

## All you need to know about electricity safety regulation (Part-6)

The [previous issue](#) explained a case study which outlined general safety measures that can be taken by consumers. This editorial will discuss another case study about the precautionary measures and safety conditions relating to the transmission of electricity.

**Case Brief:** A recent accident in Thanjavur district, which resulted in the unfortunate electrocution of at least 11 lives during a temple chariot religious procession has brought public attention to electric safety. The chariot which was manually pulled by people, was decorated with lights and serial bulbs using a diesel generator. It is claimed that the height of the decorated lights that were kept on the chariot was around 25 to 30 feet. During the procession, people were washing the wheels of the chariot, leaving water puddles all over the road. As the procession traveled through a narrow road, the chariot lost its balance, coming in contact with a live high-tension wire, subsequently electrocuting the 11 people that were on or around the chariot.

**What caused the accident?** A metal frame consisting of serial lights was used to decorate the top of the chariot. This frame came in contact with the live overhead high tension wire resulting in electrocution. Generally, overhead high tension wire lines will carry 11 - 33 KiloVolt of electricity supply, as opposed to below 650 volts of electricity carried by low tension cables. (To know more about the difference between high and low tension cables, read [here](#).)

**What does the rule say:** (i) As per *Central Electricity Act (Measures relating to safety and Electric supply) Regulation, 2010, Clause 58(i)*, states that “any conductor of an overhead line, including service lines, erected across street shall at any part thereof, not be less than 19 feet of height for not exceeding 650 volts and should not be less than 21 feet for not exceeding 33kv. (ii) *Central Electricity Act (Measures relating to safety and Electric supply) Regulation, 2010, Clause 64(i)*, Transporting and storing of material near overhead lines, states that “No rods, pipes or similar materials shall be taken below, or in the vicinity of, any bare overhead conductors or lines.

### What could have prevented or minimised the risks from such a scenario:

- As per a former TNERC official, Low tension wires and High tension wires should have been switched off during any religious procession, including temple chariots. This protocol had not been kept during the procession. It is likely that there are other protocols in place, for special events such as processions. But these protocols are not available in the public domain.
- The Fire and Rescue team should have been placed around the festival venue and route, in anticipation of such emergencies.
- Chariot processions such as this mark key festivals in the Indian religious calendar. These routes are pre-determined; and have been used for several decades. The laying of underground cables on these routes should therefore be made mandatory.

(To be continued)

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## Floating solar plant and its technology - (Part 1)

### Introduction:

Harnessing solar energy is arguably one of the greatest evolutions in the field of renewable technology. The abundant free source of light from the sun helps us to generate electricity without affecting the environment and natural resources. If fully harnessed, solar energy could play a significant role in addressing climate change. This is especially true as over the years, the cost of solar panels have reduced considerably. In 2010-2011, solar panels accounted for around 65% of a project's costs. More recently though, [panel costs have reduced to 40%](#) of a project's costs. Even though the cost of other components of a solar plant such as

inverters, cables, mounting structures etc have continued to increase, the reduction in panel costs help installers/developers to promote solar energy. With these changes, [solar energy uses continue to grow](#), and in fact, compete with other conventional sources of energy. The image represents the increase in solar installations over the years.

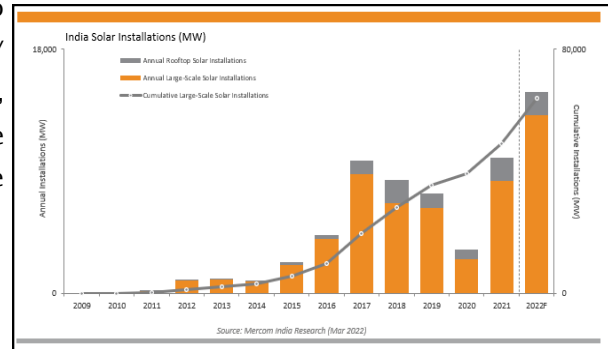
For domestic or commercial purposes, solar panels are installed on a shade-free rooftop. These are called rooftop solar (RTS) systems. For agriculture and mega-scale projects (more than 100 kW), solar panels are installed on land. These are called [ground-mounted solar systems](#). [Land acquisition becomes a troublesome issue](#) when planning for ground-mounted solar panels. A newly developed method of installing solar panels on water bodies, namely floating solar plants, appears a promising solution to these practical difficulties. This article aims to demystify floating solar plants and their functions.

