

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

EVENT:	At 13:47 Hrs Dated 21st Oct 2021,400KV Teesta III-Kishanganj tripped on Y-B fault, further 400KV-Teesta III-Dikchu line tripped at 14:32 Hrs on B-N fault causing loss of evacuation path from Teesta-III and resulted in Generation loss of 1086 MW at Teesta-III.						
S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (14:32:40)	MW	5327	-7203	-2602	341	3613
2	Actual Net Interchange after the Event (14:34:00)	MW	5196	-6555	-3363	334.4	3529
3	Change in Net Interchange (2 - 1)	MW	-131	648	-761	-6.4	-84
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	1086	0	0	0
5	Control Area Response (3 - 4)	MW	-131	-438	-761	-6	-84
6	Frequency before the Event	HZ	49.87	49.87	49.87	49.87	49.87
7	Frequency after the Event	HZ	49.85	49.85	49.85	49.85	49.85
8	Change in Frequency (7 - 6)	HZ	-0.020	-0.020	-0.020	-0.020	-0.020
9	Frequency Response Characteristic (5 / 8)	MW/Hz	6550	21880	38033	321	4200
10	Net System Demand met before the Event	MW	43335	17304	51157	1858	43870
11	Internal Generation before the Event (10 - 1)	MW	38008	24507	53759	1517	40257
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	1733	692	2046	74	1755
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	15203	9803	21504	607	16103
14	Composite ideal response (12 + 13)	MW/Hz	16937	10495	23550	681	17858
15	Percentage ideal response	%	38.7%	208.5%	161.5%	47.1%	23.5%

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

Total Change in (MW)	1086
<b>FRC for NEWS GRID (dp/df) MW/Hz</b>	<b>54300</b>
Power Number (net change in MW/maximum change in frequency )	10860

Exceptionally high and unsustainable response