

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

EVENT: On 20th Dec 2022, As reported At 06:49 hrs Due to loss of evacuation lines from 400kV Jhajjar(APCPL), Generation loss of approx.1400MW at Jhajjar TPS(APCPL). Accordingly for FRC Calculation figure of 1400MW has been considered.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (06:48:44)	MW	5881	-9696	-3032	-146	6618
2	Actual Net Interchange after the Event (06:50:00)	MW	6835	-9814	-3568	-169	6339
3	Change in Net Interchange (2-1)	MW	954	-118	-536	-23.0	-279
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	1400	0	0	0	0
5	Control Area Response (3 - 4)	MW	-446	-118	-536	-23	-279
6	Frequency before the Event	Hz	50.09	50.09	50.09	50.09	50.09
7	Frequency after the Event	Hz	50.05	50.05	50.05	50.05	50.05
8	Change in Frequency (7 - 6)	Hz	-0.042	-0.042	-0.042	-0.042	-0.042
9	Frequency Response Characteristic (5 / 8)	MW/Hz	10619	2810	12762	548	6643
10	Net System Demand met before the Event	MW	46343	18828	59377	1985	40537
11	Internal Generation before the Event (10 - 1)	MW	40462	28524	62409	2131	33919
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	1854	753	2375	79	1621
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	16185	11410	24964	852	13568
14	Composite ideal response (12 + 13)	MW/Hz	18039	12163	27339	932	15189
15	Percentage ideal response	%	58.9%	23.1%	46.7%	58.8%	43.7%

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

Total Change in (MW)	1400
FRC for NEWS GRID (dp/df) MW/Hz	33333
Power Number (net change in MW/maximum change in frequency)	10219

Source Wise Generation (MW)	GAS	HYDRO	NUCLEAR	Thermal	WIND	SOLAR
	2712	19860	5176	138899	3375	627