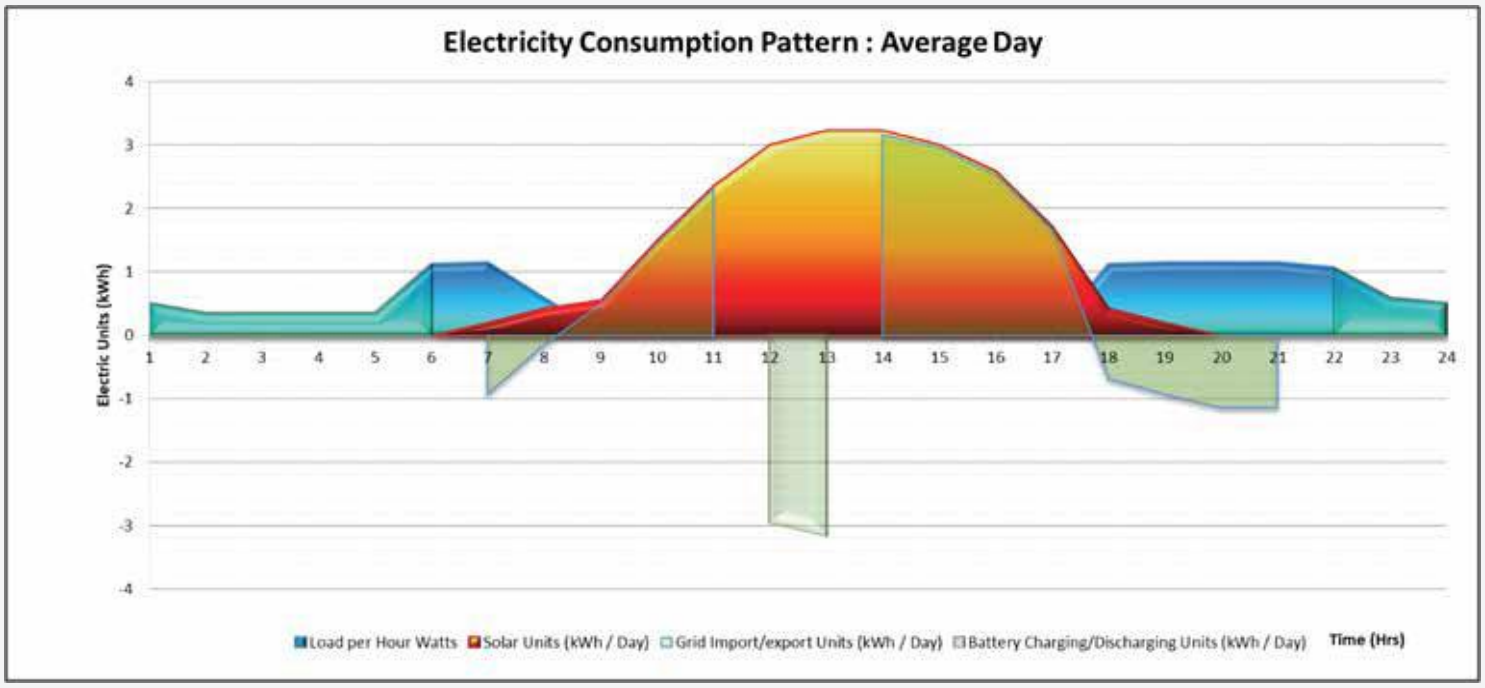
GRID INTERACTIVE HYBRID SOLUTION

Case: Solar System for an Independent House

Customer Rooftop Area: At least 50 sq.m. of shadow-free area
Customer Segment: Residential (Lucknow, UP)
Power Condition: Reliable with power outage of no more than 1-2 hours in a day
Motivation for the Customer: To reduce electricity bill and maximize savings during intermittent power outages
Total Electricity Bill = INR 2,672
Connected Load = 2.51 KW

Customer Energy Consumption Pattern and Analysis:
The company analysed the customer's rooftop for irradiance and monitored the customer's energy consumption profile in order to recommend an optimized solution.



