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20.08.2019

Coal ministry panel approves fuel supply to Tamil Nadu power plants

Financial Express : August 20, 2019

Although the North Chennai unit was originally scheduled to be commissioned in December 2019, it is now expected to be ready only by March 2020.

The coal ministry's standing committee on linkage has approved fresh fuel supply to upcoming power generation units in Tamil Nadu having capacity of 2,400 MW. The two under-construction power plants — North Chennai Thermal Power Station Stage-III (800 MW) and Uppur Super Critical Thermal Power Project (1,600 MW) — had sought domestic coal linkages under the Centre's Shakti scheme. The panel has recommended two million tonne of domestic coal supply from the Singareni Collieries, and the rest would be procured from Coal India (CIL). The two power plants would blend imported and domestic coal on a 50:50 ratio. The Shakti scheme was designed to save power plants who were without adequate fuel supply agreements.

Although the North Chennai unit was originally scheduled to be commissioned in December 2019, it is now expected to be ready only by March 2020. Similarly, the expected commissioning of the Uppur project has been delayed to March 2022 from the initial timeline of April 2020.

The coal ministry's committee has also recommended the extension of existing bridge linkages to NTPC's 500 MW Barauni Stage-2 plant (Bihar) and DVC's units in Mejia (West Bengal) and Chandrapura (Jharkhand). Bridge linkages are temporary supply contracts for state-owned generation units that have been allotted coal blocks, but mines are yet to start production.

NTPC Barauni will receive coal under the bridge linkage only for a year from the formal allotment of the Badam coal block. The power plants of DVC are scheduled to get coal from the Khagra Joydev coal block. The Khagra mine was expected to produce coal from June 2015 but it is yet to receive environmental and forest clearances and sort out land acquisition issues.

The panel also recommended coal linkages from CIL to Gujarat, Uttar Pradesh and Madhya Pradesh under the Shakti scheme. It also directed CIL to earmark 10 million tonne per year of coal for three years for power plants which would sell electricity through the central government's so-called Pilot scheme-2 to salvage private generating stations without power purchase agreement. However, coal allocation to plants under the Shakti scheme is contingent on approvals of other authorities.

Large industries unable to tap rooftop solar energy

The Hindu : August 19, 2019

For large-scale industries, which are high tension (HT) electricity consumers, in the State, rooftop solar energy system is yet to become attractive though Tamil Nadu has a new solar policy.

"The solar policy has not addressed the HT consumers. Several applications submitted during the last two years are also pending for approval with the Tamil Nadu Generation



and Distribution Corporation (Tangedco)," claimed A.D. Thirumoorthy, member, State Level Renewable Energy Committee.

According to him, Tamil Nadu has just about 500 MW of solar energy installed by HT consumers. They are mostly rooftop installations. "The industries that want to go in for solar energy on their premises, rooftop or on the ground, have to get a safety certificate from the electrical inspector and Tangedco permission too. Those who installed solar energy systems outside the industry premises, in a different location, get the permission. But, those who want to go in for rooftop or installation on the same premises are unable to get permission," he said.

Mr. Thirumoorthy said solar energy developers in the State appealed to the government to allow HT consumers, which are mainly industries, to install solar energy systems on their premises. This will reduce transmission losses too.

According to Prabhu Dhamodharan, convenor of Indian Texpreneurs Federation, textile mills are going through a tough phase and those continuing operation are able to do so mainly because of the price advantage they get from captive wind energy generation. Power cost constitutes 10% to 12% of the production cost for the mills. Renewable energy for captive use helps the industry improve its competitiveness.

Punjab, Maharashtra, and Gujarat are supporting the HT industry with concessions in power cost. However, in Tamil Nadu, the industries are facing several hurdles in getting permission for rooftop solar projects, he said.

An industrial source added that industries that invested in solar energy and installed panels are waiting for approval. This adds to the financial burden of the industries.

Tamil Nadu Electricity Consumers Association secretary N. Pradeep said the State should also have a policy to promote hybrid power generation.

Power generation firms outstanding dues rise by over 30% to Rs 46,400 crore in June

Business Today : August 18, 2019

Discoms in Tamil Nadu, Karnataka, Uttar Pradesh, Rajasthan, Telangana, Andhra Pradesh, Madhya Pradesh and Jammu & Kashmir account for the major portion of dues to power generating companies

The outstanding dues of power producers from distribution utilities have risen by more than 30 per cent to Rs 46,412 crore in June 2019 compared to the same month of the last year, showing stress in the sector.

According to PRAAPTI portal, distribution companies owed a total of Rs 34,465 crore to power generation companies in June 2018. The portal was launched in May 2018 to bring in transparency in power purchase transactions between generators and discoms.

