

Consumer guide to grid-connected rooftop solar - Part 1

The Government of India plans to install [175 GW](#) of renewable energy by the end of 2022. This includes 100 GW from solar power, 60 GW from wind power, 10 GW from biomass power and 5 GW from small hydropower. Out of 100 GW solar, 40 % has to come from consumer categories such as rooftop solar and small scale solar energy systems. Government of Tamil Nadu has taken several measures to promote rooftop solar and has introduced the second [Solar Policy](#) in the month of February 2019. The policy introduces a solar net feed-in tariff mechanism where the utility pays consumers for the electricity exported to the grid. TNERC has fixed [Rs. 2.28](#) per unit for the exported power. Given the policies, regulations and administrative procedures required for installing grid-connected rooftop solar plant in consumer's residence/house premises, it is important that consumers are aware of the same. This article seeks to demystify some points from the policy and take the consumer through the broad steps of the entire process.

1. Enquire with solar developers

Approach developers to enquire about the details of setting up the rooftop solar - such as capacity, generation, etc. Before purchasing solar system/components, consumers should ensure the quality and standards are compliant with BIS (Bureau of Indian Standards)/IEC (International Electrotechnical Commission) standards as prescribed by the Ministry of New and Renewable Energy (MNRE).

Note: Tamil Nadu Energy Development Agency ([TEDA](#)) has provided a list of [solar developers enlisted](#) with them. But TEDA does not give assurance for the quality and price of enlisted suppliers/manufacturers/system integrators.

2. Site visit by solar developer

Solar developer's visit may help consumers to calculate the required capacity and available rooftop area for installing the rooftop solar plant. This can also be done by a consumer; steps needed to calculate the plant capacity and available shade free rooftop will be discussed in subsequent parts. The additional requirements to be met for the rooftop solar can also be discussed during the site visits. A site visit for the developer is to understand

- Geographical location of the premises
- Mounting of structures - It is important for the developers to inspect the condition of the roof to ensure that it is structurally sound and also to design their structures.
- Placing of the inverter - It is important to allocate a place for installing DC and AC combiner box as well as the inverter. It is always advisable to place the DC combiner box at the mounting structures to minimize the conversion loss through wires. The inverter should be placed in such a way that it should connect the DC wires and also the main supply from the utility.
- Wiring configuration - If a consumer is having a three-phase connection, he should ensure that the load must be distributed equally. This can be done with the help of a developer.

Additional requirements - It may include electrical wiring, civil works and storage place for materials. **(to be continued)**

INSIDE THIS ISSUE:

Editorial	1,2
Tamil Nadu News	3
India News	3
Consumer Focus	4
ECC Voice	4
World News	5
Publications, Statistics	5

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The Do-It-Yourself Energy Audit Series For Household Consumers (Part 7)

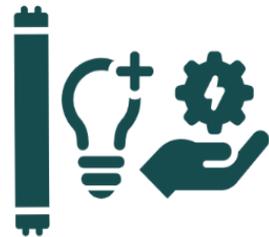
Lighting

This edition of the DIY Energy Audit Series will provide household consumers with simple checks and recommendations that can help them ensure that their lighting is energy efficient.

Lights make for an integral part of household electrical appliances. And, studies suggest that lighting contributes to a significant percentage (18% to 27%) of the total household electricity consumption. Given the significance, it is important to ensure that consumers make energy conscious choices with respect to lighting.

1. Have you made the shift to LED lighting yet?

Much has been written about the need to opt for [energy efficient lights](#) and how efficient lighting can help conserve electricity. Consumers are increasingly opting for LED bulbs and tube lights as against the less efficient alternatives such as [incandescent and CFL bulbs](#). Further, with initiatives like [UJALA](#) which has subsidized the cost of LED lights from a prohibitive 400 INR to 70 INR, LED lights are now, both energy efficient and cost effective.



Best Practices:

- Switch to energy-efficient [LED lights](#).
- Turn off lights that are not needed e.g. the light in the living room may not be needed to read when a table lamp with lower electricity consumption can be utilised instead.
- Make conscious efforts to take advantage of natural lighting, as much as possible.