### What is a floating solar plant?

A floating solar plant is also known as floating photovoltaic (FPV) or [floatovoltaics](#). It is a new method developed to install solar arrays (a set of solar panels) that float on a water body, typically a [lake or basin or dam](#), as the waters are generally calmer than the ocean or sea. It can also be placed on an irrigation reservoir or a water treatment facility.

### Why are floating solar plants gaining popularity?

Generally, solar panels are built to perform well even under high temperatures. However, [higher temperature do tend to decrease the power output](#) of the system. In a floating solar plant though, [efficiency will increase by 7.6 to 13.5 %](#) when compared to the conventional rooftop or ground-mounted solar plants, mainly due to the surrounding water which acts as a natural coolant and cools down the solar equipment. This means that a floating solar panel will produce electricity at higher efficiencies in hot climates than they might have otherwise. Floating solar panels [reduce evaporation levels by up to 33%](#) on water bodies, which in turn reduces the possibility of a drought in that area. It helps to [reduce the presence of algae blooms](#) in bodies of freshwater, which can cause health complications when they appear in drinking water sources. [Land space will not be lost](#). Installing solar plants on water bodies also [eliminates the need for deforestation to create new land](#)



Solar installations in India;  
Source: [Mercom](#)



A floating solar power plant;  
Source: [CIEL & TERRE](#)

(To be continued)

## Tamil Nadu News

### TN produces more renewable power, but Tangedco has no plans to store it

TANGEDCO has been performing well in renewable energy such as solar, hydro, and wind, but has no plans for power storage yet. According to Central government data accessed by TNIE, Tamil Nadu tops the list with 9,866.3 MW in wind power generation capacity, followed by Gujarat (9,209.22 MW). In solar power, the State ranks fourth with a generation capacity of 5,067.18 MW. All State-owned discoms are playing retailers (purchasing and selling electricity). None of them plan to analyse how to store electricity, said a top official in the Tamil Nadu Generation and Distribution Corporation (TANGEDCO). "Through pumped storage power plants, water is pumped uphill to a reservoir. Then, the force of the water flowing down the hill is harnessed to produce electricity. But, of 47 hydro plants, TANGEDCO has pumped storage in Kadamparai alone," he told TNIE.

BMS State general secretary (engineers' wing) E Nadarajan suggested that the power utility set up more pumped storage power plants to minimise private power purchase. He added that flywheel storage is a promising technology to replace conventional lead-acid batteries and would store energy as well. TANGEDCO might introduce flywheel storage on a trial basis, but is not actively exploring new storage technologies. "TANGEDCO expects the power demand to reach 24,000 MW over the next 10 years. Hence, it is essential to introduce new technologies as early as possible," he said. Former member of the Tamil Nadu Electricity Regulatory Commission S Nagalsamy also suggested introducing a storage system, and explained that there are no such proper systems globally. Nevertheless, it is possible to store electricity in batteries and distribute it through transmission lines. A senior official told TNIE, "TANGEDCO has a target to deploy 9 Gigawatt of solar plant capacity by 2023."

Source: [The New Indian Express](#), May 29, 2022

## India News

### India's heat wave highlights need to switch from coal to solar

Nothing makes you appreciate air-conditioning like high summer in India. Here in Delhi, temperatures are running over 100 degrees for much of the day, with two full months still to go before the cooling monsoon rains arrive. Unfortunately, just as everyone decided to crank up their ACs or at least their ceiling fans, electricity supply collapsed under the strain in large parts of the country. This is not, sadly, a rare occurrence. It happens almost every summer and on other occasions when power demand spikes.

There's no clearer evidence that India's electricity sector, dominated by coal-guzzling power plants and state-run utilities, simply isn't up to the job. And the problem is only going to get worse: India has rapidly electrified in recent years and peak power demand has been growing between 8% and 10% a year. Sometimes the generation companies can't pay for coal shipments because they, in turn, have not been paid by India's improvident electricity distribution companies. Sometimes Coal India Ltd., the state-run behemoth that produces 80% of India's coal supply, doesn't produce as much as promised, whether because its miners are on strike or for other reasons. Sometimes the coal has been dug out of the ground but left at the pithead because Indian Railways can't organize enough wagons or locomotives.

Sometimes protesters disrupt the long national coal supply chain. Sometimes the imported coal some plants prefer isn't available or shipments are late. Indians need to look at our dependence on coal-fired electricity with an objective eye. Far from being cheap and reliable, it too often winds up being pricier than it should be and absent when we need it most. Whatever else coal might provide India, it isn't energy security.

