell:
Town	Johannesburg		27 84 442 4235
Latitude	-26.195246		
Longitude	28		
Elevation (m)	1 742		
	Tilt Angle		
Selected	30		www.solarpanelenergy.co.za
Optimum Annual	30		sales@solarpanelenergy.co.za
Optimum Worst Month	30		
	Irradiance		
Max	6.94	<i>Customer:</i>	
Min	6.08	Name: <input type="text"/>	
Selected	6.08	Date: <input type="text"/>	
		Tel: <input type="text"/>	
		Email: <input type="text"/>	

Expected Power generation on a clear sunny day

Total Load Wh per Day	17 538 W	17.54Kw
Nominal Voltage	48V	
Solar Module Peak Watts	270W	Watts Required
Solar Panels Required	12	3 235W
Capacity of Battery	200Ah	Actual
Number of Batteries @ 50% DOD	16	3 240W
Number of Batteries @ 80% DOD	8	
Days Autonomy	1.0	50% DOD = 50% capacity left in battery
Inverter Maximum (All on)	5 465W	80% DOD = 20% capacity left in battery

AC LOADS

Description	Qty	Watts	Hrs per day	Wh per Day
Decoder / DSTV	1	50	24	1200
TV	1	150	10	1500
Energy saver lights	6	10	6	360
Surveillance Camera	1	50	24	1200
Ceiling Fan	1	70	5	350
Iron	1	500	1	500
Microwave – Medium	1	800	1	800
Laptop	1	100	2	200
Computer	1	120	2	240
Kettle	1	2000	0.5	1000
Hairdryer	0	1500	0.5	0
Fridge / Freezer Combo	1	250	12	3000
Freezer	1	200	12	2400
Floor Polisher / Vacuum Cleaner	1	1000	0.5	500
Radio	1	25	5	125
DVD Player	1	40	2	80
Dishwasher	0	1500	0	0
Cell phone charger	5	10	4	200
Alarm System	1	15	24	360
Alarm Clock	1	15	24	360
Wi-Fi router	1	10	24	240
Total AC Wh per Day				14 615
20% Systems Losses				2 923
Total Load Wh per Day				17 538

Expected Power generation on a clear sunny day

SOLAR MODULE SIZING

Maximum Battery Recharge Days	10
Solar Module Peak Watts	270 Watts
Number of Modules in Series	3
Number of Solar Modules in Parallel	4
Solar Array Wp Required	3 235 W
Actual Solar Array WP	3 240 W
Number of Solar Modules Required	12

BATTERY SIZING

Days Autonomy Required	1.0
Maximum Depth of Discharge (%DOD)	50%
Minimum Battery Capacity Required (Ah@C24)	639 Ah
Battery to be Used Nominal Voltage per Cell or Block	12 Volts
Input Capacity of Battery or Cell Selected (Ah@C24)	200
Actual (Selected) Battery Capacity	800 Ah
Cells or Batteries in Series	4
Cells or Batteries in Parallel	4
Number of Batteries or Cells	16

Depth of Discharge (DOD) of the battery.

