

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

EVENT:	As reported at 15:08 Hrs on 22th July 2021, Generation loss of 1400MW occurred in Southern Region, due to Unit tripping on SPS operation at UPCL (Units 1 & 2) and VARAHI Hydro (Units 1,2,3 & 4).						
S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (15:08:00)	MW	13852	-3051	-7236	-34	-4161
2	Actual Net Interchange after the Event (15:09:20)	MW	13527	-3243	-7729	-44.7	-3253
3	Change in Net Interchange (2 - 1)	MW	-325	-192	-493	-10.4	908
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	0	0	0	1400
5	Control Area Response (3 - 4)	MW	-325	-192	-493	-10	-492
6	Frequency before the Event	HZ	49.99	49.99	49.99	49.99	49.99
7	Frequency after the Event	HZ	49.94	49.94	49.94	49.94	49.94
8	Change in Frequency (7 - 6)	HZ	-0.050	-0.050	-0.050	-0.050	-0.050
9	Frequency Response Characteristic (5 / 8)	MW/Hz	6500	3840	9860	208	9840
10	Net System Demand met before the Event	MW	54490	20456	45886	2608	34070
11	Internal Generation before the Event (10 - 1)	MW	40638	23507	53122	2642	38231
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2180	818	1835	104	1363
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	16255	9403	21249	1057	15292
14	Composite ideal response (12 + 13)	MW/Hz	18435	10221	23084	1161	16655
15	Percentage ideal response	%	35.3%	37.6%	42.7%	17.9%	59.1%

(*) - 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	28000
Power Number (net change in MW/maximum change in frequency)	10769