

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

### EVENT:

On 31th July 2023, As reported at 10:36 hrs B-ph jumper snapped at RSUPL end of 220kV Fatehgarh2-RSUPL Line, As per PMU B-N & R-N fault is observed. At the same time, drop in RE generation at RE stations connected at other ISTS pooling station in Rajasthan RE complex also occurred on LVRT. As per PMU data, total drop in RE generation was around 1620MW. Accordingly same has been considered in the FRC calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (10:36:08)	MW	6892	-1644	-9322	-266	4157
2	Actual Net Interchange after the Event (10:36:48)	MW	7891	-1919	-9861	-297	3990
3	Change in Net Interchange (2-1)	MW	999	-275	-539	-31.2	-167
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	1620	0	0	0	0
5	Control Area Response (3 - 4)	MW	-621	-275	-539	-31	-167
6	Frequency before the Event	HZ	50.15	50.15	50.15	50.15	50.15
7	Frequency after the Event	HZ	50.04	50.04	50.04	50.04	50.04
8	Change in Frequency (7 - 6)	HZ	-0.112	-0.112	-0.112	-0.112	-0.112
9	Frequency Response Characteristic (5 / 8)	MW/Hz	5545	2454	4811	278	1491
10	Net System Demand met before the Event	MW	68431	27847	55249	2523	51989
11	Internal Generation before the Event (10 - 1)	MW	61539	29491	64571	2789	47832
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2737	1114	2210	101	2080
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	24616	11796	25828	1115	19133
14	Composite ideal response (12 + 13)	MW/Hz	27353	12910	28038	1216	21212
15	Percentage ideal response	%	20.3%	19.0%	17.2%	22.9%	7.0%

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

Total Change in (MW)	1620
<b>FRC for NEWS GRID (dp/df) MW/Hz</b>	<b>14464</b>
Power Number (net change in MW/maximum change in frequency )	9419

Source Wise Generation (MW)	GAS	HYDRO	NUCLEAR	Thermal	WIND	SOLAR
	1754	27679	5556	117929	20510	33446