

# From Energetica India's Blog Stable

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MR. SANDEEP GOSWAMI, COO, FOUNTAINHEAD II CLEANTECH INDIA PVT LTD

## Solar Net Metering can help provide solar power in the night



**N**et metering is an electricity policy for consumers who own (generally small) renewable energy facilities (such as wind, solar power or home fuel cells) or V2G electric vehicles. "Net", in this context, is used in the sense of meaning "what remains after deductions" — in this case, the deduction of any energy outflows from metered energy inflows. Under net metering, a system owner receives retail credit for at least a portion of the electricity they generate. (Source: Wikipedia)

While it is good to see that the state after state is awaking to the solar policy and even looking at giving a return, what they also need to look at is innovation. The most important factor is who would be the beneficiary of government's GBI? Will it actually elevate the suffering of the needy? Who guarantees that the surplus power thus created would eventually given back to the very locality which is providing the roof-tops? With states having shortfall in their generation, it would be easy to send the power for commercial use and thus encourage more commercial enterprises to set shop; having found assured power. This is most possible because commercial power brings in more profit to the electric company. The other profitable venture is from the rich residential area where the tariff is decent. However, the rich and the upper middle class in megalopolises, live in tall sky-scrapers where open roof-top is a premium. But they require sys-

tem which is minimum 5KW. Here the price becomes steep even if space can be found even for most upper middle class consumers.

The roof-tops which is available & most need the power belong to the tier-II cities middle class and the rural poor, who are already finding hard to make ends meet. With, the cost per watt peak between INR 50/- to 120/- which per Kilo Watt translates



to One Lakh Twenty thousand, is not something every "Aam Admi" can aspire to purchase and that is something our policy makers have not thought about.

A person who uses only 5kwhr of power or 5units a day is not someone who could or need to spend Rupee 1.2 lakh or \$ 2232. Therefore, it could be easy for the unscrupulous to capture vast rooftops, set up the solar and skim the poor roof-top owners. Imagine, the economically weaker section providing their collective roof-tops at the city

fringes and receiving Paise Ten of every Rupee envisaged in the scheme, while the rest the "investor" pockets. It is not that such eventuality would not have been thought by the policy makers, but who would be monitoring? In the "scam a week" India of today, every utopian idea can get bastardized easily.

But, here is the way one may improve the concept and provide the power to one and all especially the middle class, who are a fairly large consumer as a group staying in Tier 1 cities like Pune, Bangalore and the likes where roofs; unlike Mumbai are still available in size large enough to cater to a decent solar power generation. One can also add New Delhi as the megalopolis which can afford and need the solar to stem the power outages in summer.

There are already RESCO's and they are interested in banking the extra-generation and availing it when required from the DISCOM. Here they are wanting to put up the system which generate power during the day which is enough to cater to the needs of that very roof owner for a 24hour period.

The solution is simple. Say for example, a restaurant requires 100Kw and consumes 40KwHr during the daytime and 60KwHr in the night. As solar does not function in the night, ideally they would require a battery bank to store the power. However, if the surplus 60Kw is sent to the grid and in the evening the grid supplies that much power back to the establishment, then in effect the restaurant is running its operations on 100% Solar power. Same can be thought for residential areas which are large consumer of power.

- The Grid can benefit in many ways:
- It can charge a fee say between 2 to 5% (similar to wheeling charges) from the RESCO.
  - During the daytime when peak demand makes it difficult to manage, the extra solar power coming to it would ease the pressure and can be sold at commercial

- rate while eliminating the chance of a Grid collapse.
- It would also help them not to short-change the rural and the urban poor, by being able to cut down on their load-shedding hours, which in certain places is 6 hours or more. This would eventually help the countries growth.

What we require are policy which are driven from the Centre and applied equally by all states. The incentives which are envisaged are good. Let that be given to the RESCO's who find it un-viable to provide the services to the rural and urban poor, whose tariff does not allow the companies to have a IRR which is acceptable.

SUSANNA HUANG, FOUNDER, GREEN ENERGY VILLAGE LLC

## What is the difference between a Micro-Inverter and a String Inverter?

**B**oth inverters need to convert DC to AC. The difference is where this occurs. Micro-inverters convert DC to AC at the back of each solar panel on the roof, while string inverters do it on the ground at the string level. Let's look at the pros and cons of each inverter type from my personal point of view.

### Production

For a house with a complex roof and shading or soiling concerns, the micro-inverters work better due to its panel level optimization. However, for houses with a simple roof and good orientation, the string inverter can do a very good job due to its high efficiency. The latest string inverter is equipped with dual MPPT technology. The production

is improved as the inverter is capable of connecting two unbalanced string with different orientations.

### Initial Cost

Micro-inverters have higher initial equipment cost than string inverters. One of the most popular micro-inverters is sold at about \$0.7/W with a 25-year warranty. The string inverters are sold only at about one third of that cost with a 10-year warranty. A string inverter is a more affordable solution.

### Maintenance

Each micro-inverter has lower failure probability as it carries low AC voltage. For a 5kW solar system, 23 micro-inverters are installed. The failure rate increases with number of items in a system.

When a micro-inverter fails, it is not easy to fix. Someone has to climb to the roof, remove panels and install a new one. The string inverter mounted on the wall is much easier to access and fix.

It looks like decision makers in different solar market have their own preferences.

Solar leasing companies like string inverters. Since they are the owner of the solar system, they are very cautious about who to work with and which solar equipment to use. They like to work with manufacturers with proven track record and a mature inverter technologies with high efficiency.

Micro-inverters become popular among home owners who are attracted by the latest technology, panel level optimization and good monitoring functions.