Source: [TheEconomicTimes](#), May 06, 2022

## Consumer Focus

The Appellant (domestic consumer) noticed an electrical shock while charging his phone. Upon inspecting using a tester he found that there was electricity leakage on the device while charging. Due to leakage, devices started heating up rapidly, resulting in damage to various devices. The members living in the house felt an electrical shock. Other family members also received shocks when they touched connected devices. The Appellant employed private parties who couldn't rectify the issue. The Appellant stated that he personally checked other buildings and confirmed this issue to be affecting the whole area. He claimed to have contacted the Respondent- Assistant Engineer (AE) by phone on 21.07.2021, following which the AE said he would send someone to check the problem. But this was not done. As the issue remained unresolved, the appellant filed a petition with the CGRF on 23.07.2021 but got no remedy even from this. Therefore, he appealed to the Electricity Ombudsman on 30.09.2021.

The Respondent argued that (unlike the Appellant's claims) the premises of the appellant had been inspected thoroughly by the AE as and when complaints were received. It was observed that there was electricity on the device while charging. The Respondent argued that officials responded swiftly to the petitioner's complaint each and every time. And after examining the premises thoroughly they figured out and explained that the problem was not due to TANGEDCO. All the gadgets from the Transformer to the consumer end were tested and overhauled, and therefore they could say with certainty that the problem was not due to the utility's power supply; the problem, they concluded, must either be with the phone charger or with the electrical wiring at the consumer's end. The respondent further argued that the AE had even demonstrated the same to the appellant, by isolating the consumer connection. It was observed that electricity leakage was sensed at the phone charger when the inverter was switched on. Respondent further stated that, in spite of explaining the facts on several occasions and multiple painstaking inspections, the appellant was unable to understand the technical issues and had filed this complaint. In addition to this, a thorough enquiry was conducted in that area and there was no complaint from anyone else. The Respondent submitted that as per [Regulation 30\(1\) of the Distribution Code](#), the consumer's installation should invariably comply with the statutory provisions contained under [Section 53 of the Act](#) relating to wiring and equipment. The responsibility with regard to maintenance or testing of equipment and wiring on the consumer's premises lies on the consumer.

During the hearing on 18.11.2021, Ombudsman ordered the conduct of a joint inspection on 24.11.2021 by the team consisting of AEE and AE of a different circle along with the appellant's representative. The inspection report states that normal voltages appeared on the meter, with no abnormality or fluctuations or leakage of supply in the system. Further, the adjoining premises were also inspected and observed to be normal. In light of the facts of the case, arguments put forth, the inspection report and the statutes relied upon, the Ombudsman passed the following order: a) There was no abnormality or fluctuations or leakages at any point of supply in the consumer premises, nor in the adjoining area. Hence, it was the responsibility of the appellant to rectify the defects, if any, in his premises including wiring. b) The Respondent was directed to issue a notice to the Appellant to install Residual Current Device (RCD) within a month from the date of receipt of the notice.

Source - [Ombudsman Case, TNERC](#)

## ECC VOICE

திரு.கிருஷ்ணன், கடம்பநெல்லூர் கிராமம், அரக்கோணம் வட்டத்தில் விவசாய மின் இணைப்பு வைத்திருக்கிறார். அவரது நிலத்தில் இருக்கும் மின் இணைப்பை இருக்கும் இடத்திலிருந்து புதிய இடத்திற்கு இடம் மாற்றம் (shifting of service connection) செய்வதற்கான விண்ணப்பம் மற்றும் கட்டணத்தை அரிகலபாடி இளநிலை பொறியாளர் அலுவலகத்தில் செலுத்தியுள்ளார். விண்ணப்பம் செலுத்தி ஒரு மாத காலம் ஆகியும் இடம் மாற்றம் செய்யாமல் இருந்ததால் இளநிலை பொறியாளர், அரிகலபாடி அவர்களிடம் புகார் மனுவை சமர்ப்பித்துள்ளார். ஆனால், 6 மாதம் காலம் ஆகியும் திரு. கிருஷ்ணன் கொடுத்த மனுவின் மீது எந்தவித நடவடிக்கையும் எடுக்கப்படவில்லை. மின் விழிப்புணர்வு நிகழ்ச்சியினை தொலைக்காட்சியில் கண்டு திரு. கிருஷ்ணன் வேலூர் மின் நுகர்வோர் மையத்தின் ஆலோசனை தொடர்பு கொண்டு தனது புகாரினை கொடுத்தார். வேலூர் மின் நுகர்வோர் மையம், அரிகலபாடி இளநிலை பொறியாளர் அவர்களுக்கு மின் நுகர்வோர் சார்பாக கடிதம் அனுப்பியது மற்றும் அதன் ஆலோசகர் தொலைபேசி மூலமாக அரிகலபாடி இளநிலை பொறியாளரிடம் பேசினார். புகார் பெற்ற ஒரு வாரத்தில் திரு. கிருஷ்ணன் அவர்களது விவசாய மின் இணைப்பு புதிய இடத்திற்கு மாற்றம் செய்யப்பட்டுவிட்டது. திரு. கிருஷ்ணன் அவர்கள் வேலூர் மின் நுகர்வோர் மையத்திற்கு தனது நன்றியினை தெரிவித்தார்.

