

Consumer guide to grid-connected rooftop solar - Part 12

The [previous issue](#), using an example to explain the billing procedure and its calculations. The final issue (part 12) will explain the maintenance of rooftop solar.

The lifetime of the solar plant depends on the proper maintenance of the system. The general consumer perception is that rooftop solar plants are maintenance-free systems. But that is not the case. As with all electrical systems, checks at regular intervals are needed to ensure that there is no loss in power generation rate and subsequent reduction in the lifetime of the plant due to wear and tear. This article lists certain tips on how to maintain the rooftop solar system:

- Document the daily generation performance to improve solar panel maintenance. This will help a consumer understand the system's generation rate and flag lower generation rates. In case there is a pattern of lower generation, despite weather conditions, solar irradiations, and cleaning being optimal, it could flag a potential issue with the installation and (or) maintenance.
- Cleaning the solar panel: It is important to note that dust settles on solar panels depending on the area where the consumer is living. For example, dust may settle at a faster rate in a city than say in a village. Therefore, it is necessary to clean the solar panels at regular intervals. It is generally recommended to clean at least once in 15 days irrespective of the location. Solar panels covered with dust will produce less power as the dust hinders solar irradiation from falling on the panel.
 - ◊ It is always advisable to use a soft wet cloth or wet sponge to remove the dirt on the glass of the panel while cleaning the panel, as abrasive sponge or soap may scratch the glass.
 - ◊ In case a consumer wishes to increase the frequency of cleaning, they can do so by running a hose of water to remove the dust.
- If a consumer installs a rooftop solar system with special structures e.g. higher height, it is advisable to use a long-handled wiper to clean the panels with safety measures. It is also necessary to ensure no dust or dirt is accumulated on the inverters. Check for any breaks or damages to the insulation of the wires, cables that are connected to the inverters. Physical damage to these can be caused by rodents or other animals or humans.
- It is important to check fuses (surge protectors) on the junction boxes and if they are damaged, they should be replaced at the earliest. If a consumer is using lead-acid batteries (in case of an off-grid or hybrid system), it is important to check for the electrolyte level and use distilled water to top up the batteries. Pruning tree branches to remove shades falling on the rooftop solar panels will ensure a steady generation rate.

Conclusion: The main focus of the this [series](#) was to demystify the procedure for consumers. The aim was to help consumers a) select an installer, b) learn about the [rooftop solar capacity needed to be installed](#), c) [finalise an installer based on consumer feasibility](#), d) understand [subsidies](#), e) [purchase materials](#), f) [understand procedure for net feed-in application](#), g) highlight [Net feed-in mechanism](#) h) [billing procedure](#), and i) Maintenance. **(Concluded)**

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Electric Vehicles (Part - 10)

The final issue of the electric vehicles series will explain the incentives and infrastructure support extended for charging stations as given in the Tamil Nadu Electric Vehicles Policy this is a continuation of the [previous issue](#). It will also summarise the various aspects to be considered while purchasing an electric vehicle.

Incentives and supports for charging stations

The [Tamil Nadu Electric Vehicles Policy 2019](#) states that the Government will develop schemes with appropriate capital subsidy to enable private operators to set up Public Charging Stations (PCS). Commercial buildings such as hotels, shopping malls, cinema halls, apartments, etc., will have provisions for charging stations. Charging points will be provided in Government office parking lots in Chennai, Coimbatore, Madurai, Trichy, Salem, Tirunelveli and other places, based on requirements. The Government will take effort to set up 3 km x 3 km grid charging stations in Chennai, Coimbatore, Trichy, Madurai, Salem, and Tirunelveli. At every 25 km of national highways and state highways at least one charging station will be set up on both sides of the road. EV charging service providers can set up their own renewable energy generating stations at their premises for charging Electric Vehicles.

Aspects to be considered while choosing an electric vehicle

Apart from cost, following are the major aspects to be considered while choosing an electric vehicle:

1. **Type of vehicle:** There are three major types of electric vehicles such as i) All Electric Vehicles (AEV), ii) Plug-in Hybrid Electric Vehicles (PHEV), and iii) Strong Hybrid Electric Vehicles (SHEV).