2. Does your light have an energy efficient ballast?

A [ballast](#) is a mechanism that regulates the amount of electricity required to start a lighting fixture and maintain a steady output of light. It is important to ensure that the ballast fixed in your light is energy efficient. In [comparison](#) with [conventional magnetic ballasts](#) which tend to cause power loss of 15% of the lamp wattage, [electronic ballasts](#) can save up to 20% of electricity.

Best Practice:

- Ensure that your light is fitted with an electronic ballast for increased energy efficiency.

3. Do you regularly clean light, fixtures, and lampshades?



Accumulation of dust and dirt on lights, fixtures and lampshades not only reduces the brightness of the light, but also hampers the light output and efficiency of the light source. It has been estimated that the slow build up of dust and dirt [accounts for a loss of one-third](#) of light output.

Best Practices:

- Make sure that lights, fixtures, and lampshades are regularly cleaned to ensure optimal and efficient lighting; and
- Use light coloured lampshades as they tend to give out more light than dark coloured lampshades.

(to be continued)

Tamil Nadu News

TANGEDCO's delay in payments puts private producers in a spot

The Association of Power Producers has written to Tamil Nadu Generation and Distribution Corporation's (TANGEDCO) Chairman and Managing Director Vikram Kapur over the spiralling dues from the State utility to its members. In a letter dated June 11, Ashok Khurana, Director General, Association of Power Producers, pointed out that from February 2019 till June 2019, the pending payables towards five generating companies have increased to ₹4,441 crore from ₹3,090 crore.

In February the association wrote to TANGEDCO about the huge dues and pointed out that there is a normal delay of more than 90 days in case of regular receivables. "Payments against these overdue bills are being released only when a discount of 2-3% is being offered. Further, all change in orders passed by Central Electricity Regulatory Commission (CERC) are being challenged at Appellate Tribunal for Electricity (APTEL) and only partial payments are being released even after interim orders by APTEL for 80% payment," the association claimed. It also pointed out that the power plants were deeply stressed and were operating by taking additional corporate loans to service their debt and making coal payments in advance. "Working capital limits of these plants are completely exhausted and some of them have already defaulted on their debt servicing obligations in view of the negligent cash flows," the association said. The association requested TANGEDCO to reduce the payment cycle of regular monthly bills from more than 90 days to 30 days and not to ask for discount.

It also sought a meeting with Mr. Kapur to discuss the measures to avoid a situation where the affected power projects landed in insolvency proceedings and also adversely impacted the power supply to TANGEDCO and its consumers.

Source: [The Hindu](#), June 14, 2019

India News

Indian Railways Ramps Up its Efforts to Utilize Solar Power

In its bid to become a net-zero carbon emitter by 2030, the Indian Railways is slowly expanding its usage of renewable energy in its operations. The Minister of Railways and Commerce and Industry, Piyush Goyal informed the Lok Sabha recently that the Indian Railways plans to harness 500 MW of land-based solar power for traction. The Railways also plans to harness 200 MW of wind energy, the bulk of which will be utilized for traction purpose, added Goyal.

At present, 26 MW of wind projects have been installed at Jaisalmer (Rajasthan), and another 10.5 MW of wind projects have been installed at Tirunelveli (Tamil Nadu). Both are supplying power for train operations.

Moreover, 50.4 MW of wind projects at Sangli (Maharashtra) are under the commissioning process for train operations, said Goyal. Goyal added that the Indian Railways is also utilizing unused land for renewable energy project development. So far, 3 MW of solar PV capacity has been set up on Indian Railway's unused lands. He further said that a 50 MW solar PV project at Bhilai (Madhya Pradesh) is also under implementation at Sukhi-Siwania in West Central Railway along with a 2 MW solar PV project at Diwana (Haryana) in Northern Railways.

A couple of weeks ago, REMCL, a joint venture formed between the Indian Railways and RITES Limited, had invited bids to set up 140 MW of wind-solar hybrid projects. The wind-solar hybrid projects will be set up under the nodal zonal railways of Gujarat, Karnataka, and Madhya Pradesh. Recently, the Northern Railways had also invited developers for setting up of 4.715 MW of rooftop installations. This tender consisted of 133 installations of 10 kW (1.33 MW) and 677 installations of 5 kW (3.385 MW), totaling 4.715 MW, which was to be installed on D and E category railway stations. In January 2019, REMCL had invited bids for setting up of 2 MW of solar projects along the Delhi-Ambala railway track.

