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

EVENT:	On 14th Jan 2023, As reported At 14:55 hrs Due to multiple tripping in solar park lead to tripping of evacuating lines at 765kV, 400kV , 220kV and resulted in generation loss of around 3210 MW resulted in Rajasthan RE generation loss complex of Northern Region and same figure has been considered in FRC Calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (14:55:32)	MW	4582	-8753	-4331	311	8073
2	Actual Net Interchange after the Event (14:56:32)	MW	6887	-9217	-5685	180	7295
3	Change in Net Interchange (2-1)	MW	2305	-464	-1354	-130.7	-778
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	3210	0	0	0	0
5	Control Area Response (3 - 4)	MW	-905	-464	-1354	-131	-778
6	Frequency before the Event	HZ	50.01	50.01	50.01	50.01	50.01
7	Frequency after the Event	HZ	49.83	49.83	49.83	49.83	49.83
8	Change in Frequency (7 - 6)	HZ	-0.186	-0.186	-0.186	-0.186	-0.186
9	Frequency Response Characteristic (5 / 8)	MW/Hz	4867	2497	7278	703	4184
10	Net System Demand met before the Event	MW	52919	17364	58336	1898	51162
11	Internal Generation before the Event (10 - 1)	MW	48336	26117	62668	1588	43089
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2117	695	2333	76	2046
13	Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11)	MW/Hz	19335	10447	25067	635	17236
14	Composite ideal response (12 + 13)	MW/Hz	21451	11141	27401	711	19282
15	Percentage ideal response	%	22.7%	22.4%	26.6%	98.8%	21.7%

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

Total Change in (MW)	3210
FRC for NEWS GRID (dp/df) MW/Hz	**17258**
Power Number (net change in MW/maximum change in frequency)	**10700**

Source Wise Generation (MW)	GAS	HYDRO	NUCLEAR	Thermal	WIND	SOLAR
	2135	**8414**	**4783**	**130871**	**1958**	**34800**