CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

Petition No. 156/MP/2022

Coram:

Shri I. S. Jha, Member Shri Arun Goyal, Member Shri P. K. Singh, Member

Date of Order: 14.8.2023

In the matter of:

Petition under Sections 28(1), 28(3) and 29 of the Electricity Act, 2003 read with Regulation 1.5(i), 2.3, 5.2(m) and 5.4.2 of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (as amended) in the matter of dealing with over drawal from grid by the regional entities leading to insecure operation of the grid and other associated matters.

And in the matter of:

Northern Regional Load Despatch Centre, Power System Operation Corporation Ltd. (POSOCO), (A Govt. of India Enterprise), 18-A, Shaheed Jeet Singh Sansalwal Marg, Katwaria Sarai, New Delhi -110016

.....Petitioner

Versus

- 1. Chief Engineer, SLDC, Haryana Vidyut Prasaran Nigam Limited, Shakti Bhawan, Sector-6, Panchkula-134109
- 2. Chief Engineer, SLDC, Himachal Pradesh Load Society, Totu, Shimla-171 011, Himachal Pradesh
- 3. Chief Engineer, SLDC, Jammu and Kashmir Power Transmission Corporation Limited, SLDC Building, Gladni Grid Station, Narwal Bala, Jammu-180004.
- 4. Chief Engineer, SLDC, Punjab State Transmission Corporation Limited, PSEB Head Office, The Mall, Patiala-147 001

- 5. Chief Engineer, SLDC, Rajasthan Rajya Vidyut Prasaran Nigam Limited, Vidyut Bhawan, Vidyut Marg, Janpath, Jaipur-302005
- 6. Director, SLDC, Uttar Pradesh Power Transmission Corporation Limited, Phase-II Vibhuti Khand, Lucknow-226010
- Chief Engineer, SLDC, Power Transmission Corporation of Uttarakhand Limited (PTCUL), Vidyut Bhawan, Near ISBT Crossing, Saharanpur Road, Majra, Dehradun-248002
- 8. Managing Director, Haryana Vidyut Prasaran Nigam Limited, Shakti Bhawan, Sector-6, Panchkula-134109
- 9. Managing Director, Himachal Pradesh Load Society, SLDC Complex Totu, Shimla-171011, Himachal Pradesh
- 10. Managing Director, Jammu and Kashmir Power Transmission Corporation Limited, Gladni Grid Station, Narwal Bala. Jammu-180004
- 11. Chairman cum Managing Director, Punjab State Transmission Corporation Limited, PSEB Head Office, The Mall, Patiala-147001
- 12. Chairman & Managing Director Rajasthan Rajya Vidyut Prasaran Nigam Limited, Vidyut Bhawan, Vidyut Marg, Janpath, Jaipur-302005
- 13. Chairman, Uttar Pradesh Power Transmission Corporation Limited, 7th Floor, Shakti Bhawan, 14-Ashok Marg Lucknow, UP
- 14. Chairman, Power Transmission Corporation of Uttarakhand Limited (PTCUL), Vidyut Bhawan, Near ISBT Crossing, Saharanpur Road, Majra, Dehradun-248002
- 15. Member Secretary, Northern Regional Power Committee, 18-A, Qutab Institutional Area, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016

.....Respondents

Parties Present:Ms. Anisha Chopra, NRLDC
Shri Sheikh Shadruddin, NRLDC
Shri Prashant Garg, NRLDC
Shri Amal Nair, Advocate, PSTCL
Ms. Sugandh Khanna, Advocate, PSTCL
Ms. Kritika Khanna, Advocate, PSTCL
Shri Divyanshu Bhatt, Advocate, UP SLDC
Shri Pratap, UPSLDC
Ms. Sakie Jakharia, Advocate, NTPC
Ms. Sinal Anand, Advocate, SLDC PTCUL
Shri M. G. Ramachandran, Sr. Advocate, RRVPN
Ms. Poorva Saigal, Advocate, RRVPN

Shri Shubham Arya, Advocate, RRVPN Shri Ravi Nair, Advocate, RRVPN Ms. Shikha Sood, Advocate, RRVPN Ms. Reeha Singh, Advocate, RRVPN Shri Anurag Kulharia, Advocate, HVPNL Shri Rajesh Sheoran, Advocate, HVPNL Shri Surender Saklani, HPSLDC Shri Abhimanyu, HPSLDC

ORDER

Northern Regional Load Despatch Centre (NRLDC) (hereinafter to be referred as "the Petitioner") has filed the present Petition under Sections 28(1), 28(3) and 29 of the Electricity Act, 2003 read with Regulation 1.5 (i), 2.3, 5.2(m) and 5.4.2 of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 for seeking appropriate orders to deal with over drawal from grid by the regional entities leading to insecure operation of the grid and other associated matters. The Petitioner has made following prayers:

- (a) Allow the present Petition;
- (b) Initiate necessary penal action against Respondents R1-R14 under section 29 for non-compliance of the directions issued by NRLDC as mentioned in paragraph 22.1 & 22.2
- (c) Initiate necessary penal action against Respondents R1-R14 under section 142 of the Act for the repeated violations/non-compliances of regulation 5.4.1, 5.4.2(a), 5.4.2(b), 6.4.7 of IEGC and Regulation 7.1 of DSM Regulation as mentioned in paragraph 14 22.1 & 22.2.
- (d) Direct R1 to R14 to maintain drawal from the grid as per drawal schedule and avoid overdrawing from the grid in compliance with Regulation 5.4.2 of the Grid Code and DSM Regulations so as to ensure safety & security of the grid and obviate any possibility of a grid disturbance.
- (e) Direct R1 to R14 to ensure the compliance of the directions of NRLDC issued under section 29 of the Act in the event of inadvertent deviation/Over drawal and adhere to schedule by suitable action and report the action taken to NRLDC.
- (f) Direct R1 to R14 to take all possible measures including but not limited to resource adequacy, load & RE forecasting, ADMS, ancillary service etc. to avoid over-drawal from the grid.

