

# TECA – NEWS CLIPPING

(Energy Conservation : It Doesn't Cost. It saves)

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## Tangedco opts for GPS to get wind power generation real time

Times of India : April 25, 2019

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Tangedco has started measuring wind power generation real time with the help of GPS over the last few months. GPS system has been installed in all windmills across the state and discom has been able to measure the power generation from a windmill without going to the spot.

Till now an assessor with the help of an equipment was recording the generation and there were several lacunae in such measurement, causing losses to the discom. Tangedco has also set up smart meters in all high tension consumers and this has prevented assessors from visiting the consumer and recording the consumption.

"After installing GPS in all windmills, we are able to get the bill from the wind power companies for selling wind power within 5 days of a new month, as against a delay of over a month earlier. There is also transparency as the bill is digital and no assessor is involved," said a senior Tangedco official.

Tamil Nadu is the first state to have used GPS in windmills. Other states like Karnataka, Gujarat and Maharashtra are also likely to opt for this route shortly.

Tamil Nadu has a total wind power capacity of 8,322 MW. "With the new billing scheme, it is easy for us to know the wind power generation in a real time. We depend on forecast for power schedule, but with GPS we are able to know the wind generation real time," said the official. The GPS scheme will also help the discom to know how many windmills are actually generating power during the wind season, as many are old and not generating at all.

In the coming months, the GPS system will be installed in solar, biomass and even in thermal plants there by ruling out malpractices in billing. This will help lower discom's expenditure too.

Meanwhile, the discom has also changed all digital meters with smart meters for high tension consumers. High tension consumers are mostly factories, IT offices and other companies, which consume large amount of power. "We have a software for the smart meters and through this the bills are sent to the consumers on the first day of a month. Here too we have stopped sending assessors to collect the data on how much power has been consumed," said the official.

The bills will be sent through SMS or email to the companies. "There are a total of 9,160 high tension consumers in the state. Through the smart meter, the billing will be uniform," he said.

## Renewable energy certificate sales down 65 per cent to 3.68 lakh in April

The Economic Times : April 28, 2019

IEX and PXIL are the two power bourses in the country which are engaged in trading of renewable energy certificates (RECs) and electricity.

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Sales of renewable energy certificates dropped by about 65 per cent to 3.68 lakh units in April as compared to 10.62 lakh in same month last year due to lower supply, according to official data.

Indian Energy Exchange (IEX) and Power Exchange of India (PXIL) are the two power bourses in the country which are engaged in trading of renewable energy certificates (RECs) and electricity.

The trading of RECs is conducted on the last Wednesday of every month.

According to official data, IEX saw total trade of 2.24 lakh in April compared to 7.81 lakh in same month last year. Similarly, PXIL recorded sale of 1.44 lakh RECs in the month compared to 2.81 lakh a year ago.

As many as 1,61,949 units of non-solar RECs were traded at IEX, with sell bids for 3,51,915 units and buy bids for 6,97,502 units. Besides, 62,853 units of solar RECs were traded, with sell bids for 1,42,148 units and buy bids for 3,61,606 units in April.

Both non-solar and solar RECs continued to see low supply situation with buy bids exceeding the sell bids due to very low inventory (supply).

Similarly at PXIL, for solar RECs, there were sell bids for 78,637 units while buy offers were for 1,97,645 units. In the non-solar REC category, the sell bids were for 1,32,223 units while buy bids were for 3,40,999 units in April.

Under the renewable purchase obligation (RPO), bulk purchasers like discoms, open access consumers and capacitive users are required to buy certain proportion of RECs. They can buy RECs from renewable energy producers to meet the RPO norms.

The proportion of renewable energy for utilities are fixed by the central and state electricity regulatory commissions.

The REC mechanism is a market based instrument to promote renewable sources of energy and development of market in electricity. It provides an alternative voluntary route to a generator to sell his electricity from renewable sources just like conventional electricity and offer the green attribute (RECs) separately to obligated entities to fulfil their RPO.

## **INNOVATION: Caffeine gives solar cells an energy boost, scientists suggest**

**The Economic Times : April 28, 2019**

Caffeine in coffee is an alkaloid compound containing molecular structures that could interact with the precursors of perovskite materials

Washington DC: A team of scientists has discovered that caffeine can be a promising alternative in making traditional solar cells more efficient at converting light to electricity.

According to the scientists, it all began as a joke over morning coffee. "One day, as we were discussing perovskite solar cells, our colleague said, 'If we need coffee to boost our energy then what about perovskites? Would they need coffee to perform better?'" recalled Jingjing Xue.

The offhand comment led the team to recall that the caffeine in coffee is an alkaloid compound containing molecular structures that could interact with the precursors of perovskite materials -compounds with a particular crystal structure that forms the light-harvesting layer in a class of solar cells.

Previous attempts to improve the thermal stability of these solar cells have included enhancing the perovskite layer by introducing compounds such as dimethyl sulfoxide, but researchers have struggled to boost the cells' efficiency and long-term stability. No one had tried caffeine.

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Realising they might be onto something, the team set aside their coffee and began investigating further. They added caffeine to the perovskite layer of forty solar cells and used infrared spectroscopy (which uses infrared radiation to identify chemical compounds) to determine that the caffeine had successfully bonded with the material.

Conducting further infrared spectroscopy tests, they observed that the carbonyl groups (a carbon atom double bonded to an oxygen) in caffeine interacted with lead ions in the layer to create a "molecular lock".

