

# URBAN LIVEABILITY FORUM

PRESENTS

## "MY RESOURCE. MY RESPONSIBILITY"

A knowledge series from the experts on effective management of resources to enhance urban Liveability during and post pandemic.

# MAKE YOUR OWN ENERGY AATMANIRBHAR HUM AATMANIRHAR BHARAT

by Harinarayan K.R., Founder & CEO and  
Dhwani Sunku, Manager - Sales & Marketing,  
U-Solar Clean Energy.

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### **Make your own energy. Aatmanirbhar hum. Aatmanirhar bharat**

- by Harinarayan K.R., Founder & CEO and  
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U-Solar Clean Energy.

In order to understand the reason behind our ever increasing Energy needs and its Environmental impacts on the Earth, we need to identify the contributing factors:

- Over population (population density in urban areas)
- Digitally connected living (Electronic gadgets)
- Smart mobility (EV, IOT and related systems)
- Smart building systems
- Food, clothing and other such lifestyle choices.

To conserve depleting natural resources and stop the increase in global temperatures, it is essential to switch to clean energy alternatives like solar energy – and the best place to start is at home.

Setting up a solar power plant at your home is not only environmentally beneficial but today it is also a method to reap economic value. Such power plants last for almost three decades, so instead of leaving behind a legacy of pollution, we are able to now pass on the values of clean energy for the future generations.

## CREATE, CONSUME AND CONSERVE SOLAR ENERGY AT SOURCE - YOUR HOME, YOUR SOCIETY, YOUR CITY

We need to understand that we have unlimited needs but the planet has limited capacity to satisfy them. The current crisis has made us realize yet again how important it is to preserve the resources by limiting the consumption and over-use. It has also presented to us an opportunity for us to reset our lifestyles and shift to a sustainable economy. This is the right time to limit the consumption and move towards the preservation of resources by adopting sustainable management of resources.

The best way to manage energy resource is to produce it at home through a clean source. Most rooftops at villas or independent houses (apartments too!) are not utilized and this is a great space to install a solar power plant. By either placing the panels on the ground, mounting them on cement structures or even elevating them at a height it is possible to generate at least 50% of your daily energy consumption from a clean energy source – THE SUN!

### BUSTING SOME MYTHS ABOUT SOLAR ENERGY

**1). Cost:** Generally, the apprehension surrounding installing a solar power plant at home comes from the fear that it is too expensive an investment to make. Let us dive into a scenario for installing a 5 kWp solar power plant system for an individual home/bungalow that generates approximately 600 units of energy a month. On average a family of 4 would see a monthly bill of ₹ 3,500-4,000, in the state of Karnataka\*\* this would mean an average use of ~500 (=3500/7). in which case, post installing the solar plant there is a reduction of almost 90% of the electric bill.




**2). Excess/ unused Energy:** Most states now allow net-metering - a method by which owners of solar power plants can connect their system to the DISCOM grid and export the excess energy that is being generated for either a credit to their bills or compensation^^ from the Government. So, for instance, this family is on vacation for two weeks and no energy is used in that time – the solar plant will still generate energy and export it to the grid.

The owners will receive credits in their monthly Electric bill for this energy exported ,thereby, not only saving but also earning in the process.

**3). Installation:** The electrical components themselves are very easy to put together - more like a “plug-and-play” solution, specially when a good EPC is involved in the installation process.

**4). Durability & RoI:** A solar plant of has a life of 3 decades (average). A 10 kWp capacity usually sees an IRR of 20% over its lifetime (25 years used for calculation), which is a safe bet. The Economic payback is somewhere within the first decade of owning it. And yet, the Environmental payback is immediate.



\*\* Electricity tariffs vary across state lines in India, as each state has their own electricity board that sets the tariff for the year. The formula to calculate tariff is Monthly Bill/Electricity Used, both of which are available on the monthly electric bill (EB) received from your regional DISCOM.

^^ The compensation is very low and definitely not enough to make money off the solar power plant at home, this is an incentive to adopt clean energy and a way for the DISCOM to track influx of solar power to the grid.

## SOLAR INSTALLATIONS IN AN URBAN SCENARIO

Urban installations can be categorized as apartments and commercial buildings where the capacity for rooftop solar is lower due to higher energy demand but reduced shadow-free space. Yet the concept of energy savings holds true. The reduction in bill could be 20%-30% which is lower than that of a home but measurably significant to the apartment association or business owner.