(g) The Hon'ble Commission may issue any other directions as deemed just and proper under the facts & circumstances of the instant case

The relevant extracts of Paragraph 14, 22.1 and 22.2 referred in prayers above, have been included at paragraph 2(m) and 2(bb) to 2(ee) of this Order.

Submissions of the Petitioner:

- 2. The Petitioner NRLDC has mainly submitted as follows:
- (a) Under section 28(1) and 28(3) of the Act and various provisions of the Grid Code, the Petitioner is responsible for integrated operation of the electricity grid in Northern Region which comprises of the power systems of Delhi, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Punjab, Haryana and Rajasthan and union territories of Chandigarh, Jammu & Kashmir and Ladakh.
- (b) The critical operational conditions in the grid pertaining to the period from 1st March'2022 to 24th April'2022 led to Alert State in the grid. The grid code (IEGC) has prescribed an operational band for grid frequency from 49.90 Hz to 50.05 Hz. The data for the month of Mar'22 and April'22 has been plotted to exhibit the percentage of time wherein the frequency of the grid was within the prescribed band and below/above the band which is as follows:



Date wise Average Grid Frequency (% of time) for March-2022



Date wise Average Grid Frequency (% of time) for 01.04.2022 to 24.04.2022

(c) Due to over drawal by some of the state entities, the frequency went below the lower limit (49.90 Hz) on multiple occasions during the aforementioned period (i.e., 1st March 2022 to 24th April 2022).



(d) The frequency duration curve from 01.03.2022 to 24.04.2022 is as below:

- (e) Frequency remained below 49.90 Hz for a cumulative duration of 286 hours during the said period (1st March 2022 to 24th April 2022). On a few occasions, the grid frequency even touched 49.5 Hz leading to "Insecure State" conditions in the grid. Further, frequency remained below 49.7 Hz for a cumulative duration of 29 hours during the said period. It was observed from the frequency data (10-second resolution) that during the said period:
 - a. frequency fell below 49.90 Hz. on 102970 instances

b. frequency fell below 49.70 Hz. on 10629 instances

- (f) The persistent periods of low frequency operation made the grid vulnerable thereby endangering the stability and security of the national grid.
- (g) During the said period, there were several factors at play leading to demandsupply imbalance such as rise in ambient temperature which contributed to a sharp rise in electricity demand. Also, supply-side constraints viz. low fuel supply for coal-fired power plants, planned & forced generation outages, expected low wind season during this period, low reserves under RRAS etc. further stressed the load generation balance.
- (h) Load generation imbalance coupled with persistent over-drawal from the grid by several States aggravated the situation further and led to prolonged periods of low-frequency operation. It is reasonable to consider that any further contingency or grid incident during such conditions would have led to a major disruption/disturbance in the Grid.
- (i) The Grid code requires that all entities including SLDCs and distribution licensees must take necessary precautions and plan in advance so as to contain their drawal from the grid so that there is no over-drawal. The extant regulatory provisions under Regulation 5.2 (m), 5.3 (c), 5.4.1, 6.4.7 and 6.4.8 of IEGC mandate actions from various grid entities to maintain grid frequency within the specified band (49.90 – 50.05 Hz) for safe & reliable operation of the grid. Accordingly, it is necessary that all regional entities viz. states/distribution licensees/bulk consumers must take requisite measures to adhere to their drawal schedule and must not over-draw from the grid for reliable & secure operation of the grid.
- (j) Further, the CERC (Deviation Settlement Mechanism and related matters) Regulations also provide for inadvertent deviation by regional entities within a defined limit when the grid frequency remains within a specified band.
- (k) The CERC order dated 13.10.2015 in the suo moto Petition no. 11/SM/2015 in the matter of road map to operationalise reserves in the country also observed as follows:

"2. Over the period, reliance of the utilities on the grid for meeting their short-term energy demand was increasing. This caused serious threat to grid security. The Commission, therefore, tightened the operating band of grid frequency and made deviation charges stringent enough to discourage the utilities from deviation from their schedule. This has started yielding the desired results in terms of operation of the grid closer to 50 Hz. The Commission has reiterated time and again that unscheduled inter-change (UI) mechanism cannot be used as platform for meeting the energy demand of the utilities. Last mile imbalances are inevitable, but for this reliance on grid is not desirable. This need to be planned for, and adequate reserves need be contracted to address such last mile imbalances."

(I) Over-drawal by various State Control Area of Northern Regional Grid during the said period in violation of various provisions viz 5.2 (m), 5.4.1, 5.4.2, 6.4.7 etc. of the Indian Electricity Grid Code (IEGC) which aggravated the prevailing stressed operational conditions of the grid.