This interaction increased the minimum amount of energy required for the perovskite film to react, boosting the solar cell efficiency from 17 percent to over 20 percent. The molecular lock continued to occur when the material was heated, which could help prevent heat from breaking down the layer.

"We were surprised by the results. During our first try incorporating caffeine, our perovskite solar cells already reached almost the highest efficiency we achieved in the paper," said Rui Wang, one of the lead researchers of the study published in the *Journal ofoule*.

But while caffeine appears to significantly improve the performance of cells that utilize perovskite to absorb sunlight, the researchers do not think it will be useful for other types of solar cells.

The unique molecular structure of caffeine only allows it to interact with perovskite precursors, which may give this solar cell variety an edge on the market. Perovskite solar cells already have the advantage of being cheaper and more flexible than their silicon counterparts.

They are also easier to manufacture - perovskite cells can be fabricated from solution-based precursors as opposed to solid crystal ingots. With further research, Wang believes caffeine may facilitate large-scale production of perovskite solar cells.

## **Reforms short-circuited**

**The Business Line : April 24, 2019**

### **The UDAY scheme does not address basic issues in power distribution**

A recent *BusinessLine* analysis (April 21) points out how the financial condition of power distribution companies has only worsened after the launch of the Ujjwal Discom Assurance Yojana (UDAY). Their dues to power generators, at over ₹41,000 crore, have been rising after the launch of UDAY in 2015. The aims of UDAY — reduction in aggregate technical and commercial losses, reduction of the gap between costs and revenue and tariff revisions — have not been met. A complex tangle of factors is responsible for the power sector being persistently in the red. A key factor is the problem of unaccounted power. The fact that all connections are not metered (and this is true even of urban pockets) means that discom estimates of consumption cannot be taken at face value. Electricity regulators have not been proactive enough in ensuring that 'interface metering', which would provide an account of offtake from a baseload station is complete and its record reliable. It is inexplicable that such meters are manual rather than digitised, allowing discoms to claim, often to their convenience, that their readings are prone to error. This lack of basic transparency allows for power theft, which is often attributed to farm consumption. Hence, 'commercial losses' are a bigger issue than 'technical' losses. While providing free power to agriculture is unadvisable for its ecological impact, the discoms too need to keep their side of the bargain — which is to serve rural areas with reliable supply of power, so that the people are willing to pay for it. The existing trust deficit has held up efforts to provide metered power, check theft and charge consumers appropriately. The onus, therefore, lies on the discoms to first improve the quality of power — for livelihood and economic functions — and the upkeep of infrastructure, before charging users more.

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While the discoms have mismanaged supplies, they too have been overwhelmed by ecosystem changes. One of these is the falling cost of renewables. This has created a two-fold complication. Large consumers have moved to open access or captive generation, jeopardising the age-old cross-subsidy model of the discoms. Meanwhile, the discoms have locked themselves into costly long-term power purchase pacts with legacy generators. A way out of this is to ensure that large consumers get into long-term open access contracts. This will enable discoms to plan their power purchases more accurately. They should stick to short-term contracts. With the falling cost of renewables, discoms need to enhance their share. As for the cost of securing the grid from fluctuations that arise out of renewables generation, a CEA study estimates that this is not such a significant issue.

It is remarkable that electricity has reached all of India, thanks to a sustained 20-year effort. It needs to be clean, affordable and reliable for it to lift the economic and general well being of 1.3 billion people. Schemes like UDAY need a periodic reality check.

### **India's power demand hit a record high on Friday night**

Live Mint : April 27, 2019

- India's electricity demand touched an all time record high of 176.724 gigawatts on Friday night
- The all-time high for electricity in the spot market was ₹18.2 per unit for 4 October delivery last year

India's electricity demand touched an all time record high of 176.724 gigawatts (GW) on Friday night at a time when the general elections to elect the 17th Lok Sabha are on. This comes in the backdrop of mercury soaring in Central India on Wednesday, with the temperature reportedly touching 45 degrees Celsius in parts of Madhya Pradesh and Maharashtra. Delhi yesterday also recorded the hottest day of the season with temperature touching 43 degrees Celsius in the national capital.

*Mint* reported on 19 March about India's demand for electricity and auto fuel expected to go up as India approaches general elections.

"All India demand touched 176,724 MW (all time highest) at 23.06 hrs on 26 April, surpassing earlier peak of 175,590 MW on 18 Sept, 2018," power secretary Ajay Bhalla said in a tweet on Saturday.

In the build up to the general and the state assembly elections last year, additional power requisitioning by distribution companies had led to a short-term hike in electricity prices.

According to data collated by Icrea and the Indian Energy Exchange (IEX), the demand for electricity, petrol and diesel picked up in March of 2009 and 2014, just before general elections. While the 2009 elections were held in five phases from 16 April to 13 May, the 2014 elections were held over nine phases from 7 April to 12 May. Polling this year is being held in seven phases from 11 April to 19 May.

Of India's installed capacity of 350.162 GW, peak electricity demand has been low due to issues such as precarious finances of some state-owned electricity distribution companies, which prevents them from power procurement of the required quantum.

The all-time high for electricity in the spot market was ₹18.2 per unit for 4 October delivery last year. Of the estimated 1,200 billion units (BU) of electricity generated in India, the short-term market comprises 130-150BU.

The government claims that in the nine months of FY19, peak demand grew at 7.9% as compared to 2.8% in the corresponding period in FY18. It attributed this increased power demand to the spread of household electrification, increased supply to agricultural consumers, low hydropower generation and extended summers.

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