2. Energy storage systems

a. Battery technologies: i) [Lithium-ion \(Li-ion\) batteries](#), ii) [Lead-acid batteries](#), and iii) [Nickel-metal hydride \(Ni-MH\) batteries](#) are the most commonly used battery technologies. Consumers should consider their usage pattern and charging feasibility.

b. Battery parameters: [Battery parameters](#) such as i) Battery capacity and voltage, ii) Cost, iii) Lifespan, iv) Performance, v) Charging time, and vi) Safety, need to be checked while choosing an electric vehicle

3. **Driving range:** This is one of the most important aspects to be considered while choosing electric vehicles. There is not much public infrastructures available for charging the electric vehicles; unlike plenty of fuelling stations that are available for conventional vehicles. Hence a consumer must be aware of the maximum delivery range (distance) of an electric vehicle and charging time required to deliver that range.

4. **Charging infrastructure:** Consumers should know the availability and details of [public charging stations \(PCS\)](#) in their areas. In case of installing a [private charging station](#), following points need to be considered i) Cost of the station, ii) Space requirement for installation, c) Charging capacity, d) Charging time, and e) Technical feasibility for installing a charging station. Solarisation of charging stations would be more environmentally friendly and beneficial to the consumers.

5. **Maintenance:** Electric vehicles require less maintenance when compared to conventional vehicles. However, electric vehicles need to be handled more carefully during maintenance work; since the electric motors, batteries, and other associated electronics of electric vehicles use comparatively more sophisticated equipments. A consumer should be aware of authorised service centres in his/her area.

Conclusion:

The main focus of the [electric vehicles series](#) was to demystify electric vehicles for consumers' benefit. This series has covered a) [Introduction to the electric vehicles](#), b) [Types of electric vehicles](#), c) [Energy storage systems](#), d) [Charging of EVs](#), and e) [Initiatives from Government of India](#) and [Government of Tamil Nadu](#). We hope that with all the information provided in this series, consumers will have a broad understanding of electric vehicles.

(Concluded)

Tamil Nadu News

Tamil Nadu: Peak power demand crosses 13,400MW as mercury rises

Peak hour power demand has crossed 13,400MW and consumption has crossed 300 million units per day in Tamil Nadu after a gap of two months. Renewable power comprising wind, solar and hydro power is now contributing more than 80 million units a day. Tamil Nadu's highest power demand of 16,151MW was recorded on April 3, 2019 and the maximum consumption of 370 million units was reported on April 12, last year. The maximum demand for this year was 15,490MW, reported on March 16, days before the lockdown was imposed.

As of now, renewables form the second largest contributor to the total power supply in the state after the central power generating units. Sources in Tangedco told that peak hour demand has been increasing in the last few days owing to mercury level shooting up and many offices starting operation. Power demand in Chennai has crossed 3,000MW owing to large-scale use of air-conditioners.

"We have seen increase in peak demand and consumption, especially during evening time. Fortunately, the wind season has started. On an average, we have been evacuating about 2,500MW of wind energy for the past few days. On May 22, the total wind power consumption was 58.87 million units," said a senior Tangedco official. The peak wind energy evacuation on May 22 stood at 3,500MW.

Source: [Times of India](#), May 24, 2020

India News

Government announces cheaper solar power for household

Now people looking to reduce their energy bill can do by putting up solar plants on their rooftops. For a kilo watt rooftop system, which generates about 350-400 units, one can pay Rs 78,000 after availing government subsidy of 40 per cent. Without subsidy, the cost of plants are estimated at Rs 43,000 per kilo watt.

Rajasthan Renewable Energy Corporation Ltd (RRECL) has selected vendors who will be eligible to put up the plants. The vendors will also be responsible for getting the government subsidy and for maintenance of the solar plants for five years.

RRECL has allocated 45 megawatt under the scheme. People consuming more power can also opt for additional capacity plants but the subsidy will be 20 per cent, applicable for 4-10 kilo watt systems.

