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

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Wind energy generation reaches record high

Times of India: August 21, 2016

Wind power consumption in Tamil Nadu has reached a record high. Since May 15, when the wind power season started, the state has consumed 6,087 lakh million units, which is several times more than the wind power consumption in 2014 and 2015. On an average, about 22% of the power requirement in the state over the past three months has been met by wind energy.

Due to commissioning of transmission lines as part of the green corridor from Kayathar in Tuticorin district to Kancheepuram as well as another line in the western districts, the wind power evacuation has increased. On an average, nearly 4,000MW of wind power is being evacuated daily during the present wind season, especially during evening hours.

"Apart from the Kayathar line, we have also commissioned Coimbatore-Rasipalayam-Balavadi transmission line to evacuate wind power. To the extent possible, we have replaced thermal power with wind energy," said a senior Tangedco official.

Tangedco has also set up a Renewable Energy Management Centre (REMC) within its load dispatch centre. This helps the dispatch centre forecast wind power generation and regulate production at thermal plants. "The officials at the centre are positive about harnessing wind energy to the maximum, utilising scientific forecasting by the National Institute of Wind Energy (NIWE) and data from the 117 pooling substations of the windmill farms," he said.

With the wind energy generation going up, Tangedco has stopped purchase of power from private thermal power companies, thereby saving several crores of rupees. "We have stopped purchase of 900MW from private thermal companies. The cost of each unit from these companies is around Rs 5.10, but we get wind energy at Rs 4.10 per unit," he said.

Meanwhile, on August 16, wind power evacuation in Tamil Nadu reached a record high of 4,715MW, accounting for 33% of the total energy evacuated on that day, chairman of the Indian Wind Power Association, K Kasthurirangan told TOI.

"The average evacuation has been between 4,200 and 4,300MW this season. High amount of evacuation is due to the forecasting and scheduling system installed at wind mills," he said. During previous years, Tamil Nadu was not able to evacuate much of the wind energy generated in the state owing to poor evacuation facilities, he said.

Kudankulam Unit 2 Capacity Being Increased For Grid Synchronisation

New Indian Express: August 20, 2016

The power generation capacity of the second 1,000 MW unit at the Kudankulam Nuclear Power Plant (KNPP) is being increased for its further synchronisation with India's national grid, a KNPP source said on Saturday.

"The second unit is currently at the power start-up stage. During this stage, the capacity of Unit 2 will be gradually increased for further synchronisation with the grid," the source told IANS over telephone.

"A unit is usually connected to the grid at 30 per cent capacity level and synchronisation proceeds on the subsequent attainment of 100 per cent capacity level," he said.



"The second unit might be synchronised with the national grid by August-end," the source added.

India's Atomic Energy Regulatory Board this week gave clearance for increasing the power supply from the second unit at KNPP.

Unit 1 of the KNPP being built by Russia's atomic energy corporation Rosatom was dedicated to the nation earlier this month by Prime Minister Narendra Modi, Russian President Vladimir Putin and Tamil Nadu Chief Minister J Jayalalithaa.

Rosatom's Vice-President (Projects) in South Asia Andrey Lebedev had said over the phone earlier this week that "unit 2 is scheduled for synchronisation with the Southern Grid for August 27-28".

The second unit at Kudankulam went critical last month when the stage of physical start-up was completed successfully, and it is expected to be commissioned later this year.

KNPP site director RS Sundar told visiting journalists last week that "Unit 1 has so far generated 10,900 million units of electricity since its synchronisation with the Southern Grid following the reactor's criticality on July 13, 2013."

"We have recently completed 175 days of continuous operation of Unit 1 and its performance is excellent," he added.

On the day of dedicating Unit 1 to the nation on August 10, PM Modi said five more 1,000 MW units would be built at Kudankulam with Russian partnership.

In this connection, Russia has offered India a new range of reactor units -- the VVER-Toi (typical optimised, enhanced information) design -- for the third and fourth units.

An agreement between India and Russia was signed in December 2008 for setting up Kudankulam's units 3 to 6. The ground-breaking ceremony for the construction of units 3 and 4 was performed earlier this year.

Meanwhile, Modi on Saturday reaffirmed India's time-tested ties with Moscow when Russian Deputy Prime Minister Dmitry Rogozin called on him in New Delhi.

"He recalled his recent meeting with President Putin in Tashkent in June and via video-link for dedication of the Kudankulam Nuclear Power Plant Unit 1 at the beginning of this month," a statement issued by the Prime Minister's Office here said.

On his part, Rogozin conveyed Putin's greetings to Modi and briefed him on the progress in ongoing projects between India and Russia, it added.