In June this year, total overdue amount, which was not cleared even after 60 days of a grace period offered by generators, stood at Rs 30,552 crore against Rs 21,739 crore in the same month in 2018. Power producers give 60 days time to discoms for paying bills for the supply of electricity.

After that, the outstanding becomes overdue and generators charge penal interest on that in most of the cases. In order to give relief to power generation companies, the Centre has enforced a payment security mechanism from August 1, 2019.

Under this mechanism, the discoms are required to open letters of credit for getting power supplies. The data on the portal indicates that the outstanding, as well as the overdue amount, have increased over the preceding month. In May 2019, the total outstanding on discoms was Rs 43,814 crore while the total overdue amount was Rs 25,660 crore.

Discoms in Tamil Nadu, Karnataka, Uttar Pradesh, Rajasthan, Telangana, Andhra Pradesh, Madhya Pradesh and Jammu & Kashmir account for the major portion of dues



to power generating companies, taking a longer duration of up to 839 days to make payments, the portal showed.

Madhya Pradesh tops the list with 839 days to make payments, followed by Bihar (789 days), Andhra Pradesh (787 days), Haryana (787 days), Telangana (767 days) Karnataka (761 days), Tamil Nadu (760 days), Punjab (757 day) and Jammu & Kashmir (756 days) in that order.

Overdues of independent power producers amount to over 62.27 per cent of the total overdue of Rs 30,552 crore on discoms.

Among the public sector power generators, NTPC alone has an overdue amount of Rs 6,342.94 crore on discoms followed by NLC India at Rs 4,604 crore, THDC India at Rs 1,971.73, NHPC at Rs 1,963.71 crore and Damodar Valley Corporation at Rs 843.79 crore.

Discoms owe the highest overdue of Rs 3,201.68 crore to Adani Power followed by Bajaj Group-owned Lalitpur Power Generation Company Ltd at Rs 1,980.26 crore and GMR at Rs 1,733.18 crore among private generators

Kudankulam power plant 3rd unit moves towards operationalisation ahead of PM's Russia trip

The Economic Times : August 19, 2019

The Unit-3 of Kudankulam Nuclear Power Plant (NPP) has taken a key step towards operationalisation with supply of main equipment for the plant ahead of PM Narendra Modi's visit to Russia in September first week.

Andrey Lebedev, Vice-President for projects in India of ASE, Russia's Rosatom State Atomic Energy Corporation Engineering Division, said that all main equipment have been supplied.

Rosatom State Corporation is main equipment suppliers and technical consultants for the Kudankulam Nuclear Power Plant project.

The shipment consisted of the molten core catcher, embedded parts of the reactor pit, dry protection, heat-insulation of the cylindrical shell/barrel, truss buckstay, reactor vessel. These are part of the enhanced safety features in VVER-1000 reactors. A thrust truss and devices for neutron flux monitoring chambers allocation are expected to be delivered by the next shipload.

A core melt localization device (CMLD), or a "core catcher," is one of the most important passive safety systems of modern nuclear power plants of Russian design. CMLD is installed at the bottom of the plants's protective shell. It is designed to localize and cool the molten core material in case of a hypothetical accident that could lead to damage to the core. The "core catcher" allows the integrity of the protective shell to be preserved and thus excludes radioactive emission in the environment, even if the hypothetical accident is serious.

The passive safety systems are capable of functioning even in the event of a complete loss of power supply. They can provide full safety without the active systems and an operator. For example, the passive heat removal system (PHRS) ensures long-term heat removal from the reactor core section if all the other power supply sources fail. If necessary, the system can switch on without external interference and function under the influence of purely natural factors.

"Taking into account that four steam generators, a pressurizer, main coolant pipelines and a bubbler were delivered earlier, ASE has mostly completed the procurement of the containment equipment for the third unit to ensure uninterrupted and continuous operations for the reactor plant construction which is on the critical path of the project," said Lebedev.



Kudankulam NPP is being constructed in Tamil Nadu within the scope of Russian-Indian agreement of 1988 and its attachments dated 1998 and the Agreement as of December 08, 2008.

In October 2013 Unit-1 of the Kudankulam NPP was connected to the southern power grid. In August 2016 Unit-2 of the Kudankulam NPP was connected to the power grid. Unit-3 and Unit-4 of the Kudankulam NPP are under construction. The contracts for construction of Unit-5 and Unit-6 have been signed and the preparatory works are in progress.