Over-drawal from the Grid by State Control Areas of Northern Region:

(m) From the 15 minutes time block wise energy meter data it has been observed that during the said period i.e. from 1.03.22 to 24.04.22, the states have resorted to over-drawal from the grid in many blocks by the states thereby violating IEGC regulations 5.4.2(a), 5.4.2(b). The state wise data showing the percentage of blocks wherein there was over drawal vis-a-vis total number of blocks and overdrawl in terms of the % energy is as follows:

Serial No. in the	Name of State	Total no. of 15 min Blocks from 1st March to 24th April-22			When State has done Over Drawal					
Higher % to	Name of State				Numbers of Blocks			In Percentage (%)		
Lower %		Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total
1	Uttarakhand	2976	2304	5280	2152	1495	3647	72%	65%	69%
2	Himachal Pradesh	2976	2304	5280	1723	1225	2948	58%	53%	56%
3	Jammu & Kashmir	2976	2304	5280	1664	1186	2850	56%	51%	54%
4	Rajasthan	2976	2304	5280	1548	1183	2731	52%	51%	52%
5	Haryana	2976	2304	5280	1749	773	2522	59%	34%	48%
6	6 Punjab	2976	2304	5280	1219	838	2057	41%	36%	39%
7	Uttar Pradesh	2976	2304	5280	1009	880	1889	34%	38%	36%

Serial No. in the order of Higher % to Lower %		Total In	ter State	Drawal	Over Drawal Energy					
	Name of State	Scheduled Energy in MU			In Million Units			Percentage (%) of Schedule Energy		
		Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total
1	Himachal Pradesh	528.9	300.7	829.6	32.0	20.0	52.0	6%	7%	6.3%
2	Uttarakhand	686.0	584.6	1270.6	40.7	28.3	69.0	6%	5%	5.4%
3	Jammu & Kashmir	1303.0	781.5	2084.5	52.2	41.7	93.8	4%	5%	4.5%
4	Rajasthan	1656.5	1488.7	3145.2	79.4	58.2	137.5	5%	4%	4.4%
5	Haryana	2639.0	2278.6	4917.7	76.8	22.3	99.1	3%	1%	2.0%
6	6 Punjab		1424.2	3116.2	29.3	18.9	48.2	2%	1%	1.5%
7	Uttar Pradesh	4176.4	3487.6	7664.0	46.1	44.0	90.1	1%	1%	1.2%

(n) As per the DSM regulations "no over-drawal of electricity by any buyer shall be permissible when grid frequency is below 49.85 Hz". The data of over-drawal by the states at frequency below 49.85 Hz is as below:

Serial No. in the order of Higher %	Name of State	Total no. of 15 min Blocks from 1st March to 24th April-22			Over Drawal at Frequency below 49.85 Hz Numbers of Blocks In Percentage (%)					
to Lower %								in refeelinge (70)		
		Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total
1	Uttarakhand	2976	2304	5280	128	318	446	4.3%	13.8%	8.4%
2	Himachal Pradesh	2976	2304	5280	119	205	324	4.0%	8.9%	6.1%
3	Jammu & Kashmir	2976	2304	5280	114	184	298	3.8%	8.0%	5.6%
4	Haryana	2976	2304	5280	125	154	279	4.2%	6.7%	5.3%
5	5 Punjab	2976	2304	5280	62	182	244	2.1%	7.9%	4.6%
6 Rajas	Rajasthan	2976	2304	5280	70	153	223	2.4%	6.6%	4.2%
7	Uttar Pradesh	2976	2976 2304 5280		66	149	215	2.2%	6.5%	4.1%

State wise Data:

<u>Haryana:</u>

(o) Over-drawal by Haryana remained in the range of 100-600 MW in several time blocks, even at frequency below the band. Haryana has over-drawn from the grid in the range of 1-3 MUs during the said period which can be seen from the plot as below:



(p) Haryana met 0.5 % to 3% of its daily energy requirement by over drawing from the grid under DSM. Haryana met around 10-30% of its schedule by purchasing from various segments of the short-term electricity market i.e. STOA-bilateral, day-ahead market (DAM) and real-time market (RTM) during the said period.

Himachal Pradesh:

(q) Over-drawal by Himachal Pradesh remained in the range of 50-300 MW in several time blocks even at a frequency below the band. Himachal Pradesh met 1 % to 14% of its daily energy requirement by overdrawing from the grid which can be seen from the plot as below:



(r) Himachal Pradesh has met around 20-50% of its schedule by purchasing from STOA-bilateral segment mostly while selling power primarily in day-ahead market (DAM) and real-time market (RTM) during the said period.

Jammu & Kashmir and Ladakh:

(s) Over-drawal by Jammu & Kashmir and Ladakh remained in the range of 50-300 MW in several time blocks even at a frequency below the band. J&K and Ladakh have met 1 % to 12% of its daily energy requirement by over drawing from the grid during the said period which can be seen from the plot as below:



(t) Jammu & Kashmir and Ladakh has met around 10-45% of its schedule by purchasing power from day ahead and real time market during the said period. J&K has also been selling its power in the bilateral segment of STOA.

<u>Punjab:</u>

(u) Over-drawal by Punjab remained in the range of 50-250 MW in several time blocks even at a frequency below the band which can be seen from the plot as below:



<u>Rajasthan:</u>

(v) Over-drawal by Rajasthan remained in the range of 50-400 MW in several time blocks even at a frequency below the band during the said period which can be seen from the plot as below:



(w) Rajasthan has met 0.8 % to 1.6% of its daily energy requirement by over drawing from the grid. It was also observed that while Rajasthan was over drawing from the grid during the period, it was selling power in the various segments of the market.

