


CALCULATIONS

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

www.solarpanelenergy.co.za
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Total Load Wh per Day	8 748 W	8.75Kw
Nominal Voltage	48V	
Solar Module Peak Watts	270W	Watts Required
Solar Panels Required	6	1 614W
Capacity of Battery	200Ah	Actual
Number of Batteries @ 50% DOD	8	1 620W
Number of Batteries @ 80% DOD	4	50% DOD = 50% capacity left in battery
Days Autonomy	1.0	80% DOD = 20% capacity left in battery
Inverter Maximum (All on)	3 700W	

AC LOADS

Description	Qty	Watts	Hrs per day	Wh per Day
Decoder / DSTV	1	50	5	250
TV	1	150	5	750
Energy saver lights	4	10	5	200
Surveillance Camera		50		0
Ceiling Fan	1	70	5.5	385
Iron	1	500	1	500
Microwave – Medium	1	800	1	400
Laptop	1	100	2	200
Computer	1	120	1	120
Kettle		2000		0
Hairdryer	1	1500	0.5	750
Fridge / Freezer Combo	1	250	12	3000
Freezer		200		0
Floor Polisher / Vacuum Cleaner		1000		0
Radio	1	25	8	200
DVD Player	1	40	2	80
Dishwasher		1500		0
Cell phone charger	5	10	4	200
Alarm System	1	15	12	180
Alarm Clock		15		0
Wi-Fi router	1	15	5	75
Total AC Wh per Day				7 290
20% Systems Losses				1 458
Total Load Wh per Day				8 748

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	2
Solar Array Wp Required	1 614 W
Actual Solar Array WP	1 620 W
Number of Solar Modules Required	6

BATTERY SIZING

Days Autonomy Required	1.0
Maximum Depth of Discharge (%DOD)	50%
Minimum Battery Capacity Required (Ah@C24)	319 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	400 Ah
Cells or Batteries in Series	4
Cells or Batteries in Parallel	2
Number of Batteries or Cells	8

Depth of Discharge (DOD) of the battery.