Rosatom State Atomic Energy Corporation is the largest electricity generating company in Russia, providing over 18% of the country's energy needs. The company ranks first in the world in terms of the size of its foreign projects portfolio, with 36 power units in 12 countries at various stages of implementation. Rosatom ranks first in the world in uranium enrichment, second in the world in uranium reserves and fourth in terms of its production, and provides 17% of the nuclear fuel market.

Rosatom brings together about 400 enterprises and organizations, including the world's only nuclear icebreaker fleet. Together, they employ about 250,000 people.

India leads world in growth of energy sector investments between 2015-18

Business Standard : August 17, 2019

Flows into the sector expand by 12% in calendar 2018 alone, India is outlier since energy sector investments elsewhere have either stagnated or decelerated

Growth in energy sector investments was the most pronounced in India compared to any other region in the world between 2015 and 2018.

Data compiled by the International Energy Agency (IEA) showed that India's energy sector investments expanded by 12 per cent in calendar 2018 alone. During 2015-2018, investments flowing into the country's energy sector are estimated to have grown by seven per cent CAGR (compounded annual growth rate). Investments, including private foreign capital, poured into areas like coal supply, oil & gas, energy efficiency, renewable power, electricity networks, thermal power and renewables for transport or heat.

In terms of volumes of energy-centric investments, India ranked fourth - behind China, United States (US) and Europe but raced ahead of South East Asia and sub-Saharan Africa regions. India is the outlier since energy sector investments in rest of the geographies have either stagnated or decelerated.

A report by the US-based think-tank, Institute for Energy Economics & Financial Analysis (IEEFA), notes that the tender outcomes at India's solar and wind power auctions have offered constant evidence of global private capital chasing the country's planned projects. Major international investors such as SoftBank, Brookfield (a leading alternative asset manager), leading Japanese conglomerate ORIX and Sembcorp have loosened their purse strings to fuel India's appetite for renewable growth.

SoftBank led by Japan's Masayoshi Son, is investing heavily in India's renewable energy portfolio through its energy arm SB Energy. The company owns more than 3,000 Mw of renewable capacity under development awarded through competitive reverse bidding auctions. Endorsing the deflationary nature of the Government of India led International Solar Alliance (ISA), Softbank chief executive officer Masayoshi Son went so far as to promise free power from its solar plants in India to ISA member countries after the completion of the asset's initial 25-year Power Purchase Agreement (PPA) period. SoftBank recently invested \$250 million in Ola Electric, an electric mobility service company. Established in 2017, SoftBank has already valued the company at \$1 billion.

Brookfield, one of Canada's leading alternative asset managers with \$365 billion of assets under management (AUM), is reported to be in the process of acquiring a 210 Mw



wind farm from Axis Energy for Rs 500 crore. In 2017, it acquired SunEdison's 300 Mw of solar assets in India. Axis Energy's wind assets will take Brookfield's India power capacity to 510 Mw.

ORIX, a Japanese financial services and asset management company, owned a 49 per cent stake in a total of 874 Mw of wind power projects with India's debt-strapped Infrastructure Leasing and Financial Services (IL&FS). ORIX is now looking to buy the final 51 per cent stake in the projects.

Likewise, Singapore based integrated energy player Sembcorp plans to invest more in its Indian subsidiary Sembcorp Energy India Limited (SEIL). The company owns 1,700 Mw of capacity in India including 550 Mw under development, as of June 2019.

Tim Buckley, director of energy finance studies, IEEFA said, "There has been clear momentum in India's renewable energy capacity building in the last 24 months, leveraging the expanding opportunities in deflationary sustainable domestic projects. The country has a clear ambition to transition to a cheaper lower emission electricity system, and that ambition is attracting healthy global investment. Global capital flows will into India will accelerate as long as the Indian government provides a clear policy framework and puts in place measures to lower risks and protect investor confidence."

In its report, IEEFA estimates that India needs \$500-700 billion in renewable energy and supporting grid investment over the coming decade in order to meet its renewable energy targets.

Renewable hybrid energy systems as a game changer

Livemint : August 19, 2019

India recently conducted two auctions for wind/solar hybrid projects. Both the auctions were under-subscribed, with bids totalling 1.56GW awarded to SB Energy, Adani Green Energy and ReNew Power, against a total of 2.4GW on offer. The discovered prices were marginally below the ceiling tariff of ₹2.70. Although the initial response from industry appears guarded, we believe that renewable hybrids can play a key role in helping India accelerate the decarbonization of power generation and lowering the cost of electricity in the medium term.