Uttarakhand:

(x) Over-drawal by Uttarakhand remained in the range of 50-200 MW in several time blocks even at a frequency below the band, which can be seen from the plot as below:



(y) Uttarakhand has met 1 % to 7% of its daily energy requirement by over drawing from the grid. Uttarakhand has met around 15-40% of its schedule by purchasing from various segments of the short-term electricity market i.e. STOA-bilateral, day-ahead market (DAM) and real-time market (RTM) during the said period.

Uttar Pradesh:

(z) Over-drawal by Uttar Pradesh remained in the range of 100-500 MW in several time blocks even at a frequency below the band which can be seen from the plot as below:



(aa) UP has over-drawn in the range of 1-3.5 Mus during the said period. While UP was over drawing from the grid during the period, it was selling power in different products of electricity market.

Actions Taken by NRLDC/POSOCO:

Warning Messages:

(bb) During the period (1st Mar- 24th Apr-2022) as per regulation 5.4.2 and 6.4.12 of the Grid code, NRLDC had issued a number of warning messages to the overdrawing States to control their over-drawal. A brief summary of the number of such messages issued by NRLDC is listed below:

Sr.	Name of State	Number of V by NRL	Number of Violation Messages Issued by NRLDC u/s 5.4.2 of IEGC					
N0.	Control Area	1.03.22 to 31.03.22	1.04.22 to 24.04.22	Total				
1	Haryana	130	189	319				
2	Uttar Pradesh	83	129	212				
3	Jammu & Kashmir	73	134	207	To control			
4	Rajasthan	85	95	180	over drawal			
5	Himachal Pradesh	18	71	89	(OD)			
6	Punjab	34	49	83				
7	Uttarakhand	17	39	56				
	Total	440	706	1146				

Repeated Violation:

(cc) The summary of number of instances when Over Drawal was not controlled (i.e. Over Drawal was not reduced even by 1 MW from the Over Drawal value at the time of issuance of message) by the State after issuance of warning message by NRLDC is indicated in Table below:

Serial	Name of State	Number of OD Messages issued by NRLDC			Number of Instances when OD was not reduced at all by the State after issuance of OD Message by NRLDC								
NO.	Control Area				In next 5 minutes		In >5 & <10 minutes			In >10 & <15 minutes			
		Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total
1	Haryana	130	189	319	36	60	96	21	39	60	19	32	51
2	Jammu & Kashmir	73	134	207	33	50	83	23	44	67	22	38	60
3	Uttar Pradesh	83	129	212	29	51	80	24	40	64	19	26	45
4	Rajasthan	85	95	180	19	22	41	16	12	28	10	15	25
5	Himachal Pradesh	18	71	89	8	22	30	9	24	33	6	20	26
6	Punjab	34	49	83	12	14	26	8	8	16	8	7	15
7	Uttarakhand	17	39	56	3	11	14	3	10	13	1	11	12
	Total	440	706	1146	140	230	370	104	177	281	85	149	234

(dd) The summary of instances when Over Drawal status was not changed to Under Drawal by the State Control Area (thereby continuously violating the second proviso of Regulation of 7.1 of the DSM Regulations i.e. "no overdrawal of electricity by any buyer shall be permissible when grid frequency is below 49.85 Hz) even after issuance of message by NRLDC at frequency below 49.85 Hz is as under:

Serial	Name of State	Number of OD Messages issued by NRLDC at Frequency		No. of Instances when Over drawal status is not changed to Under Drawal after issuance of OD Messages									
NO.		below 49.85 Hz			In next 5 minutes		In >5 & <10 minutes			In >10 & <15 minutes			
		Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total	Mar	Apr	Total
1	Haryana	80	136	216	69	124	193	56	100	156	49	71	120
2	Jammu & Kashmir	37	73	110	37	71	108	37	66	103	36	63	99
3	Uttar Pradesh	41	71	112	36	61	97	34	49	83	30	42	72
4	Himachal Pradesh	11	43	54	11	42	53	11	40	51	11	38	49
5	Rajasthan	34	44	78	23	28	51	14	19	33	11	16	27
6	Punjab	18	36	54	16	30	46	13	23	36	14	13	27
7	Uttarakhand	12	32	44	12	32	44	11	28	39	7	24	31
	Total	233	435	668	204	388	592	176	325	501	158	267	425

(ee) From above it can be construed that despite receiving warning messages from NRLDC on many occasions, the respective states have failed to respond or act upon timely and reduce their over-drawal, thereby constituting the repeated non-compliance of NRLDC instructions.

Emergency Measures:

(ff) NRLDC was constrained to take emergency physical regulatory measures during the period (1st March-24th April-2022) by opening of identified radial feeders to contain Over drawal and to restore grid frequency within safe operating limits. Summary of emergency measures taken by NRLDC during the said period as below:

Serial No.	Name of State	Number of Emergency Measures
	Control Area	taken by NRLDC
1	Jammu & Kashmir	7
2	Himachal Pradesh	6
3	Haryana	5
4	Punjab	2
6	Uttarakhand	2
6	Uttar Pradesh	2
7	Rajasthan	1
	Total	25

(gg) The matter was also brought to the notice of energy secretaries of the respective states by letters from CMD (POSOCO), on 24.03.2022 and 12.04.2022 highlighting the necessity of proper load management and maintaining grid disciple for reliable & secure operation of the grid.