"The rates of rooftop solar now are in reach of common public. It will provide boost to rooftop solar sector in state as well as less power burden on discoms. It is a good option for people to get cheap power at their homes," said Prakhar Mittal, member of Rajasthan Solar Association.

Mittal said the move will be a game changer to promote renewable at the grass-root level and will ensure that a large population of residential connection owners will become self-dependent on energy consumption.

Source: [Times of India](#), May 29, 2020

Consumer Focus

The petitioner, a domestic consumer, wanted to shift from a temporary service connection to domestic service connection for a house. The petitioner was using a temporary service connection (Tariff VI) for constructing his house. As per the present TNERC Tariff [order](#), temporary service connection (Rs. 11 per unit) which is higher tariff rate than a domestic connection. He had submitted an application on 06.02.2019 for change of tariff from temporary service connection (Tariff VI) to domestic service connection (IA) with the TANGEDCO local section office. Following which, the site was inspected by the TANGEDCO officials and they found that it was still under construction. This was informed to the petitioner on 07.02.2019. However, the petitioner had filed a complaint in the section office to which TANGEDCO said that tariff change could not be sanctioned because the building is still under construction with no domestic activity taking place. In his letter, the consumer states that he had to move in and was not in a position to undertake additional construction work on the house.

Following which, the petitioner lodged a complaint on 21.03.2019 with the Consumer Grievance Redressal Forum to change his tariff. The CGRF directed the foreman to inspect the petitioner's house on 03.04.2019. The foreman, after inspection on 03.04.2019, informed the petitioner to submit an undertaking letter with the local section office stating that "the petitioner will change the tariff if any construction work happens in the future" as the petitioner stated that he was not in a position to complete the work and had to move there urgently. The undertaking was sent on 10.04.2019. TANGEDCO thereafter informed the petitioner to pay Rs.89 as fee for changing the temporary connection to domestic connection. After paying the fee, Assistant Engineer inspected petitioner's site and changed the temporary connection to the domestic connection on 10.04.2019.

Although the above service connection was changed, the CGRF did not address the delay of 60 days in doing so and the high temporary connection tariff paid by the consumer. The petitioner appealed to the Electricity Ombudsman. The Electricity Ombudsman observed that according to papers submitted by the petitioner, he had completed the construction work on 06.02.2019 and was eligible for change in tariff. It was noted that TANGEDCO failed to submit the inspection report of 07.02.2019 in support of their claim that the building was still under construction. Hence, the Electricity Ombudsman ordered the respondent (i) to calculate the consumption units under domestic tariff for the period 11.02.2019 - 10.04.2019 and to return the extra charges to petitioner's account, (ii) to pay compensation of Rs.1000/- maximum for the delay in sanctioning the tariff. (iii) to submit the compliance report within 45 days from the date of receipt of the order.

Source: [Ombudsman Case](#)

ECC VOICE

சேலம் மாவட்டம், குமாரசாமிபட்டி பகுதியில் வசிக்கும் திரு.தீனதயாளனின் வீட்டு மின்னணைப்பு மீட்டரின் "DISPLAY" பழுதாகிவிட்டது. இது தொடர்பாக அவர், சேலம் மின் நுகர்வோர் மையத்தின் ஆலோசகர் திரு.ஜெயராமன் அவர்களை தொலைபேசி வாயிலாக தொடர்பு கொண்டு தனது புகாரை தெரிவித்தார். மின்ஆலோசகரின் ஆலோசனைப்படி திரு.தீனதயாளன், பழுதடைந்த மீட்டரின் புகைப்படம் மற்றும் மின் அட்டையின் புகைப்படங்களை மின் நுகர்வோர் மையத்தின் (Whatsapp) வாட்ஸ்அப் எண்ணிற்கு அனுப்பினார். இது தொடர்பாக மின் ஆலோசகர் தகுந்த ஆவணங்களுடன் நேரில் சென்று சேலம் மறவனெறி மின்வாரிய உதவி செயற்பொறியாளரிடம் இந்த புகாரை தெரிவித்தார். புகாரை பெற்றுக்கொண்ட உதவி செயற்பொறியாளர் இந்த புகாரை நிவர்த்தி செய்ய சம்மந்தப்பட்ட அலுவலர்களுக்கு ஆணையிட்டார். புகார் கொடுத்த இரண்டு நாட்களில், திரு.தீனதயாளன் வீட்டில் களஆய்வு மேற்கொள்ளப்பட்டது. களஆய்வு செய்த பின்னர், உதவி பொறியாளர் புதிய மீட்டருக்கான தொகையை செலுத்துமாறு திரு.தீனதயாளனிடம் அறிவுறுத்தினார். உரியதொகை செலுத்திய பிறகு புதிய மின் மீட்டர் பொருத்தப்பட்டது. புதிய மின் மீட்டர் மாற்றி அமைக்க உதவி செய்த சேலம் மின் நுகர்வோர் மையத்திற்கு திரு.தீனதயாளன் தனது நன்றியினைத் 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