There is no power shortage in the country – but the entire sector is in a mess

Scroll.in: August 19, 2016

The power sector urgently needs better financial management and more investment in transmission and distribution infrastructure, not capacity addition

"There is no shortage of power in the country," said energy minister Piyush Goyal recently. "We have sufficient power and if any state wants to buy power, one can do so from a portal now". He does not foresee any shortage in the next four to five years, Goyal said in another interview in June.

India more than doubled its electricity generation capacity between 2005 and 2015, with coal-based plants accounting for more than 60% of the new capacity. Installed capacity stands at 300,000 MW according to the Central Electricity Authority, as of May 2016.

But it does not mean all is well. India's electricity sector is a shambles. Severely indebted distribution companies, an ageing and leaky transmission and distribution infrastructure, unsustainable tariff regimes and pathetically low plant load factors or capacity utilisation have rendered past and ongoing investments, particularly in capacity addition, risk-prone and wasteful.

Goyal is aware of these problems. He has, to his credit, demonstrated a keenness to set the house in order. But his job is not being made any easier by the prime minister or states like Tamil Nadu that continue to insist on unnecessary enhancement of expensive and unpopular generation capacity at a time when attention and investment ought to be targeted elsewhere.

Non-starters

The continued pursuit of coal-fired ultra mega power projects, and the prime minister's nuclear bonanza to the Americans, French and Russians are both likely to be non-starters that will cause much social disruption. In the unlikely event that the projects are realised, they will be unmitigated financial disasters well before the environmental and safety problems begin.

Neither pursuit makes sense financially. In June 2016, the Nuclear Power Corporation of India Ltd cancelled Westinghouse's allocation in Gujarat and relocated the 6 x 1100 MW nuclear park to Andhra Pradesh's Srikakulam district. An analysis by Institute of Energy Economics and Financial Analysis headquartered in the United States found that the first-of-their-kind Westinghouse AP1000 reactors will cost between Rs 2.4 lakh crore and Rs. 4.5 lakh crore to build – that is a per MW cost of between Rs 36 crores and Rs 68 crore. Grid connected solar plants cost Rs 6 crore per MW and coal power plants Rs 7 crore per MW.

In the unlikely event that construction begins early next year, the first plant will not come on stream until 2029. Electricity from that plant will cost between Rs 11.18 and 22.12 per kilowatt hour in 2029 when solar rates are expected to have dropped to Rs 3 per unit.

The ultra mega power project story is no different. In the seven years since the 4000 MW imported coal-based project was announced in Cheyyur, Tamil Nadu, capital cost for the project has gone up by 35% – from Rs 20,000 crore to Rs 27,000 crore.

The project's dodgy financials have deterred investors. In 2015, the bidding process failed after all private sector bidders withdrew. The energy ministry has since suggested revisions to the bidding guidelines. As per the new suggestions, promoters will be allowed to own, instead of transfer, the project they build and operate, and convey fuel cost hikes and forex volatility to consumers.

"The fuel-cost pass-through will expose consumers and discoms to tariff volatility," said the IEEFA which put the cost of electricity from Cheyyur at Rs 5.95 per kWh – two to five times higher than other such projects, and 85 paise higher than the recently announced solar tariff for Tamil Nadu.

"The real issue with the Tamil Nadu electricity sector is not the availability of power generating capacity, but the high indebtedness and grid transmission and distribution losses," the report concludes. That is true for the country as a whole.

Between 2005 to 2015, the Tamil Nadu Generation and Distribution Corporation ran up losses of Rs 65,000 crore, and a debt of Rs 80,000 crore, making it among the top indebted discoms in the country. It began taking steps to repair the situation last year, announcing in March that it had cut losses by Rs 3000 crore. But two months later, within days of returning to power, Chief Minister J Jayalalithaa announced free electricity for the first 100 units of consumption, setting back the exchequer annually by Rs 1,607 crore. Eventually, credit-rating agencies ICRA and CARE downgraded its rating earlier this year, citing



“exceptionally high” aggregate technical and commercial losses of 24.4% in 2014-15. The global grid average loss is 6% to 8% and the German high is 4% to 5%.

Transmission and distribution

Fixing this requires better financial management, and more investment in transmission and distribution infrastructure, not capacity addition. The transmission capacity just does not match the generation capacity. Global best practice recommends that for every MW of generation capacity added, 7 MVA of power transformation capacity in transmission and distribution be built. In India, only 3 MVA is added, according to a recent paper by ICICI Securities. A quarter of what little is transmitted is lost between the power plant busbar and the consumer.

Narendra Modi and Jayalalithaa have been announcing capacity additions in Ramanathapuram and Koodankulam. But if Cheyyur were to be built tomorrow, the infrastructure to evacuate its power does not exist. The TANGEDCO does not have money to buy itself an LED bulb, leave alone surpluses left to invest in evacuation capacity.