Measures to avoid the recurrence of such stressed scenario:

- (hh) It is emphasized that the following measures may be incorporated by the states for avoiding the recurrence of such insecure operating conditions in the future:
 - a. Avoiding Heavy reliance on Day-Ahead and Real Time market
 - b. Adequate Demand estimation & management
 - c. Better Coordination for ramp management
 - d. Better RE Forecasting & scheduling
 - e. Measure for Addressing Generation Adequacy
 - f. Fuel Security and Adequacy statements
 - g. Reserves and ancillary services at state level

Hearing dated 05.07.2022:

- 3. The matter was heard on dated 05.07.2022 and the Commission admitted the Petition. The Petitioner was directed to submit the following details/information:
 - (i) Violation in terms of the quantum (MW) of over drawl as well as % w.r.t. scheduled drawl quantum by the State entities along with duration of such violation; and
 - (ii) Status of grid condition and overdrawal by the Respondents 1 to 14 and non-compliances witnessed post 24.4.2022.

Submissions of Petitioner

- 4. Petitioner vide affidavit dated 15.07.2022, in compliance to RoP for hearing dated 05.07.2022 has submitted as follows:
 - (a) The duration of violation, as per the regulation 5.4.1 and 6.4.7 of IEGC and Regulation 7.1 of DSM Regulations (i.e. "The over drawal/under drawal of electricity by any buyer (except Renewable Rich States) during the time block shall not exceed 12% of its scheduled drawal or 150 MW whichever is lower, when grid frequency is "49.85 Hz and above and below 50.05 Hz" is as below:

Sr. No.	State	Total Hours from 1 st March to 24 th April 2022 (in Hours)	Total Duration when State has done Over Drawal of more than 150 MW or 12% of schedule (in Hours)	% duration of violation w.r.t. total duration
		A	В	C = B/A
1	Himachal Pradesh		264	20.0%
2	Haryana		264	20.0%
3	Jammu & Kashmir		245	18.5%
4	Rajasthan	1320	224	17.0%
5	Uttarakhand		212	16.0%
6	Uttar Pradesh		181	13.7%
7	Punjab		50	3.8%

(b) The State-wise duration of Over Drawal is as below:

Sr. No.	State	Total Hours from 1 st March to 24 th April 2022	Total Duration when State has done Over Drawal (OD) (in Hours)	% Duration of OD w.r.t. total duration
		Α	В	C = B/A
1	Uttarakhand		912	69.1%
2	Himachal		737	55.8%
	Pradesh		151	55.678
3	Jammu &	1320	713	54.0%
	Kashmir	1020	715	54.076
4	Rajasthan		683	51.7%
5	Haryana		631	47.8%
6	Punjab		514	39.0%
7	Uttar Pradesh		472	35.8%

(c) The frequency also remained below 49.90 Hz for a cumulative duration of 220.5 hours during the period 25th April 2022 to 30th June 2022. The frequency remained below 49.7 Hz for a cumulative duration of 14.8 hours during the said period:

(i) frequency fell below 49.90 Hz. on 79366 instances

- (ii) frequency fell below 49.70 Hz. on 5332 instances
- (d) Accordingly, post 24.04.2022 the states have also continued to violate the Regulations 5.4.1, 5.4.2(a), 5.4.2(b) and 6.4.7 of IEGC and Regulation 7.1 (including second proviso) of the DSM Regulations on various occasions. In addition to the above, as per regulation 5.4.2 and 6.4.12 of the Grid code, NRLDC had also issued a number of warning messages to the overdrawing States to control their over-drawal. A summary of such messages issued by NRLDC control room post 24.04.2022 (i.e. from 25th April to 30th June 2022). A summary of such messages issued by NRLDC control room post 24.04.2022 (i.e. from 25th April to 30th June 2022) for controlling over drawal by States is as below:

Sr. No.	Name of State Control Area	Number of Violation Messages Issued by NRLDC u/s 5.4.2 of IEGC for Over Drawal Control					
		April	Мау	June	Total		
1	Haryana	94	38	85	217		
2	Uttar Pradesh	35	53	79	167		
3	Rajasthan	26	34	79	139		
4	Punjab	50	17	24	91		
5	Himachal Pradesh	15	10	30	55		
6	Jammu & Kashmir	25	5	13	43		
7	Uttarakhand	3	10	9	22		
	Total	248	167	319	734		

Reply of HVPNL/ SLDC Haryana:

5. HVPNL/ SLDC Haryana vide affidavit dated 02.08.2022 has submitted as follows:

(a) Haryana has always carried out demand estimation on the basis of the available previous 10-15 years data, however, in the present case due to an un-anticipated incremental increase in the total energy consumption in the month of March & April, 2022, it was not possible for Discoms/HPPC/SLDC, Haryana to accurately forecast its demand. total energy consumption in the month of March and April, 2022 was 4200.6 MUs and 4538.8MUs respectively which was 5.43% & 17.34% respectively higher than the energy consumption in March and April 2021.