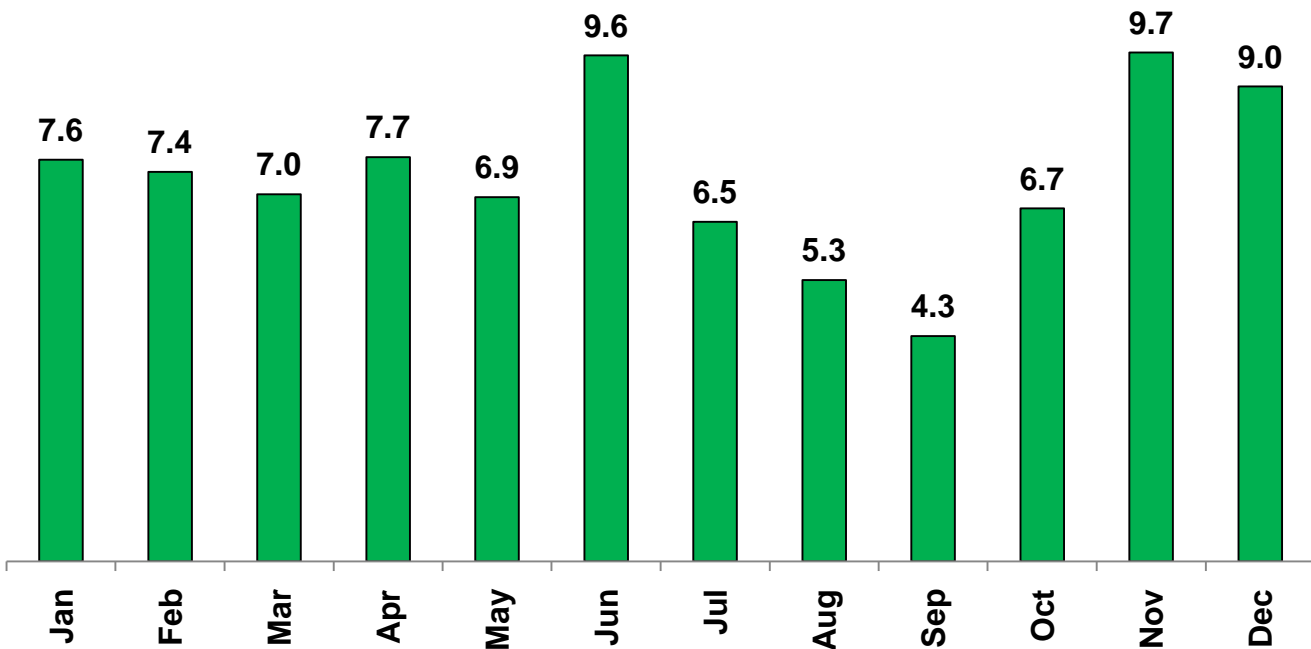
50% DOD = 50% Capacity left in Battery

80% DOD = 20% Capacity left in Battery

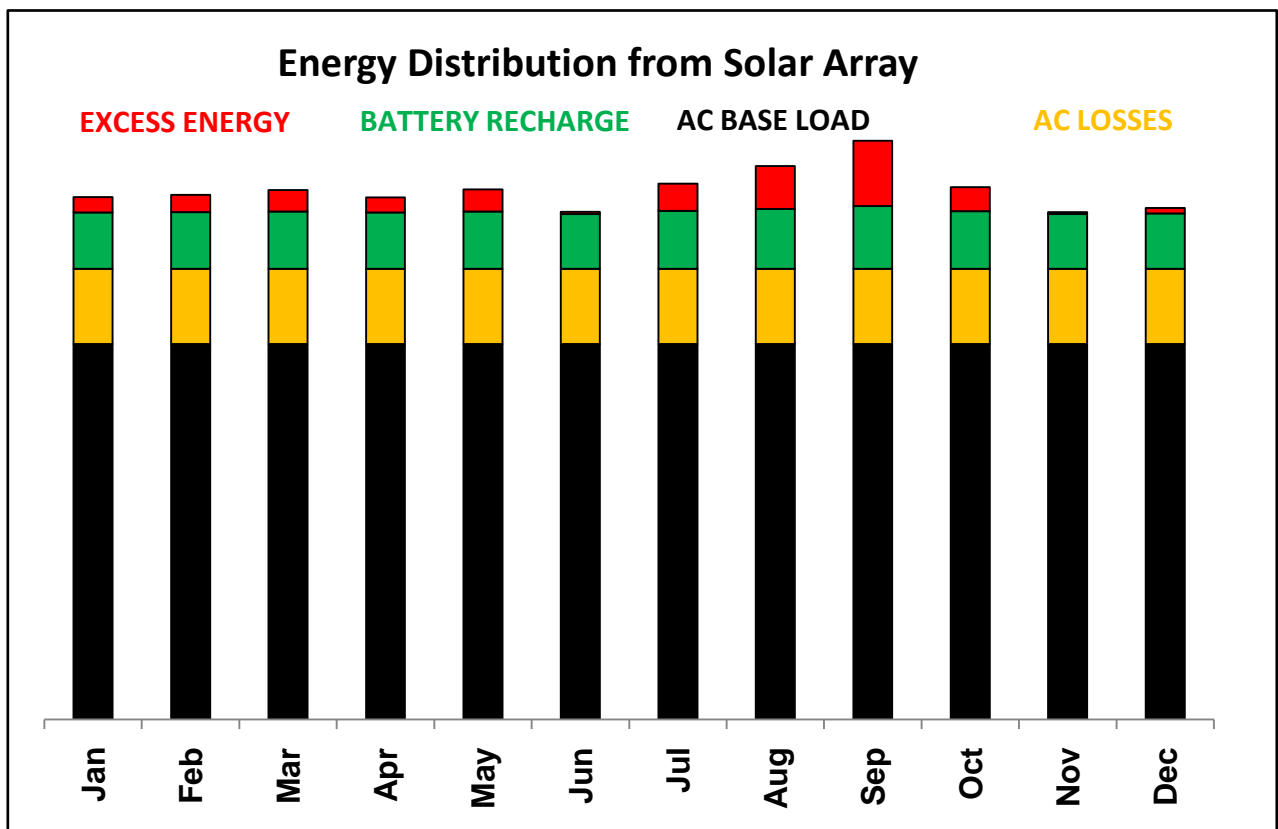
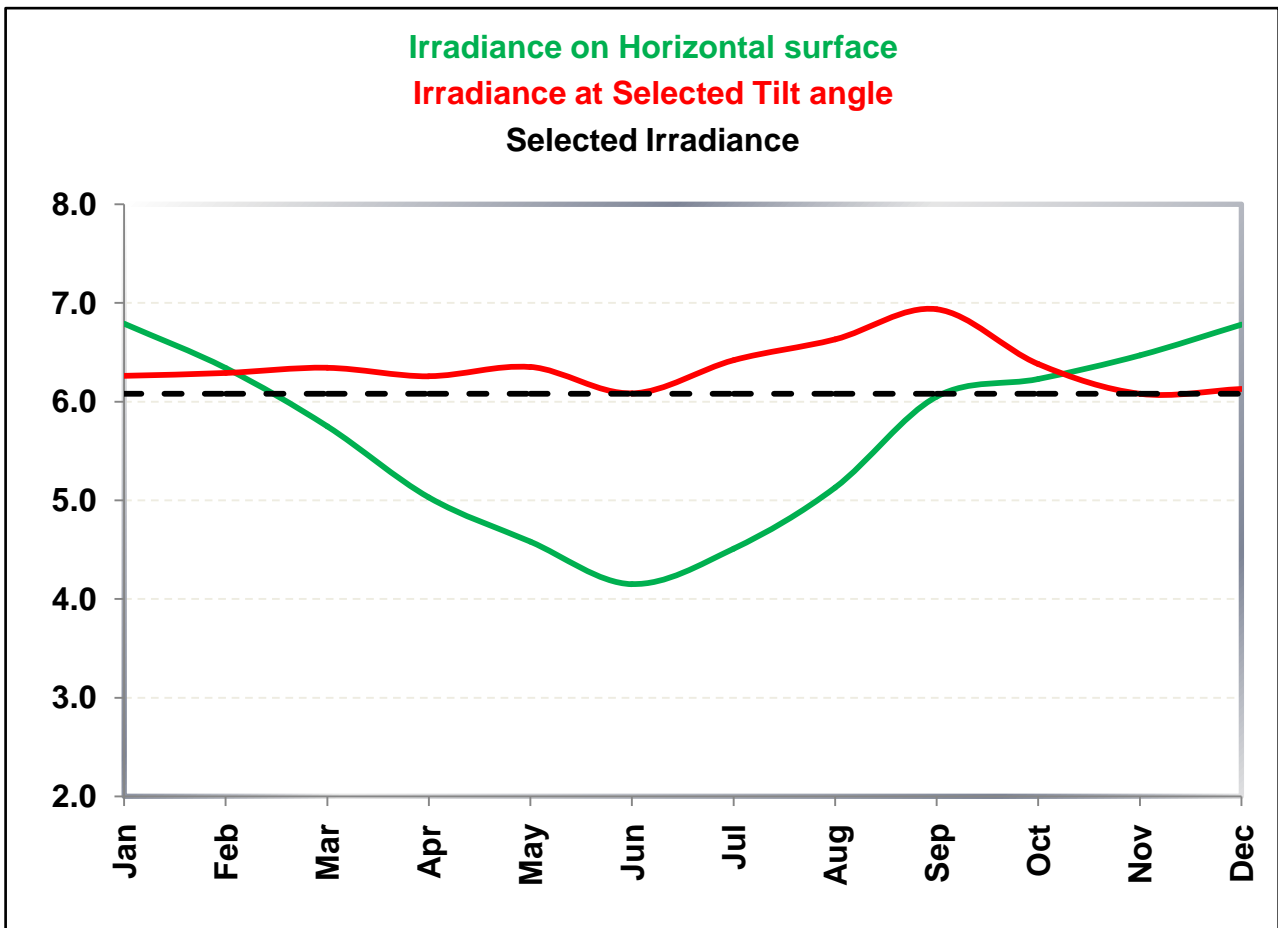
%DOD	Batteries Needed
50%	8
80%	4

Excess Energy Per Annum	
Without Batt Recharge	With Battery Recharge
154kWh	559kWh

Recharge Days from DOD



Expected Power generation on a clear sunny day



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