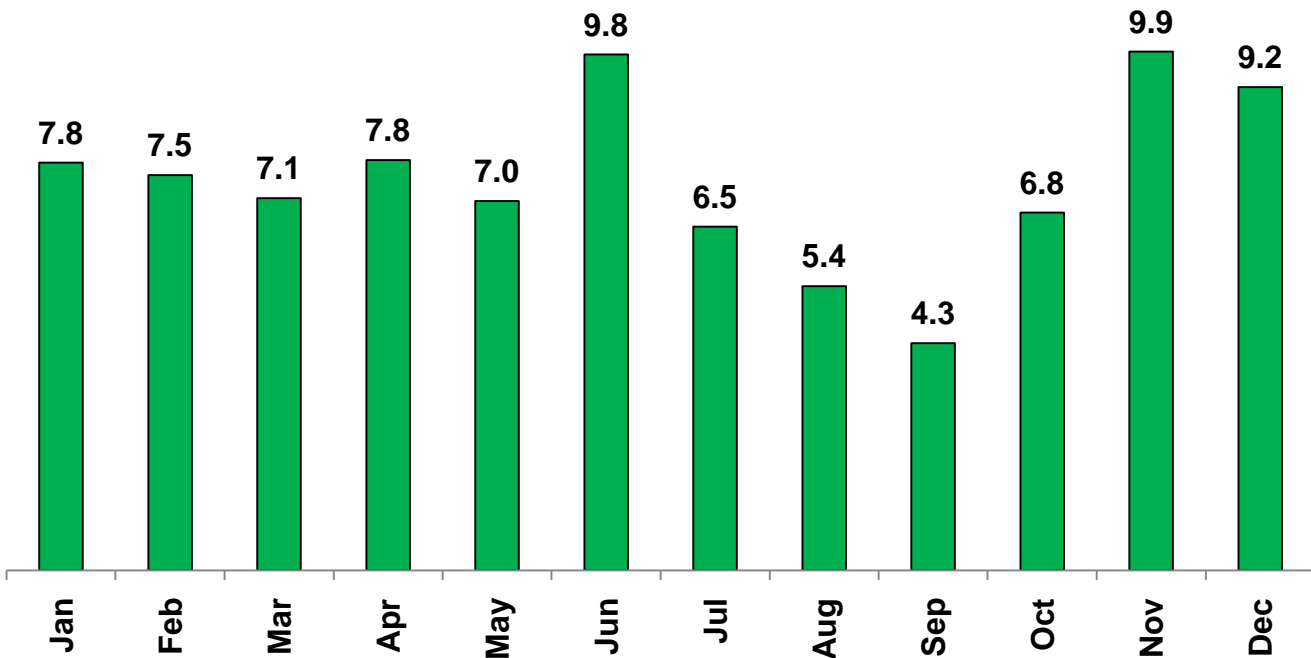
50% DOD = 50% Capacity left in Battery

80% DOD = 20% Capacity left in Battery

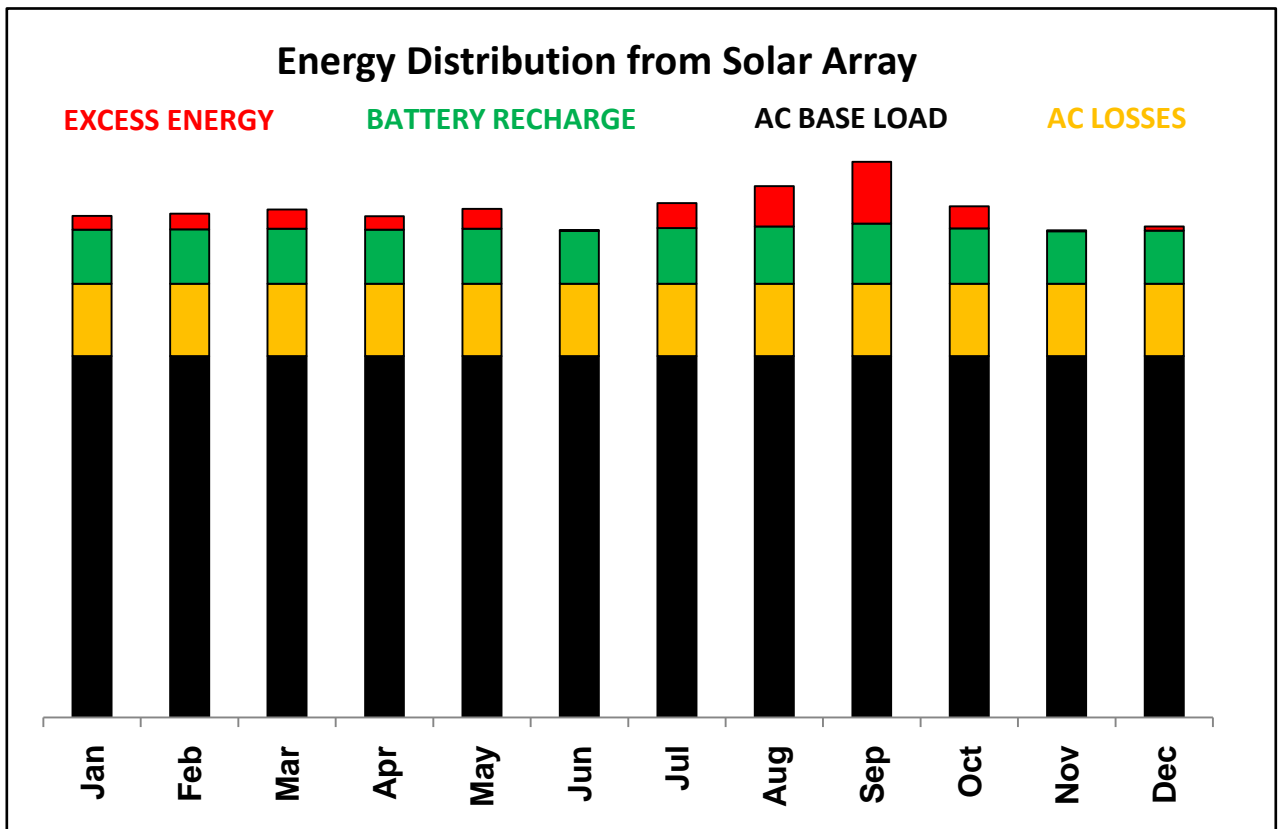
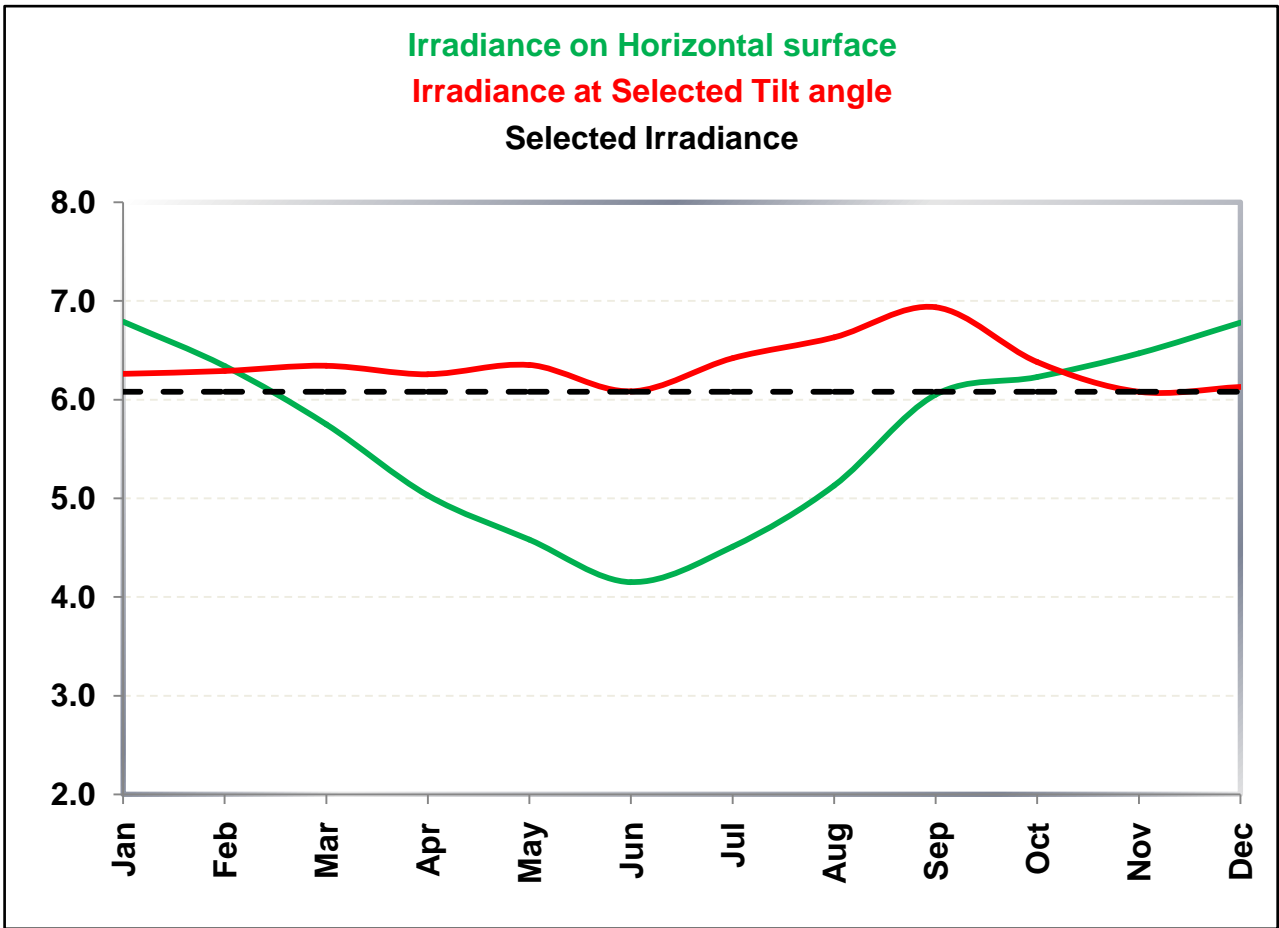
%DOD	Batteries Needed
50%	16
80%	8

Excess Energy Per Annum	
Without Batt Recharge	With Battery Recharge
293kWh	1 104kWh

Recharge Days from DOD



Expected Power generation on a clear sunny day



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