Source: [Mercom India](#) June 28, 2019.

Consumer Focus

The appellant's father applied for a new electricity connection under normal priority for agriculture and irrigation purposes for his well on 15.10.1984 . The TANGEDCO directed him to submit relevant documents for the registration. Subsequently the appellant's father died on 26.11.2003 and the following documents were submitted by the appellant: 1. Death Certificate 2. Legal heirship Certificate 3. Patta standing in the name of appellant's father. A representation was also given to TANGEDCO to allot the electricity connection. However, this request was not considered by TANGEDCO.

In 2018, the appellant had filed a complaint before the CGRF but the Forum refused to take up the complaint stating that it was time barred . Hence, the consumer appealed to the Ombudsman for redressal of his grievance. TANGEDCO stated that the appellant was advised to produce the documents and register his readiness to install required equipment before 2003. As per a TANGEDCO office circular, if the applicant does not submit his readiness within 90 days notice period, it may be extended subject to a maximum period of 5 years. For this purpose, the applicant must submit an application requesting for extension of time. Failing which, the application will be cancelled and will not be considered for any priority.

According to TANGEDCO, the appellant did not follow the above procedure. When the appellant approached TANGEDCO during the consumer grievance day meeting held on 06.03.2018, TANGEDCO informed him since the related documents were not furnished and the readiness not registered, the application stood cancelled and could not be reconsidered.

According to the findings of the Ombudsman, he noted that there are no specific Regulations put out by TNERC that details the time limit to register readiness for agriculture service connection. The office order can not take precedence over a TNERC regulation. Further, the Ombudsman noticed that the Officer in charge of the Appellant's file had asked for certain documents from the Appellant in 2009 which was beyond the 5 year time limit set by TANGEDCO in its circular. This indicated that the application was received by TANGEDCO and kept pending. As a result, TANGEDCO cannot deny that the application was not received by them or that it had exceeded the time limit. In light of this, the Ombudsman directed TANGEDCO to give suitable directions to issue fresh 90 days of notice for effecting agricultural service connection to the well. This was for the original application that was submitted by the appellant's father, subject to the rules set by TANGEDCO, within 30 days from the date of receipt of the order. TANGEDCO was directed to send a compliance report within 45 days.

ECC VOICE

சேலம் மாவட்டம் ஏற்காடு கிராமத்தில் வசிக்கும் திரு பாபு அவர்கள் ஏற்காட்டில் இருந்து செம்மனத்தம் செல்லும் வழியில் சாலையின் நடுவில் மின் கம்பம் உள்ளதாகவும் இதனால் வாகனங்கள் சென்று வரும் போது மிகவும் இடையூறாகவும், விபத்துகள் ஏற்படும் வாய்ப்பு உள்ளதாகவும் நம் சேலம் மின் நுகர்வோர் மையத்திற்கு தெரிவித்தார். மின் கம்பம் குறித்த பிரச்சினையை தீர்க்க எப்படி அணுகுவது என்று திரு பாபு சேலம் மின் நுகர்வோர் மைய ஆலோசகர் அவர்களிடம் ஆலோசனை கேட்டு அறிந்தார்.

மின் நுகர்வோர் மைய ஆலோசகர் அவர்களின் ஆலோசனையின்படி ஏற்காடு மின்வாரிய உதவி செயற்பொறியாளர் அலுவலகத்தை தொலைபேசியில் தொடர்பு கொண்டு இந்த மின்கம்பம் சாலையின் நடுவில் இருப்பதால் வாகனங்கள் செல்வதற்கு இடையூறு இருக்கின்றது மற்றும் விபத்துகள் ஏற்படுவதற்கு வாய்ப்பு உள்ளது என்று தெரிவித்து, அதனை இடம் மாற்றி தருமாறு கேட்டுக் கொண்டார்.

