

Power grid collapse was a wake-up call

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This week, India suffered two massive grid failures that snapped power supply in over 19 states, bringing lives of more than 600 million people to a standstill and the economy to a grinding halt. Unfortunately, there was nothing sudden or accidental about this event; it was a crisis waiting to happen.

Interconnected regional grid is an efficient and effective way of optimising generation resources and demand requirements. Over the past decade or so, it has helped immensely in enhancing reliability and stability of the power sector.

However, like any other complex system, ensuring smooth operation of the grid requires collaboration based on clear set of rules and a competent managing agency whose authority and autonomy should be respected by all constituents. The recent collapse is a grim reminder regarding this need for collaboration and discipline by all constituents and need for real autonomy and authority of the monitoring agency.

Just Who Manages the Grid?

Over-drawing of power by certain states, in spite of repeated warnings prohibiting them from doing so, has been one of the triggers for this crisis. In fact, just a day before the grid collapse, the Central Electricity Regulatory Commission (CERC) had issued an order directing the defaulting states to strictly abide by the grid code regulations and to refrain from overdrawing power.

The regional load dispatch centre is required to pre-identify feeders that can be opened when the grid is subject to danger on account of over-drawing. This needs consultation with concerned state load dispatch authorities, which had not happened and hence the regional authority could not take necessary preventive steps.

Analysis by experts has also brought forth serious technical issues such as absence and improper functioning of essential safety equipment like governors and under-frequency relays, which should have arrested the faults locally. However, like most other systemic failures; this too has crisis of accountability and governance at its root. This article highlights two such issues.

The first issue is about the autonomy and authority of load dispatch centres, which are responsible for ensuring grid safety. The Electricity Act 2003 envisages load dispatch centres to be technically competent autonomous bodies, which will ensure stable system operation and non-discriminatory network access to all eligible participants.

However, the functional autonomy and authority is yet to be realised in practice. The Regional and National load dispatch centres fall under Power System Operation Corporation (POSOCO) which is a subsidiary of PowerGrid, the central transmission utility. Almost all state load dispatch centres are controlled by respective state transmission utilities, which in turn are managed directly or indirectly by respective state governments. Such a structure severely hampers the autonomy of these agencies in politically sensitive decisions such as load shedding.

Need For Power Police

Little has been done to overcome these issues. Even the basic recommendations of the 2008 Gireesh Pradhan committee such as ring-fencing of load despatch centres (LDCs) for ensuring financial autonomy, introducing better reporting and monitoring norms and establishing specialised training centres for system operators have not been implemented. Also, except a couple of notable instances, regulatory commissions have failed to initiate penal proceedings against erring grid constituents.

Protocol Please

The second issue is accountability and transparency regarding load shedding. Power shortage prevalent across the country is more acute in this region where grid discipline was persistently violated. Even at present, there is no transparent and equitable way to address this shortage.

As a result, load shedding takes place according to short-term economic and political considerations rather than system stability and equity based norms. This lack of accountability in load shedding coupled with weak autonomy and authority of institutions responsible for system monitoring has led to the present crisis. Load shedding is also directly linked to power purchase planning (which 70-80% of the distribution company's expenditure) and also distribution loss estimation. Even then, most state regulatory commissions have not taken any steps towards ensuring transparency in load shedding.

In contrast to this, the Maharashtra Electricity Regulatory Commission (MERC) has suo motu developed a transparent and equitable protocol for managing load shedding which has evolved overtime based on public consultation. As a result, in spite of suffering from huge shortages (~4000 MW and more) since 2005, the state has not experienced any such major systemic failure nor has it resorted to heavy over-drawing.

Transparent and accountable measures such as the load shedding protocol can go a long way in enhancing system stability and minimising political influence in this critical decision making area. Sadly, MERC's approach has not been followed by any other state commission. Also, unlike tariff matters, there have not been any proactive steps from either ministry of power or the appellate tribunal directing the state commissions to ensure transparency and accountability in this important area.

Tough Times Ahead

Lastly, it's important to note that even today almost one-third of India's households do not have access to electricity and even those who have access receive only a few hours of supply, in effect facing a grid failure on a continuous basis. Therefore when we talk of measures for network augmentation and system modernisation, this unmet demand also needs to be factored in.

Additionally, developments such as increase in open access, renewable generation and sophistication in market operation are going to make system operation increasingly complex. Hence, the present crisis needs to be seen as a wake-up call to gear up for the tougher times ahead.

It is important that we must prevent such crisis in the future. This will require among other things, committed efforts towards ensuring real transparency, accountability in load shedding; autonomy and adequate authority in power system operation and reliable and sound monitoring mechanisms.

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