(b) Apart from unexpected rise in demand during the period in dispute, there was a shortfall in supply of power owing to the outage of the various Generators: Adani Power, Mundra (1424 MW), CGPL, Mundra (380 MW), Khedar Thermal Plant, Hisar (600 MW), Faridabad Gas Plant (432 MW), MGSTPP (Unit 2), Jhajjar (660 MW)

(c) There were some other outages of power plants due to technical reasons. Approx. 3500-4000 MW of the scheduled power was not available due to force majeure conditions such as the shortage in the supply of coal, technical default etc. which were beyond the control of SLDC, Haryana.

(d) Despite the shortage of power supply coupled with the unprecedented

increase in power demand as detailed above, the SLDC, Haryana has taken pro-active steps to mitigate the over-drawl. Actions taken by the SLDC, Haryana are as below:

- i. HPPC had purchased a quantum of 4558.20 LUs & 5619.37 LUs at an average cost of Rs 7.66/Kwh & Rs. 11.50/Kwh during the month of March and April 2022 respectively. HPPC had also made persistent efforts for allocation of power from the Dadri Thermal-II Power Plant with the Ministry of Power, Government of India.
- ii. HPPC has approached NRPC/ CEA for allocation of share to the State of Haryana out of the unallocated share of 15% of the central generating stations. HPPC had also floated tender for procurement of 1000 MW medium-term power.
- iii. Efforts were also made for procurement of power (75MW & 270MW) from Stage-I &II, Baglihar HEP Project, Jammu & Kashmir and load shedding was carried out in March & April 2022 to the tune of 100.02 MUs & 297.33 MUs respectively.
- iv. SLDC Haryana both on the receipt of the over-drawl messages from NRLDC and also on its own had issued a number of instructions/ advisory notices to the Discoms to curtail over-drawl.

(e) A working group has been constituted comprising of officers from each of Haryana's Power Utilities- HVPNL, UHBVNL, DHBVNL and Haryana Power Generation Corporation Limited (for brevity 'HPGCL') to look after the SLDC Operational issue as and when it arises. The working group in its second meeting dated 27.05.2022 has also deliberated on the expediting the implementation of the ADMS.

(f) SLDC Haryana has acted diligently so as to comply with the provisions of Grid Code and directions of NRLDC and taken all possible steps to curtail over-drawal of power.

(g) Regarding dependency upon the DSM mechanism to meet the shortterm demand, proper 'scheduling' of power is beneficial but the primary requirement for implementation of the scheduling is availability of accurate forecast data. However, in the present case, the accuracy was not possible.

(h) The availability of spinning reserves is not possible in case of critical power shortage experienced by the State.

Reply of HPSLDC:

- 6. HPSLDC vide affidavit dated 25.08.2022 has submitted as follows:
 - (a) There was huge variation in the energy consumption pattern of HP State due to high temperature variation during the month of March 2022 & April 2022 as compared to the energy consumption in March and April 2021.
 - (b) H.P. is a Hilly State having 100% Renewable Energy (Hydro & Solar) in The State and all the power plants in HP are run of the river with or without pondage (2-3 hours at max.), so the injection of power into the grid mainly depends on the availability/discharge of water and sudden variation in temperature resulted in difficult to match the demand pattern during short time span.
 - (c) Due to less availability of coal in the country, there was shortage of power availability in power exchanges which resulted in shortage of power in DAM and RTM.
 - (d) HPSEBL (DISCOM) had to purchase the power on the platform of the power exchange at an average rate of Rs. 12.78/kWh & Rs. 16.55/kWh in DAM & RTM during the month of March 2022 & Rs. 12.00/kWh & Rs. 16.00/kWh in DAM & RTM during the month of April 2022 to meet up the shortfall of power in HP.
 - (e) HPSLDC has always endeavored to maintain the safety and security of grid while attempting to curtail any insecure operation of the grid. Being as SLDC and independent authority, HPSLDC has no authority for sale/ purchase of Power as per Section 31 of the Electricity Act, which is solely being exercised by HPSEBL. As such HPSLDC is left with two things:
 - i. Booking of URS and H.P. had booked a quantum of 31.6 Mus of energy during March 2022 and 20.4 Mus of energy during April 2022.
 - ii. Physical regulation of lines/ feeders for curtailing over-drawal from the Grid only as the last resort. The load shedding was carried out in H.P. to

minimize over-drawal during the month of March & April 2022 to the tune of 4.30 MUs & 13 MUs respectively.

- (f) HPSLDC both on receipt of the over-drawal messages from the NRLDC and also on its own has issued number of instructions/ advisory notices to the DISCOM.
- (g) GoHP had also purchased the energy quantum of 2.8 MUs & 1.5 MUs during the month of March 2022 & April 2022 to meet the shortfall of energy as close as possible which was arised due to change in ISGS (hydro) schedule during Intra Day.
- (h) HP has over-drawn in the range of 0.1-2.7 Mus during the said period and met 1% to 9% of its daily energy requirement by over-drawing from the Grid. HP during the said period has met 20-50% of its schedule by purchasing from STOA-bilateral segment mostly while selling power primarily in DAM & RTM.
- (i) All the compliances to the messages of NRLDC has been made by HPSLDC and also requested to DISCOM (HPSEBL) & DoE (GoHP) to control overdrawal & under-injection respectively by arranging the power from RTM. HPSLDC has taken all possible steps in their control area to reduce overdrawal and comply with the provisions of Grid Code and the direction of NRLDC.
- (j) Regarding non-availability of spinning reserves, it is submitted that the availability of spinning reserves is not possible in case of H.P. as the state has all the hydro- stations including ISGS hydro plants which are snow fed run of river with or without pondage having max pondage upto 3 hours which had been exhausted during the peaking hours/ period upto their max. capacity.