In apartments, solar is generally installed to offset common electricity bill to all its residents and therefore the requirement must be approved by the apartment association. A single resident cannot solely benefit from installing a rooftop solar power plant due to the ownership of the roof as a common area to all residents of the building.

Similarly, when a corporate is renting/leasing a space in a commercial building and hopes to install a solar power plant, they require written permission/approval from the owner to do so. In cases where the corporate (business entity) owns the commercial building, it is a direct and straightforward process that can take about 3 months for project completion and commissioning. Usual bottlenecks with corporates are the approval from management, in which case it takes about 6 months to start generation on the solar plant and reap financial benefits from it.

Adopting a solar power plant is very straightforward, a basic, step by step breakdown of what to expect when you reach out to a solar EPC developer is as below -

**Step 1.** Exchange of information: Any good contractor will always want to provide you with detailed feasibility assessment including your energy consumption, property's location and estimates about the amount of power that can be generated as so on.

**Step 2.** Tentative proposal: A commercial offer (price offer, investment, savings) and technical specifications will be shared based on the analysis of Step 1 above.

**Step 3.** Request for confirmation: On receiving confirmation after negotiation, the company will start scheduling and planning to execute the project.

**Step 4.** Installation and Commissioning: A typical solar installation <10 kWp will take anywhere from 3-6 weeks to install. Setting up the power plant is not labor intensive and it should not intrude on your activities at the property (be it home or apartment or school or office). The team will set up the structures, board the panels, connect the inverters, trench and secure cables, and lastly connect to the meter.

**Step 5.** Net-metering Approval (if-required) Not all solar power plants require net-metering. This is evaluated by the EPC in the feasibility due diligence stage and advised accordingly.

## CASE STUDIES:

### SUCCESSFUL IMPLEMENTATION AND FUNCTIONING OF URAN SOLAR POWER PROJECT

#### 1). Brigade Petunia, Banashankari, Bangalore

In August 2018, Brigade Petunia became the first apartment community in Bangalore to run 100% of their common area on solar power. Their power requirement is about 11,500 units of electricity every month. A 96 KW rooftop solution was placed on its roof which offsets 90% of their electricity bills & performs with 10% extra efficiency as expected.



The plant has helped them gain energy security & also contribute to the environment. With a break-even period of 7 years at 16% IRR, it's a first of a kind investment for any residential complex & ensures better returns than a fixed deposit in a bank.



#### 2). Creative School, Bilishivale, Bangalore

This holistic school/learning centre, adopted to clean energy in order to be self-dependent energy prosumer. They have installed a 10 KW rooftop system with net-metering & batteries for power backup. Due to the system being battery-based, it is able to store excess energy upto 20-25% of their total generation & transports it to the electric grid.

“Zero” bill status has been achieved by this school & they claim economic benefits for the excess power transported. Micro-grid inverter used for this setup ensures that power is not lost in case of low generation. Due to this, the plant generates 4.5 kWh of energy per day.



## ABOUT U-SOLAR CLEAN ENERGY - OPERATIONAL EXCELLENCE IN EPC FOR 10 YEARS

U-Solar Clean Energy has been in the solar industry for a decade with over 250 projects installed and a total capacity of 100 MWp solar power plants executed in India. The company has a strong focus on engineering and operations, therefore pioneering new ways to integrate solar power for its clients. U-Solar Clean Energy ensures that a detailed assessment is done for even the smallest project as the most important aspect of delivering solar power plant for captive consumption is to ensure the solution meets the users energy requirement. During it's journey commencing 2010 until now, U- Solar Clean Energy has successfully executed small projects for homes/villas, to mid-sized ones for hotels and hospitals to larger ones in the industrial and commercial segment including all kinds of roof tops as well as ground mounted projects with its sights firmly set on the sustainability motive.

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### ABOUT THE WRITERS



**Harinarayan K. R.** - Founder and CEO, U-Solar Clean Energy

With a strong vision for a renewable energy-focused future U-Solar Clean Energy was founded on a deep and abiding belief that renewable energy with its advantages in distributed generation, short turnaround times, clean origins is the answer to a multitude of problems ailing the power sector in India. Leading a team of engineers and managers to push the envelope in the solar rooftop market.



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Works with U-Solar Clean Energy business development in a techno-commercial capacity to deliver prospective clients, equip them with data-driven decision-making tools to facilitate an effortless transition to adopt solar. Leading the marketing team in developing strategies to increase the company's vision to create an ecosystem to set-up solar plants at homes across the residential market.

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