

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

EVENT:

At 12:38 Hrs Dated 11th-Feb-2022,As reported multiple element tripping occurred in Rajasthan Solar complex of Northern Region at 765/400kV Fatehgarh2(PG) & Bhadla(PG) pooling station and led to solar generation loss of around 2807 MW (Fatehgarh2(2322MW)+Bhadla(485 MW)).Same has been considered for FRC calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (12:38:30)	MW	5460	-8373	-3060	209	5486
2	Actual Net Interchange after the Event (12:40:00)	MW	7474	-8716	-4444	147.0	4762
3	Change in Net Interchange (2 - 1)	MW	2014	-343	-1384	-62.0	-724
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	2807	0	0	0	0
5	Control Area Response (3 - 4)	MW	-793	-343	-1384	-62	-724
6	Frequency before the Event	HZ	49.95	49.95	49.95	49.95	49.95
7	Frequency after the Event	HZ	49.79	49.79	49.79	49.79	49.79
8	Change in Frequency (7 - 6)	HZ	-0.160	-0.160	-0.160	-0.160	-0.160
9	Frequency Response Characteristic (5 / 8)	MW/Hz	4956	2144	8650	387	4525
10	Net System Demand met before the Event	MW	50692	16883	61238	1888	52482
11	Internal Generation before the Event (10 - 1)	MW	45232	25256	64298	1679	46996
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2028	675	2450	76	2099
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	18093	10102	25719	672	18799
14	Composite ideal response (12 + 13)	MW/Hz	20120	10778	28169	747	20898
15	Percentage ideal response	%	24.6%	19.9%	30.7%	51.9%	21.7%

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

Total Change in (MW)	2807
FRC for NEWS GRID (dp/df) MW/Hz	17544
Power Number (net change in MW/maximum change in frequency)	10396