Reply of PSTCL/ Punjab SLDC:

- 7. Punjab SLDC vide affidavit dated 07.09.2022 has submitted as follows:
 - (a) The critical operations conditions in the grid during the period from 01.03.2022 to 24.04.2022 cannot be attributed to the States/ Discoms alone.
 The critical operations conditions are a result of the several factors which

contribute to the sharp rise in electricity demand and the same has been acknowledged by NRLDC itself in its Petition.

- (b) The imbalance in the drawal of energy by the State of Punjab is miniscule and arises in the natural operation of the grid, and not due to any wrongful actions of commission or omission by the answering Respondent. Only about 1.5% of the total scheduled energy is stated to have been over-drawn by the State of Punjab. Further, considering the dynamic nature of power system, the over-drawal or under-drawal conditions exists. In most cases, such over-drawal or under-drawal is for the benefit of the grid operations.
- (c) Punjab has over drawn beyond deviation limit in only 4% of the time blocks and in terms of energy, Punjab has over drawn beyond schedule with only 0.4% of the energy, and has remained at bottom of the table amongst all the 7 states.
- (d) Punjab has taken utmost care and various steps efforts within its control to curtail over-drawl. The violation messages are received from the automated software of NRLDC, but the remedial measures to be taken by Punjab SLDC are mostly implemented by giving directions to the distribution licensee to curtail over drawl by disconnection of load or increase in own generation/ revival of surrendered power from CGS etc.
- (e) Punjab SLDC is already in the process of implementation of SAMAST scheme. The demand forecasting, which is presently being done manually by Punjab SLDC, will be automated under SAMAST scheme within the next few months, which will facilitate precise estimation of demand. This will further improve control on drawls thereby avoid re-occurrence of the stressed grid scenario as mentioned by NRLDC.

Reply of PTCUL/ Uttarakhand SLDC

- 8. PTCUL vide affidavit dated 09.09.2022 has submitted as follows:
- (a) Imbalance in demand and supply was due to sudden rise in temperature during March –June, 2022 in Uttarakhand contributed towards sharp rise in electricity demand in comparison to previous years. Also, boom in economy post covid-19 lead to unprecedented rise in power demand. A comparison

viz a viz year 2021 figures is given below: -

	S. No.	Month	Max. Energy Consumption in NR (2022)	Max. Energy Consumption in NR (2021)	% Rise
	1.	March	1182.02 MU	1068.28 MU	10.65
ſ	2.	April	1373.87 MU	1107.20 MU	24.08
	3.	May	1539.80 MU	1140.26 MU	35.04
	4.	June	1737.09 MU	1594.09 MU	9.00

Max. Energy consumption (MU) on a day in NR: -

Max Demand (MW) figures of Uttarakhand: -

Year	March	April	Мау	June
2021	2068	1917	1798	2189
2022	2162	2329	2354	2594
% Rise	4.54	21.49	30.92	18.50

- (b) Unexpectedly high demand (approximately 13% higher) was observed in the months of March and April 2022 due to early advent of summers and increased demand of industries. Fall in generation of thermal power plants of Central/State Sector due to low fuel supply /non- availability of sufficient Domestic Coal and high gas prices due to Russia –Ukraine war lead to lesser allocation/availability of power to various states from central sector Generating Stations (CSGS) and ISGS.
- (c) Despite the rise in State hydro generation in year 2022 in comparison to 2021, Uttarakhand State faced power shortage due to uncontrollable factor/factors beyond control of SLDC i.e. un-anticipated high increase in demand, unavailability of State Gas generation due to very high gas prices, less allocation of Coal based generation due to fuel shortage, power shortage in Power Exchange etc.
- (d) Moreover, the availability of power in the Power Exchanges was on lower side and even the rates of power in exchanges reached to the tune of Rs. 20.00/unit.
- (e) Uttarakhand DISCOM (UPCL) is carrying out demand estimation for the State, however in the present case due to unexpected & unprecedented

increase in temperature during the said period, the Discom/LDCs could not accurately forecast its demand as has been the case pan India._UPCL in coordination with SLDC requested NRPC for allocation of unallocated power of Central Sector generating stations during upcoming summer season vide email dated 17.03.2022.

- (f) UPCL explored all possible modes of power purchase i.e. inviting the bids through Discovery of Efficient Price (DEEP) Portal of Govt. of India, as well as through TAM (Term ahead market), DAM (Day ahead market) and RTM (Real time Market) in Power Exchanges at around Rs. 12 per unit or higher in DAM, RTM and TAM.
- (g) SLDC, Uttarakhand has acted in a manner so as to diligently comply with the provisions of the Grid Code and directions of NRLDC and taken all possible steps to curtail over-drawal of power. In addition to the directions issued to the Discoms, SLDC, Uttarakhand has also carried out requisite manual load shedding.
- (h) The number of messages sent to Uttarakhand SLDC as claimed by the Petitioner are least w.r.t. other States which clearly shows that SLDC in coordination with DISCOM has taken the situation seriously and maintained drawal from grid near to schedule. From the above table, it can be seen that SLDC has timely acted on majority of warning messages issued by NRLDC to restrict over-drawal from the grid despite the difficult situation of power shortage in the country.
- (i) Regarding dependency on the DSM mechanism to meet short term demand, it is submitted that 'scheduling' of power is beneficial but the primary requirement for implementation of the scheduling is availability of accurate forecast data. However, in the present case during the period of March & April 2022, the accuracy of demand forecast was not possible.
- (j) Regarding non-availability of spinning reserves, it is to state that Uttarakhand has all the hydro generating stations which are run of the river with or without poundage capacity up to three hours which are usually exhausted during the peak hours up to their maximum capacity and spinning reserve is not available.