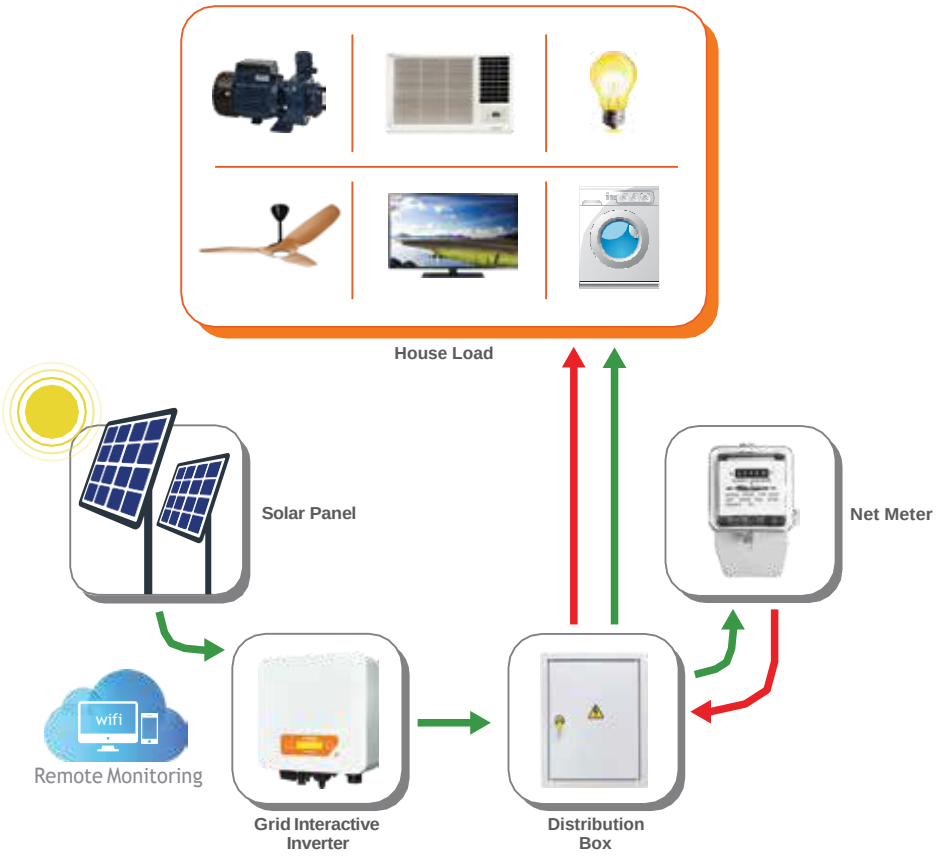
(xx)- means import from Grid		DARK (NIGHT)							SUNNY HOURS (DAY)											DARK (NIGHT)					
Time (Hrs) -->		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Load Units (kWh / Day)	12.06	0.51	0.36	0.36	0.36	0.36	1.12	1.15	0.59	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	1.12	1.15	1.15	1.15	1.07	0.59	0.51
Solar Units (kWh / Day)	22.50	-	-	-	-	-	-	0.22	0.43	0.56	1.51	2.37	3.01	3.23	3.23	3.01	2.58	1.72	0.43	0.22	-	-	-	-	-
Grid Import/export Units (kWh / Day)	9.55							(0.93)	(0.16)	0.50	1.45	2.31			3.17	2.95	2.52	1.66	(0.68)	(0.93)	(1.15)	(1.15)			
Battery Charging/Discharging Units (kWh / Day)	(0.89)	0.51	0.36	0.36	0.36	0.36	1.12						(2.95)	(3.17)									1.07	0.59	0.51

Sunny Hours	% of Total Solar Energy Generated per Day
7:00 AM	1%
8:00 AM	2%
9:00 AM	2%
10:00 AM	7%
11:00 AM	11%
12:00 PM	13%
1:00 PM	14%
2:00 PM	14%
3:00 PM	13%
4:00 PM	11%
5:00 PM	8%
6:00 PM	2%
7:00 PM	1%

Irradiance = 4.5
Energy Consumed per Day = 12.06 Unit
Solar Energy Generated per Day = 22.50 Units
Net Units Exported/(Imported) per Day = 9.55 Units
*Net Metering is required

What solution is recommended?_
Solar System Proposed: 5 kWp On-grid Hybrid
GIH Inverter: 5 KW, 1 Ph
Battery Type: Li-ion (LFP)
Battery Size @ 85 % DOD: 20 kWh

GRID INTERACTIVE INVERTER (GI)



Every solution component is chosen with best-in-class reliability and attractive warranty to ensure peace of mind and maximum solar utilization throughout the lifetime of the solar system.

WHAT IS THE OUTCOME FOR THE CUSTOMER?

Net export to grid is around 9.55 units, which can be used as surplus energy anytime during the year. Also, battery charging during power outage can utilize the same surplus energy, thus maximizing electricity savings by reducing the energy component of the bill to zero.

HOWEVER, IT IS TO BE NOTED THAT THE FOLLOWING FACTORS WILL AFFECT UP TO 100% REDUCTION IN ANTICIPATED ELECTRICITY BILL:

1. The energy consumption pattern of the customer
2. Type and rating of the solar inverter, panels and batteries in use
3. Quality of solar solution installed, commissioned and maintained, which includes inverter, panels, batteries and BOS
4. DC/AC losses generated by the solar solution
5. Solar energy per kWp/day produced
6. Electricity tariffs and other miscellaneous charges that the customer will incur from the associated DISCOM, including solar policies implemented by the concerned state authority

Authorized Signatory

Mr. Sandip Ghosh

EVP – Solar Business