இரண்டு வாரம் சென்ற நிலையில் சேலம் மின் ஆலோசகர், திரு.பாபு அவர்களை தொடர்பு கொண்டு புகார் நிவர்த்தி அடைந்ததை விசாரித்த பொழுது, அந்த மின் கம்பத்தினை இடம் மாற்றி அமைக்கவில்லை என்று திரு.பாபு தெரிவித்தார்.

சேலம் மின் ஆலோசகர், கடிதம் மூலம் செயற்பொறியாளர்- கிழக்கு, சேலம் அவர்களுக்கு இந்த புகாரினை தெரிவித்து உடனடியாக நடவடிக்கை எடுக்குமாறு கேட்டு கொண்டார். புகார் பெறப்பட்ட சில நாட்களில் ஏற்காடு உதவி செயற்பொறியாளர் அலுவலகம் மூலமாக இந்த மின் கம்பம் சாலையோரம் மாற்றி அமைக்கப்பட்டது. சேலம் மின் நுகர்வோர் மையம் எடுத்த முயற்சியின் காரணமாக மின் கம்பம் இடம் மாற்றி அமைக்கப்பட்டது என்று திரு பாபு அவர்கள் நன்றியினை தெரிவித்தார்.

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Citizen consumer and civic Action Group (CAG) is a non-profit, non-political and professional organization that works towards protecting citizen's rights in consumer and environmental issues and promoting good governance processes including transparency, accountability and participatory decision making.

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World News

Fossil fuels produce less than half of UK electricity for first time

Zero-carbon energy sources are poised to overtake fossil fuels as the UK's largest electricity source over a full calendar year. This year will be the first that fossil fuels make up less than half of the electricity generated, according to National Grid, following a dramatic decline in coal-fired power and rising renewable and low-carbon energy. Instead, UK homes and businesses will rely more on "cleaner" electricity generated by wind farms, solar panels, hydro power and nuclear power reactors.

A decade ago, coal plants generated almost a third of the UK's electricity, but in the first half of this year they have provided only 3%. In the same period renewable energy has climbed from supplying just 2% of the UK's power to a fifth of all electricity produced. The "landmark tipping point" is an "historic achievement" in the UK's journey towards becoming a net-zero carbon economy by 2050, said National Grid.

John Pettigrew, the UK power system operator's chief executive, said: "The incredible progress that Britain has made in the past 10 years means we can now say 2019 will be the year zero-carbon power beats fossil fuel-fired generation for the first time." "We wouldn't have said it if we weren't confident that this will be the year." National Grid is able to confidently predict the 2019 record only six months into the year following the UK's greenest ever winter, and the huge number of coal-free days recorded since then.

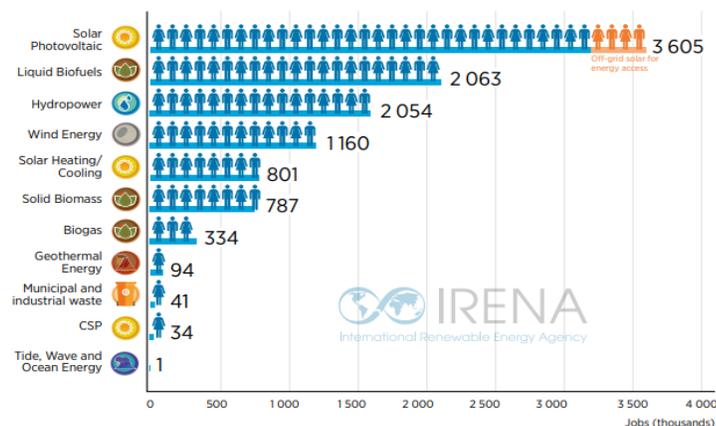
The UK reached a record stretch of consecutive 18 coal-free days earlier this year, which ended on 4 June.

Source: [The Guardian](https://www.theguardian.com), June 21, 2019.

Publications / Regulations

- Renewable energy and jobs—Annual review 2019, June 2019, International Renewable Energy Agency ([IRENA](https://www.irena.org))
- Annual generation programme 2019-20, June 2019, Grid operation and distribution wing—Central Electricity Authority ([CEA](https://www.cea.gov.in))

Renewable Energy Employment by Technology



Source: Renewable Energy and Jobs, Annual Review 2019 - International Renewable Energy Agency ([IRENA](https://www.irena.org))