

Frequency Response Characteristic Calculation for All India based on NLDC SCADA Data

| EVENT: | At 10:08 Hrs Dated 26th-April-2022, As reported due to blackout at 400kV Padghe (MH), Load loss of around 3110 MW occurred in Western Region in Mumbai,MMR,Nasik,Ahmednagar area.In the event load loss of around 1694 MW occurred due to tripping of 5 No. of 400/220kV ICTs at 400kV Padghe(MH) and 1263 MW load relief came from various LTS (Load Trimming Scheme) operation.Accordingly Load loss figure of 1694 MW is considered in FRC Calculation. | | | | | | |
|---------------|--|-----------|-------|-------|-------|-------|-------|
| S No | Particulars | Dimension | NR | ER | WR | NER | SR |
| 1 | Actual Net Interchange before the Event (10:08:20) | MW | 4741 | -4264 | -5563 | 94 | 4542 |
| 2 | Actual Net Interchange after the Event (10:10:00) | MW | 5284 | -4184 | -6449 | 123.0 | 4828 |
| 3 | Change in Net Interchange (2 - 1) | MW | 543 | 80 | -886 | 29.0 | 286 |
| 4 | Generation Loss (+) / Load Throw off (-) during the Event | MW | 0 | 0 | -1694 | 0 | 0 |
| 5 | Control Area Response (3 - 4) | MW | 543 | 80 | 808 | 29 | 286 |
| 6 | Frequency before the Event | HZ | 49.93 | 49.93 | 49.93 | 49.93 | 49.93 |
| 7 | Frequency after the Event | HZ | 50.05 | 50.05 | 50.05 | 50.05 | 50.05 |
| 8 | Change in Frequency (7 - 6) | HZ | 0.117 | 0.117 | 0.117 | 0.117 | 0.117 |
| 9 | Frequency Response Characteristic (5 / 8) | MW/Hz | 4641 | 686 | 6905 | 248 | 2444 |
| 10 | Net System Demand met before the Event | MW | 53437 | 21513 | 62114 | 1990 | 52564 |
| 11 | Internal Generation before the Event (10 - 1) | MW | 48696 | 25777 | 67677 | 1896 | 48022 |
| 12 | Ideal load response assuming 4% per Hz (0.04*Row 10) | MW/Hz | 2137 | 861 | 2485 | 80 | 2103 |
| 13 | Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11) | MW/Hz | 19478 | 10311 | 27071 | 758 | 19209 |
| 14 | Composite ideal response (12 + 13) | MW/Hz | 21616 | 11171 | 29555 | 838 | 21311 |
| 15 | Percentage ideal response | % | 21.5% | 6.1% | 23.4% | 29.6% | 11.5% |

(*) - Data may be constant/suspected during the event
 Note: +ve exchange=> import ; (-)ve exchange => export

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| Total Change in (MW) | 1694 |
| FRC for NEWS GRID (dp/df) MW/Hz | 14479 |
| Power Number (net change in MW/maximum change in frequency) | 11219 |