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#### Initiative of



*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

### UN-Energy Plan of Action Towards 2025 launched

Against the backdrop of a global energy crisis and worsening climate emergency, the United Nations on Wednesday took a major step to catalyse the large-scale action and support needed for the transition to clean, affordable energy for all and net-zero emissions with the launch of a UN-Energy Plan of Action Towards 2025. The 'Plan of Action' was launched by some 30 leading organisations comprising UN-Energy. An Energy Compact Action Network was also launched to match those governments seeking support for their clean energy goals with those governments and businesses that have pledged over \$600 billion to support these commitments, the UN said in a release.

Coalitions were announced to support energy access and transition in Nigeria and the city of Santiago, Chile, showcasing the Network's potential, as well as to advance or expand coalitions supporting green hydrogen and a stronger role for women in leading and benefiting from the energy transition.

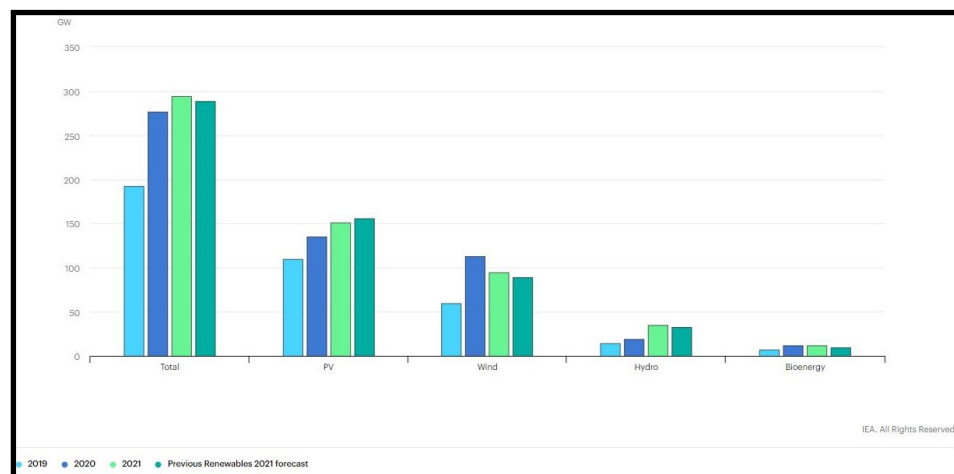
The 'UN-Energy Plan of Action Towards 2025' sets out a framework for collective action by nearly 30 UN and international organisations -- in order to achieve the massive pledge they made at the time of the High-level Dialogue. In line with the milestones set out in the Global Roadmap, by 2025, UN-Energy committed to support, facilitate and catalyse, inter alia, 500 million more people to gain access to electricity, and 1 billion more people to gain access to clean cooking solutions, as well as a 100 per cent increase in renewables capacity globally, no new coal power plants in the pipeline after 2021, 30 million jobs in renewable energy and energy efficiency, and doubling annual clean energy investment globally, the release added.

**Source:** [Energyworld.com](http://Energyworld.com), May 05, 2022

## Publications / Regulations

- Global Hydrogen Trade to Meet the 1.5°C Climate Goal: Green Hydrogen Cost and Potential, May 2022, [IRENA](http://IRENA)
- Renewable Energy Market Update, May 2022, [IEA](http://IEA)
- Unlocking the Potential of Distributed Energy Resources, May 2022, [IEA](http://IEA)
- Draft Central Electricity Regulatory Commission (Conduct of Business) Regulations- notified on May 2022, [CERC](http://CERC)
- Information related to Decentralized Solar Schemes, May 2022, [MNRE](http://MNRE)

## Renewable net capacity additions, 2019-2021



Source: [IEA](http://IEA)