

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

EVENT:	At 01:09 Hrs on Dated 23rd-May-2022, At 01:09 hrs while test charging of 765 kV Bhuj-Banaskatha line 1, 765 kV Bhuj Banaskatha line 2 also tripped due to over voltage. Due to extended planned outage of 400 kV CGPL Bhuj DC lines and tripping of both circuits of 765 kV Bhuj-Banaskantha lines, Bhuj substation got isolated from the grid which resulted loss of evacuation path for Bhuj RE generators leading to loss of around 1673 MW RE generation. and same has been considered for FRC Calculation.						
S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (01:08:50)	MW	13983	-6092	-6702	-924	-204
2	Actual Net Interchange after the Event (01:10:30)	MW	13384	-6438	-5637	-932	-492
3	Change in Net Interchange (2-1)	MW	-599	-346	1065	-8.0	-288
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	0	1673	0	0
5	Control Area Response (3 - 4)	MW	-599	-346	-608	-8	-288
6	Frequency before the Event	HZ	50.03	50.03	50.03	50.03	50.03
7	Frequency after the Event	HZ	49.99	49.99	49.99	49.99	49.99
8	Change in Frequency (7 - 6)	HZ	-0.035	-0.035	-0.035	-0.035	-0.035
9	Frequency Response Characteristic (5 / 8)	MW/Hz	17114	9886	17371	229	8229
10	Net System Demand met before the Event	MW	56389	20959	56490	1909	35494
11	Internal Generation before the Event (10 - 1)	MW	42406	27051	63192	2833	35698
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2256	838	2260	76	1420
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	16962	10820	25277	1133	14279
14	Composite ideal response (12 + 13)	MW/Hz	19218	11659	27536	1210	15699
15	Percentage ideal response	%	89.1%	84.8%	63.1%	18.9%	52.4%

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

Total Change in (MW)	1673
FRC for NEWS GRID (dp/df) MW/Hz	47800
Power Number (net change in MW/maximum change in frequency)	11950