Every summer, Tamil Nadu lets substantial wind generation capacity idle or under-operate – the grid does not have the capacity to convey the electricity that would be generated if all the turbines ran to capacity. Thankfully, the Koodankulam Unit 1 that is located in this windy belt is a lemon with an average generating only 25% of its capacity. If it had operated at 80% capacity as well-designed nuclear plants do, Tamil Nadu would have been forced to shut down all wind turbines for the grid to accommodate the prioritised baseload from this plant.

The IEEFA estimates that India’s coal thermal plants generate only 58% of their capacity. That is pathetically low. Increasing capacity to 70% would wipe out the entire base load deficit without adding a single MW of generating capacity, estimated a rough 2015 estimate by CRISIL.

To sum up, the issue is that existing plants are under-utilised. Where is the need for new capacity?

Coal-based power plants are unbankable. Even Indian public sector banks, which are known for the devil-may-care attitude with extending loans are beginning to act cautious. The IEEFA finds that at 11%, the largest chunk of Indian banks’ stressed advances is to the power sector. Adding capacity would force new projects to operate at even lower capacities, eroding their ability to service loans.

Tamil Nadu and the rest of India should fix their creaky, leaky buckets before adding any new capacity to the grid.

Power cuts in a time of surplus

Live Mint: August 18, 2016

24x7 reliable power supply to all at an affordable price would be the best gauge of power sector growth

Recent bids on power exchanges indicate electricity tariffs are at their lowest ever. In July, the Indian Energy Exchange saw a total 6.74 billion units put on sale, compared with purchases of 3.98 billion units at an average tariff of Rs.2.16 per unit.

Theoretically, this suggests India has finally become a “power surplus” nation, exactly 137 years after the first demonstration of electric light was given in Kolkata by P.W. Fleury & Co.

Yet, the stark reality is that many states are witnessing power cuts of 4-5 hours every day. In Uttar Pradesh, planned load shedding is as much as 11-12 hours in rural areas and 5-6 hours in urban, according to the Uttar Pradesh Power Corp. Ltd website.



What's causing this anomaly? There are four reasons. The first is that while capacity addition has peaked, industrial and commercial offtake remains low. In the three years ended fiscal 2015, capacity addition was 74.72 gigawatts, the fastest in a decade. However, growth in industrial and commercial consumption—the highest-paying segment under the telescopic tariff structure followed—was only around 4.57%, as per a Central Electricity Authority (CEA) report, *Growth of Electricity Sector in India From 1947 to 2015*. Only the domestic consumer segment, which puts additional cost burden on the distribution utilities given lower tariffs, saw decent demand growth of 8.9%, as per CEA estimates. In some states such as Maharashtra, industrial and commercial consumption declined 0.73% while domestic consumption increased 7.81% in the three years.

The second is that cost of supply has increased, as have aggregate technical and commercial (AT&C) losses. Domestic consumers do not have the capacity to absorb all the incremental power produced, or pay higher cost. Distribution companies, or discoms, typically incur higher cost on supplies to this segment and earn lower revenues. Small wonder they are resorting to load shedding.

The practice of power cuts is more extensive in rural areas, where the cost of supply is significantly higher, demand density lower and AT&C losses higher than in urban areas.

There is also a limit to how much industrial and commercial consumers can be exploited to recover losses from electricity supplies to homes, or the so-called cross-subsidization. To boot, higher industrial and commercial tariffs are already impacting the competitiveness of domestic firms.

Third, local distribution continues to be a problem for want of infrastructure. In urban centres such as Noida, Faridabad and Gurgaon, inadequate distribution capacity has meant power cuts being extended beyond planned load shedding. Taking cognizance of this, the government has sharpened its focus on fund allocation under the Integrated Power Development Scheme to strengthen networks.

And fourth is the financial health of discoms and the challenges to their revival. Intermittent AT&C losses are a major reason—apart from the humongous debt burden—why discoms are in the doghouse. At the national level, AT&C losses are already high at 22.7%—meaning nearly a quarter of the electricity produced in India is wasted. That national average has been driven up because losses are significantly higher in five states: 46% in Bihar, 39% in Odisha, 32% in West Bengal, 28% in Madhya Pradesh and 27% in Rajasthan, according to a Power Finance Corporation report on the performance of state utilities.

While technical losses can largely be attributed to infrastructural issues and consumption mix at different voltage levels, the bigger problem is poor billing and collection efficiency. Additionally, disbursement of tariff subsidy by states is inadequate and irregular.

To be sure, the government has taken a number of initiatives, including initiating a road map to achieve reliable 24x7 power for all in every state, and improving the financials of discoms through the Ujwal Discom Assurance Yojana (UDAY).