BHARAT VASANDANI, ENERGETICA INDIA |

## Companies Bill 2011 (India) and Solar



**T**he recent news has been the India has made the Companies Bill 2011 into law; after a long discussion and wait.

The new law mandates companies with a net worth of Rs 500 crore (\$100 million) or more, or turnover of Rs 1,000 crore (\$200 million) or more, or a net profit of Rs 5 crore (\$1 million) or more

during the past three financial years must spend at least 2 percent of their average net profits from the three preceding years on CSR (corporate social responsibility) initiatives.

This stipulation makes India the first country in the world to legally mandate corporate spending on social welfare.

CSR activities recognised under the Bill include: Eradicating extreme hunger and poverty; Promotion of education; Promoting gender equality and empowering women; Reducing child mortality

and improving maternal health; Combating HIV, AIDS, Malaria and other diseases; Ensuring environmental sustainability; Imparting employment enhancing vocational skills; Social business projects; and Contribution to certain funds. The company is to give preference to local areas when formulating its CSR policy.

For companies in the solar sector; especially solar panel manufacturers can easily provide solar panels to NGOs, schools, villages to / goes to page 4

comes from page 3 / bring in much needed power to the downtrodden; helping the much needed and also fulfilling CSR mandate.

In addition, this helps them in their branding exercise and trial processes.

Companies not in the solar sector can also do the same; encouraged by

solar companies.

This applies for biogas, LED lights, and other such technologies that can cover "Ensuring environmental sustainability"; one of the areas under CSR. Though some others can also be used (indirectly) to promote renewable energy and cleantech technologies.

The CSR law has the ingredients to boost India's off-grid and cleantech space at a time when MNRE off-grid funds are drying off or are slowing down.

The implementation will take some time and as usual the industry will come up with learning through new models of application.

MADHAVAN NAMPOOTHIRI; FOUNDER AND DIRECTOR OF RESOLVE ENERGY CONSULTANTS

## What is the biggest concern for the Indian solar sector today?

**L**ack of Visibility of Projects" – This was cited unanimously by the CEOs of the top solar project developers in India as the biggest challenge faced by the sector. On the opening day of the 7th RE Expo in New Delhi on 12th September 2013, CEOs like Inderpreet Wadhwa (Azure Power), Alan Rosling (Kiran Energy), Pashupathi Gopalan (Sun Edison), Rajesh Bhatt (Juwi) stressed upon the importance of this point. It may be recalled that there has not been any project allocation under the JNNSM after December 2011 and the Phase 2 of the JNNSM has stalled. Many of the state policies are also facing huge delays or lack of interest due to various factors (Tamil Nadu, Andhra Pradesh and Rajasthan are examples).

Inderpreet Wadhwa said that visibility of projects for at least 3 years will help resource planning for companies. He also said that irrational prices like Rs. 5.5/kWh quoted during the bidding process will make projects unviable and cannot work. He mentioned that allocation of projects in states through L1 process has not been very effective. Instead of going for new and innovative ways of bidding, states should follow what worked really well for the JNNSM.

Alan Rosling said that the predictability of project is important. He also highlighted the fact that while MNRE's role has been very important in the growth of the sector, there are several other players, mostly the state regulators whose role will be even more critical for the growth of the sector. These regulators can help grow the sector by effective RPO enforcement and bringing in clarity to the Open Access regime.



Pashupathy Gopalan of Sun Edison said that India is Number One in terms of potential among the 20 countries in which the company operates. There is a lull in the sector now and this is a time to reflect. He said that Consistency, Continuity and Visibility of projects are extremely important.

Tarun Kapoor, Joint Secretary, Ministry of New & Renewable Energy (MNRE) acknowledged the importance of the issue and said that there is a need to have a Feed-in-Tariff regime like in Wind wherein developers don't have to wait for allocation but can start project development anytime during the year.

On the topic of PV Manufacturing, Mr. Kapoor said that domestic module manufacturing is picking up, with good orders from overseas, but cell manufacturing is still in distress. The Indian Rupee depreciation cannot be of great advantage, because input costs (mainly imports) have also increased.

S Venkatramani of Indosolar said that while visibility of power projects is important, a level playing field for Indian manufacturers should be created. He said that the Rupee depreciation has improved competitiveness, but the onslaught of

dumping of modules from other countries continues unabated. He said that the domestic manufacturing industry is not asking for any incentives or subsidies, but only a stoppage of dumped products. It is all about level playing field, he stressed.

On the topic of financing, Pashupathi Gopalan of Sun Edison said that a huge amount of Foreign Direct Investment has come in to the country (Rs. 20,000 Crore in the form of debt financing) and has helped India achieve close to 2 GW of installed capacity. However, there are two major challenges that are of concern to investors.

- Off-take risk – Honoring of the Power Purchase Agreement (PPA) is extremely critical for investor confidence, and the recent appeal of GUVNL for downward PPA tariff revision was a huge blow to that confidence. Investors feel nervous about other states doing the same.
- Project allocation – The L1 process has been disastrous and has led to quality issues. There are several operational projects which are now refurbishing their plants because of quality issues. These developers who awarded the EPC contractors who quoted the lowest capital cost, are now facing quality issues which is leading to lower plant performance and they are now forced to refurbish their plants at additional cost.

In addition to these topics, off-grid solar was also discussed. Mr. Tarun Kapoor also announced the intention of MNRE to set up huge Ultra Mega Power Projects (UMPP) in Solar with more than 1 GW of solar plant in one location. He said that discussions are underway to set up 3 to 4 such Solar UMPPs.