U.S. renewable fuel use tops coal for first time since firewood reigned 130 years ago - EIA

U.S. consumption of renewable energy overtook coal in 2019 for the first time since firewood was the top fuel source more than 130 years ago, the Energy Information Administration said on Thursday.

The shift underscores a decade-long decline in the coal industry, driven by regulatory efforts to reduce greenhouse gas emissions and fierce competition from natural gas, wind and solar power sources.

U.S. coal consumption fell 15% last year to the lowest since 1964, while the use of energy from sources like wind and solar notched slightly higher, the EIA said.

That brought total coal-fired power consumption to 11.3 quadrillion British thermal units (Btu) in 2019, and renewable energy consumption to 11.5 quadrillion Btu, it said.

“Historically, wood was the main source of U.S. energy until the mid-1800s and was the only commercial-scale renewable source of energy in the United States until the first hydropower plants began producing electricity in the 1880s,” the EIA said, adding coal became popular in power generation around the 1880s.

The EIA’s earliest energy estimates began in 1635. Earlier this month, government data showed that electricity generated by renewable sources like solar, wind and hydro exceeded coal-fired power in the United States for a record 40 straight days here in part because of lower overall electricity consumption during the coronavirus pandemic.

Coal tends to be among the first fuels shut off by utilities, since renewable sources tend to be cheaper to operate or are backed by state mandates.

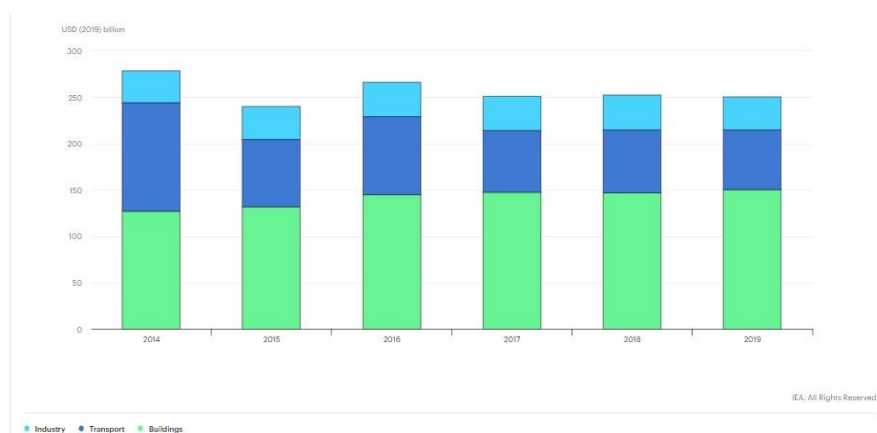
The EIA said 90% of coal is consumed by power plants, with the rest being used by industrial facilities, while renewable energy is “more broadly consumed by every sector in the United States.”

Source: [Reuters](#), May 28, 2020

Publications / Regulations

- A report on Impact of Energy Efficiency Measures, [BEE](#)
- Tracking SDG 7 : The Energy Progress Report, [IRENA](#)
- Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020. , [MNRE](#)

Global investment in energy efficiency by sector, 2014-2019



Source: [IEA](#)