India has added 65-70GW of wind and solar capacity so far, with wind and solar contributing 9.5% of generated energy in May 2019. If the government target of 175GW is achieved by 2022, this share could exceed 15-16%. Renewable energy has three inherent challenges. First, it relies on intermittent sources, producing energy only when the sun is shining or wind is blowing; second, its output is constrained to specific hours of the day; third, its use leads to lower utilization of transmission lines. This can create issues in matching peak power demand with renewable output (e.g. in evening hours when solar energy is not available), and raise costs of transmission. Experience in countries which have achieved renewable energy penetration of over 15% indicates that some flexible energy resources which can rapidly ramp up or down are needed. These could include hydro or gas-based power, or energy storage solutions.

Renewable hybrids can be one solution to the above issues. Simply put, a hybrid system can combine wind, solar with an additional resource of generation or storage. Let us take an example: in India, we observe that solar output is maximum between 11am and 3pm, while wind output is highest in late evening and early morning. Peak demand for power is reached in the evening hours of 6-9pm, which cannot be catered to by either wind or solar. If we can store some energy during excess renewable generation hours and release it into the grid during peak demand hours, the combined "hybrid" system can produce 24x7 clean energy in response to varying levels of demand through the day. The storage can take many forms, such as batteries, pumped hydro or mechanical storage through flywheels. The intermittency of wind and solar could also be balanced by adding a fast ramping source of power; for example, an open cycle gas turbine. The overall output of the hybrid system can thus be matched against a required load on an hourly basis. In this way, it can provide both baseload and flexible power.



Hybrid systems are expected to become increasingly cost competitive, driven by reducing costs of battery storage and solar energy. An optimal combination of solar, wind and storage can deliver stable round-the-clock power even at today's costs of around ₹6-7/kWh. Compared to baseload coal plants, this is significantly higher. However, lithium-ion battery costs are expected to fall from current \$220-240/kWh to below \$100 in next 3-4 years. Similarly, levelized costs of solar energy have plummeted from ₹4.63/kWh in 2016 to ₹2.50/kWh in the latest auctions and may fall as low as ₹2/kWh in the next 3-5 years.

McKinsey's proprietary modelling suggests that that if the above improvements are factored in, wind-solar storage hybrid systems could generate round-the-clock power with cost as well as reliability levels comparable to existing coal-fired power plants in the next 4-5 years. For example, a hybrid system which is required to deliver a flat load of 250MW could be designed by combining solar, wind and battery storage, at a levelized cost of energy at ₹3-4/kWh by 2025. This is, of course, dependent on the specific location and some seasonal variations.

India's ministry of new and renewable energy released a solar-wind hybrid policy in 2018. This provides a framework to promote grid-connected hybrid energy through set-ups that would use land and transmission infrastructure optimally and also manage the variability of renewable resources to some extent.

India is not the only country planning hybrid projects; 50-plus hybrid projects of MW-scale have already been announced or are under construction globally, with Australia and US being the leaders. For larger capacities or longer duration balancing, pumped hydro is a viable storage solution, but is restricted by the lack of suitable physical locations.

If the economics of hybrid systems do approach the above levels, our analysis indicates that they can potentially be competitive with 30-40% of existing coal-fired stations in India. They can therefore become a viable solution to meeting future baseload power requirements, all at zero carbon emissions and future cost-inflation proof. Several leading Indian corporates are also showing active interest in increasing their usage of clean power if round-the-clock solutions are available.

This opens up important questions for India's future power-system planning. Should India continue to build new coal-fired plants to meet baseload requirements, or could renewable hybrids take a significant share? How should investors who are evaluating existing stressed coal-fired assets put a value on them 5-7 years ahead? Most importantly, what policy and regulatory changes need to be made so that India can fully capture the potential of this interesting disruption in the energy sector?

To discipline discoms, Centre looking to link loans with performance

Livemint : August 16, 2019

Highlights:

The Centre may withhold permission to a state to borrow to the extent of electricity losses not funded by it

The Centre wants to prompt state government departments such as police to make timely payments to discoms

The National Democratic Alliance (NDA) government is exploring a radical plan to help bring financial discipline to state electricity distribution companies (discoms) by limiting state governments' borrowing.

The move comes against the backdrop of a crisis at discoms due to their poor financial health, which has led to delayed payment to generation utilities. According to the broad

contours of the plan, the Finance Ministry may withhold permission to the state to borrow to the extent of electricity losses not funded by the respective state governments.

"The idea is to make discoms' borrowing conditional to their performance," said a senior Union government official, requesting anonymity.

Under the Fiscal Responsibility and Budget Management Act, states must limit their borrowing to three percent of gross state domestic product. As of September 2015, the total debt of all state-owned discoms was around Rs 2.45 trillion, with Rs 80,000 crore serviced by states. Also, the annual discom losses in FY16, FY17 and FY18 were funded through borrowings.

