



One Nation-One Grid-One Frequency: National Grid

Why in News

Recently, the [Power Grid Corp. of India Ltd \(PGCIL\)](#) celebrated the anniversary of operationalization of **One Nation-One Grid-One Frequency i.e National Grid.**

Key Points

▪ Evolution of National Grid:

- The national grid management on a regional basis started in the sixties.
- The Indian Power system for planning and operational purposes is **divided into five regional grids.**
- The integration of regional grids, and thereby **establishment of National Grid**, was conceptualised in the early nineties.
 - Initially, State grids were interconnected to form a regional grid and India was demarcated into 5 regions namely **Northern, Eastern, Western, North Eastern and Southern region.**
- In 1991 North Eastern and Eastern grids were connected. Further, in 2003, **Western region grid was connected with it.**
- In August 2006 North and East grids were interconnected thereby 4 regional grids are synchronously connected forming a central grid operating at one frequency.
- On 31st December 2013, the southern Region was connected to the Central Grid. Thereby achieving '**One Nation, One Grid, One Frequency**'.
 - All possible measures are taken to ensure that the grid frequency always remains within the **49.90-50.05 Hz (hertz) band.**

Importance of One Frequency

- Maintaining a consistent electrical frequency is important because multiple frequencies cannot operate alongside each other without damaging equipment.
- This has serious implications when providing electricity at a national scale.
- **Capacity of National Grid:**
 - Presently, the country has a total inter-regional transmission capacity of about **1,12,250 MW** which is expected to be enhanced to about **1,18,740 MW by 2022.**
- **Benefits of One Nation-One Grid-One Frequency:**
 - **Matching Demand-Supply:** Synchronisation of all regional grids will help in optimal utilization of scarce natural resources by transfer of Power from Resource centric regions to Load centric regions.
 - **Development of Electricity Market:** Further, this shall pave the way for establishment of a vibrant Electricity market facilitating trading of power across regions.

Source: PIB

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