

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

EVENT:

At 11:27 Hrs Dated 30th-Jan-2022,As reported multiple element tripping occurred in Rajasthan Solar complex of Northern Region at 765/400kV Fatehgarh2(PG) pooling station and led to solar generation loss of around 2038 MW(as per NLDC SCADA data) .Same has been considered for FRC calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (11:27:15)	MW	4571	-8013	-963	476	3521
2	Actual Net Interchange after the Event (11:29:00)	MW	5900	-8167	-1705	421.3	2996
3	Change in Net Interchange (2 - 1)	MW	1329	-154	-742	-54.9	-524
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	2038	0	0	0	0
5	Control Area Response (3 - 4)	MW	-709	-154	-742	-55	-524
6	Frequency before the Event	HZ	50.02	50.02	50.02	50.02	50.02
7	Frequency after the Event	HZ	49.91	49.91	49.91	49.91	49.91
8	Change in Frequency (7 - 6)	HZ	-0.110	-0.110	-0.110	-0.110	-0.110
9	Frequency Response Characteristic (5 / 8)	MW/Hz	6443	1400	6745	499	4768
10	Net System Demand met before the Event	MW	51950	18219	62713	1919	49464
11	Internal Generation before the Event (10 - 1)	MW	47379	26232	63676	1443	45943
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2078	729	2509	77	1979
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	18952	10493	25470	577	18377
14	Composite ideal response (12 + 13)	MW/Hz	21030	11222	27979	654	20356
15	Percentage ideal response	%	30.6%	12.5%	24.1%	76.4%	23.4%

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

only interchange of 132kv Surjamani-comilla D/c.

Total Change in (MW)	2038
FRC for NEWS GRID (dp/df) MW/Hz	18527
Power Number (net change in MW/maximum change in frequency)	11322