According to government information reviewed by Mint, "Shortfall of subsidies and other reasons such as regulatory deferral of revenues and lack of adherence to aggregate technical and commercial losses are leading to losses in discoms. These losses have to be funded through discom bonds, backed by state guarantee, or state development loans bonds as per the Ujwal Discom Assurance Yojana (UDAY)." UDAY was launched to turn around debt-ridden state discoms.

Discoms are the weakest link in the electricity value chain, plagued by low collection, increase in power purchase cost, inadequate tariff hikes and subsidy disbursement, and mounting dues from government departments. This has resulted in discoms having poor payment records.

Combined with a plan to limit discom loans of Power Finance Corporation (PFC) and REC to capital expenditure projects, the idea is to prompt state government departments such as police and other essential services to make timely payments to discoms. PFC and REC are India's largest power sector lenders, with reported assets of \$43 billion and \$37 billion, respectively.

"Government department dues getting delayed lead to cash losses of discoms, even though (these) get accrued as booked income. However, this causes problem in cash flow management in discoms, increases the requirements of working capital and leads to delay in payment of gencos (power generation companies). Therefore, such delays on part of one state have repercussions on the complete power sector value chain and in entities beyond the boundaries of their own states," said the information reviewed by Mint.

Given the delay in tariff orders by the respective State Electricity Regulatory Commissions leading to revenue shortfall of discoms, the Union government is also of the view that such shortfalls should be bridged by states' subsidies. If the shortfall is not being taken care of by the respective state governments, the Finance Ministry may withhold permission to the state to borrow to the extent of such shortfalls.

"We are looking at ways and means through which state government and discoms get their act right," said a second Union government official, requesting anonymity.

In an attempt to ensure timely payments by states to electricity generation utilities, the government has already made it mandatory for state discoms to offer letters of credit as part of the payment security mechanisms in power purchase agreements. Also, the NDA government wants state power regulators to ensure regular tariff revision and put an end to creating so-called regulatory assets, as it seeks to enforce financial discipline at state electricity discoms.

In addition, the government plans to convert all electricity meters into smart prepaid meters by 2022.

A regulatory asset is created when the regulator accepts certain expenditures but does not factor them in while determining the present tariff. The expenditures are adjusted with future tariffs and are accounted for as regulatory assets in the interim.

Odisha mulls prepaid power card



New Indian Express : August 20, 2019

After successful pilot project in Sambalpur govt offices, Energy Dept to take it to Rourkela

After piloting prepaid smart electric meter service in some government offices of Sambalpur, the Energy Department plans to roll out the project in Rourkela as part of its move to check power pilferage and tackle huge pending bills of domestic consumers.

"The State Government will extend the prepaid electricity service across the State after analysing the outcome of the pilot project in Sambalpur and Rourkela," said Energy Minister Dibya Shankar Mishra on Monday.

The Energy department mulled the idea of installing prepaid energy meters in all government establishments at the district and block levels and complete the process by March 31, 2013 after Orissa High Court in its March, 2012 order said the power distributing companies (discoms) are at liberty to snap electric connections if the Government failed to clear its pending dues for 2011-12 fiscal within a month. The court order came while disposing of a Public Interest Litigation (PIL) related to tariff hike. In the case, the petitioner had complained that large pending dues of Government departments are also factored into while calculating tariff of electric units.

Though Energy department had given an ultimatum to all district collectors for installation of pre-paid electric meters at all government offices including urban and local bodies and public sector undertakings situated in their districts before April 2013, this has failed to yield desired outcome due to non-cooperation of the discoms.

Under the new system, consumers will have to purchase prepaid electricity cards from discoms or from their authorised vendors. Power connection to the consumers will be disconnected automatically when the balance is exhausted. Power supply will be resumed only after recharging their accounts, said Energy Secretary Hemanta Sharma.

The discoms will provide one per cent discount to people who opt for the prepaid service. The new service will make the billing system less time consuming and hassle-free, he added.

As per the new system, a consumer has to install a display device near the meter which will show the units of power consumed. Unspent balance of a consumer of a particular month will be transferred to his account for the next month.

Apart from improving revenue collection of discoms, the prepaid meters system will reduce energy consumption and bring down the commercial loss in the distribution sector to a great extent, the Minister said.

New system

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- Unspent balance of a month will be transferred to consumer account for next month
- Consumer has to purchase prepaid electricity cards from discoms or authorised vendors
- Power connection will be disconnected automatically when balance is exhausted
- Discoms will provide one pc discount to people who opt for prepaid service

Save Energy. Save Money. Save the Planet