

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

EVENT:

At 03:16 Hrs on Dated 03rd-May-2022, As reported at 03:16 hrs, 400 KV simhadri,400kv gazuwaka,400kv kalapakka,400kv hinduja,220kV VSS,220kV gannavaram, 220kV pendurthy,220kV sarada,220kV atchutapuram,220kV abhjeet,220kV mrs vizag got dead, consequently Generation loss of around 2660 MW and Load loss of around 1200 MW occurred in the event. In this Event effective generation loss of around 1440 MW has been considered for FRC Calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (03:16:36)	MW	13090	-8727	-8791	-497	4230
2	Actual Net Interchange after the Event (03:18:12)	MW	12703	-8830	-9230	-524	5239
3	Change in Net Interchange (2-1)	MW	-387	-103	-439	-27.0	1009
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	0	0	0	1440
5	Control Area Response (3 - 4)	MW	-387	-103	-439	-27	-431
6	Frequency before the Event	Hz	50.03	50.03	50.03	50.03	50.03
7	Frequency after the Event	Hz	50.00	50.00	50.00	50.00	50.00
8	Change in Frequency (7 - 6)	Hz	-0.025	-0.025	-0.025	-0.025	-0.025
9	Frequency Response Characteristic (5 / 8)	MW/Hz	15480	4120	17560	1080	17240
10	Net System Demand met before the Event	MW	59618	19141	59376	1576	42221
11	Internal Generation before the Event (10 - 1)	MW	46528	27868	68167	2073	37991
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2385	766	2375	63	1689
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	18611	11147	27267	829	15196
14	Composite ideal response (12 + 13)	MW/Hz	20996	11913	29642	892	16885
15	Percentage ideal response	%	73.7%	34.6%	59.2%	121.0%	102.1%

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

Total Change in (MW)	1440
FRC for NEWS GRID (dp/df) MW/Hz	57600
Power Number (net change in MW/maximum change in frequency)	8889

Exceptional High & unsustainable Response