UDAY has immense potential to cure discoms through initiatives proposed under four broad categories: improvement of operational efficiencies; reduction of cost of power; reduction in interest cost; and, enforcement of financial discipline through alignment with state finances. However, success hinges on relentless implementation by states.

In a nutshell, the ills plaguing the sector can be attributed to poor financials of discoms, inadequate investment in transmission and distribution infrastructure and lack of cost recovery from certain consumers.



Also such simple deductions of “power surplus” divert attention from the stark reality that there are more than 55 million households waiting to be plugged in. That latent demand is not part of any “surplus” calculus.

That’s why when measuring power sector growth—and planning to scale up for the future—using just the yardstick of “adequate availability of electricity” will be inadequate. A truer, holistic gauge would be 24x7 reliable power supply to all at an affordable price.

To achieve that objective, states will have to show strong resolve to reduce AT&C losses, invest in infrastructure development, ensure efficient commercial operation of discoms, make timely tariff revisions, and reduce the cross-subsidization that’s impacting the competitiveness of the industry and services sectors.

The time is also right, perhaps, to provide direct, targeted subsidies to electricity consumers who can’t pay much—if at all. The learnings from the LPG direct subsidy transfer project would be very handy here

CEA working on 13th electricity plan

Business Standard: August 21, 2016

Central Electricity Authority (CEA) is working on the 13th National Electricity Plan and the draft is expected in a month.

"We are working on 13th national electricity plan for five years and perspective plan for the next five years," CEA chairman S D Dubey said.

The plan will try to gauge power demand in the country and highlight policy enablers to achieve the same.

"Earlier, the plan used to demand that projections be made state-wise. But this time, we are undertaking demand at discom level," Dubey said.

CEA will map some 78 distribution companies of the country in the process.

The 12th plan (2012-17) had estimated a capacity addition of about 76,000 MW to meet the demand projections of the country, of which 63,000 MW would be coal based.

Inter-regional transmission capacity of 37,800 MW was projected during the period.

With rise in renewables, mainly in solar generation, and with impetus from government, an installed capacity of 100GW of solar was expected by one to two years from 19,000 MW in 2015-16.

In the wake of high renewable generations in the country, new standards in power sector are also being worked out by the authority.

"We are working on standards on construction, operation and maintenance of power equipment for renewable electricity systems for grid stability," Dubey said.

Stakeholders' feedback is received and after modifications new standards will be revealed shortly.

In the 12th plan, 40 per cent of power projects were super critical which will increase in the years to come, he indicated.

LED bulbs can help save Rs 1.25 lakh cr in energy cost: PM

Business Standard: August 16, 2016



Modi also said LED bulbs not just save electricity but also reduce CO2 emissions and contribute to the environment

Price of energy-efficient LED bulbs has dropped to Rs 50 from previous Rs 350 following government intervention, said Prime Minister Narendra Modi as he targeted saving Rs 1.25 lakh crore in energy cost through installation of 77 crore such lighting devices.

Delivering his third Independence Day address from the ramparts of the Red Fort, he said light-emitting diode (LED) bulbs not just save electricity but also reduce CO2 emissions and contribute to the environment and the economy.

"LED bulb used to cost Rs 350 (apiece) in India. At that price who will buy a LED bulb (over a conventional bulb). And the government did not bother much about it.

"But if the LED bulb can change the life of people, environment and economy, the government should also try to change its work culture. We did that and through government intervention, the price of a Rs 350 LED bulb has now been brought down to Rs 50," he said.

Use of LEDs in households and public lighting could reduce energy consumption by 50% to 90%.

So far, the government has distributed more than 13 crore LED bulbs, and is aiming to distribute more than 70 crore bulbs through bulk orders within the next three years.

Under the Domestic Efficient Lighting Programme (DELP), the government procures LED bulbs through competitive bidding and provides the bulbs to consumers at competitive rates. This has led to bringing down of cost of LED bulbs.

Stating that so far 13 crore LED bulbs have been distributed, Modi said the government would have been hailed by people if it would have resorted to populist style of giving Rs 300 as subsidy from the exchequer.

But through its intervention, thousands of crores of rupees in energy cost as well as price of LED bulb have been saved, he said.

If the 77 crore incandescent bulbs sold in Indian households were switched to LEDs, the country could save 20,000 megawatt (25 billion KWh or units) of energy per year worth Rs 1.25 lakh crore, he said.

He appealed to citizens to switch to LED bulbs and save Rs 250-500 in electricity bill. "We can save Rs 1.25 lakh crore in energy bills annually if 77 crore LED bulbs are installed and 20,000 MW of consumption cut," he said.

Save Energy. Save Money. Save the Planet

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