

Effective Resource Planning: RA studies needed to optimise the surrender of generation capacities

By Animesh Atre and Dr Ammu Susanna Jacob

The Indian power sector has witnessed substantial growth in generation capacity, with 420 GW (as of May 2024) meeting the energy needs of more than 1.4 billion people. The growth has been primarily driven by policy reforms such as the Electricity Act, 2003, and efficiency improvements. However, the Central Electricity Authority (CEA) predicted a night-time peak shortage of 14 GW in June 2024. Further, energy demand is soaring due to the country's high economic growth rate and ecosystem development for new technologies such as electric vehicles.

In this scenario, the fact that some discoms are surrendering their allocations from central generating stations (CGSs) or power plants seems counterintuitive and requires a closer examination.

What does surrendering generation capacity imply? Why are discoms doing so?

In 2019, the Ministry of Power (MoP) released a circular permitting discoms to relinquish their allocations from CGSs after completing their 25-year power purchase agreement. In addition, the discoms must have surplus power and be able to meet peak demand without despatching capacity from the surrendered plant. Consequently, instances of discoms relinquishing their allocated share of power from generating stations have become frequent, primarily due to uneconomical power tariffs.

To surrender or not?

With discoms surrendering their share, generating companies may incur losses, reducing their profitability. Thus, although relinquishing capacities may appear strategic in the short term, the potential long-term consequences must be considered.

Further, while making a surrendering request, discoms solely focus on current power prices. Instead, they should develop a long-term plan for economic power purchases. Such a plan should also account for uncertainties in future energy demand growth and power generation. For example, during the 2021 coal shortage in India, discoms were forced to procure power from the open market at high prices.

For these reasons, the decision to surrender capacities by discoms should be taken using a planned approach such as a resource adequacy (RA) study. The guidelines for RA studies were framed by the MoP in consultation with the CEA in 2023.

What are RA studies?

An RA study adopts a least-cost methodology for planning generation and transmission resources to meet the projected demand in compliance with specified reliability standards for serving the load with an optimal generation mix. As per the CEA guidelines, discoms are required to undertake a 10-year long-term RA study to meet

peak energy demand. However, these studies are currently only conducted at the national level.

Further, the CEA guidelines advocate for a diverse mix of contract durations, with at least 75 per cent of required capacities covered by long-term agreements. This implies that capacities should not be surrendered without undertaking proper studies. Discoms are also required to present their plans for approval to the state electricity regulatory commissions, underscoring the importance of compliance while surrendering capacities.

Adherence to these guidelines by discoms has the potential to prevent load shedding (when demand exceeds supply and selective power disruptions follow) and control sharp increases in power prices, reducing economic strain on consumers, distributors and generators.

Possible roadblocks for discoms

Adopting an RA study may not be a cakewalk for the discoms as it requires adequate financial and intellectual resources as well as effective collaboration and coordination with multiple stakeholders such as state transmission utilities and state and regional load despatch centres. These requirements can pose significant challenges for discoms in effectively planning and acquiring resources due to issues pertaining to data availability and accuracy, financial limitations (most discoms in India are incurring losses) and infrastructure bottlenecks. Despite these challenges, discoms are required to provide a reliable power supply to consumers. Consequently, when discoms need to make decisions on new capacity additions or surrendering capacities, they often end up adopting a fragmented approach.

The way forward

To overcome these challenges, the centre could undertake capacity-building measures for the discoms and provide the necessary RA tools to assist in effective decision-making for long-term planning. This would enable discoms to conduct RA studies effectively, assisting them in building new generating/storage capacities, retiring inefficient thermal plants and surrendering capacities efficiently. In conclusion, although surrendering capacities may offer immediate financial relief to discoms, a comprehensive RA study at the discom level is needed to ensure long-term energy security.