Reply of UPSLDC

- 9. UPSLDC vide affidavit dated 08.09.2022 has submitted as follows:
- (a) The ratio of power overdrawn to power underdrawn in the state of Uttar Pradesh during the period March 2022 to July 2022 has been 49.6: 50.4. This signifies that UPSLDC has overdrawn the power 49.6% of the times whereas it has underdrawn power 50.4% thereby demonstrably ensuring that it has managed to maintain the grid stability to the best of its ability, especially considering the circumstances.
- (b) In terms of regulation 7 of the DSM Regulations, the Renewable rich States, where the minimum combined installed capacity of wind and solar based generation is above 1000 MW (Regulation 2(1) (m-i) of the CERC DSM Regulations), additional DSM charges are applicable for deviation when the same is beyond 200 MW. The State of UP is a Renewable rich State as the combined installed capacity of solar based generation is about 2,000 MW. Therefore, out of total 72 instances, around 20 of the instances are not applicable in case of Uttar Pradesh.
- (c) Because of following issues faced by UPSDLC, there have been instances when UPSLDC had overdrawn power even when the grid frequency was low:
 - i. Sign Violation
 - ii. Change in Procedure for Scheduling for Real Time Market
 - iii. No real time control of UPSLDC on the injection and withdrawal of power
 - iv. Essential Services Effected
 - v. No power available in exchange even at peak rate
 - vi. High Demand during summer season
 - vii. Coal Shortage and Load Shedding
- (d) As per the procedure prescribed in the communication dated 15.05.2020 issued by POSOCO, if a direction of ramp-up or ramp-down of generation has been issued by UPSLDC, the same shall be complied in the 7-time blocks, i.e., 105 minutes. Hence, it is evident that even if the schedule is changed by UPSLDC in accordance with the grid discipline, the same shall take effect after at least 105 minutes from issuance of such direction for

change of schedule.

- (e) Further, Indian Railways, has the largest number of access/ withdrawal points in the State of Uttar Pradesh (around 107 interface points). Moreover, considering the nature of its services, it is never able to reduce its demands and is, therefore, constantly over drawl from its schedule. In such a scenario and considering the nature of services provided by the Railways, it is not possible for UPSLDC to take any measures to make the Railways conform to the schedule.
- (f) Presently the load management is manual, and it takes certain time to increase or decrease the load of Discoms via manual communication channels through SLDC, ALDC, substation- level 1 (usually 220KV), substation level 2 (usually 132 KV) successively. CERC had directed for implementation of Automatic Demand Management Scheme ("ADMS") in all the state in the country, vide its directions dated 31.12.2015 in Petition No. 05/SM/2014. The implementation is being overseen and routinely taken up in the Operation Co-ordination Committee Meetings of the Northern Regional Power Committee.
- (g) There are essential services where uninterrupted power supply has to be ensured by UPSLDC. These services include the Indian Railways, Metro Services, Hospital, Defence, Irrigation, Water Services etc. These services, if affected, could cause a huge problem on millions of people who are directly or indirectly dependent on these services.
- (h) It is matter of record that there have been continuous instances of coal shortages throughout the country. It is because of this reason clubbed with the fact that the period under consideration is during the on-setting of the summer months, there is a drastic gap between the total energy demand and total energy available to be supplied.
- (i) In spite of frequent unscheduled load shedding and purchasing power from all available sources, sometimes over-drawl from the grid may happen also Continuous under-drawl will cause sign violation thus violation of IEGC. However immediate actions were taken to arrest the over-drawl in shortest possible time.

Reply of RVPNL/ Rajasthan SLDC

- 10. RVPNL vide affidavit dated 23.09.2022 has submitted as follows:
- (a) The over-drawal projected with regard to 180 No. Messages of NRLDC have been computed on a 5-minute time Block, as against the time block of 15 minutes as defined in the Grid Code and/or DSM Regulations, 2014. Accordingly, the allegations made by NRLDC, namely that there have been repeated violations by RVPN vis-à-vis the warning messages issued from time to time is grossly erroneous as the same is computed on a time-block of 5 minutes, contrary to the prevalent Regulations.
- (b) NRLDC issued 79 warning messages in the case when the frequency was below 49.85 Hz. Out of such 79 messages, RVPN on 70 occasions complied with directions/messages within the next three consecutive 5minute time block. Similarly, when the frequency was 49.85 Hz and above, 101 warning messages were sent by NRDLC to RVPN. Out of such 101 messages, RVPN on 65 occasions complied with the directions/messages within next three consecutive 5-minute time block.
- (c) National Grid, being vast and dynamic in nature, the sudden changes (rise/fall) in frequency are on account of the generation and demand imbalance. The primary factors responsible for such imbalance are:
 - a. The unexpected fall in generation due to sudden outage or low capacity running of the State thermal generating stations; or
 - b. due to the infirm, intermittent and variable nature of the renewable generation which are subject to vagaries of nature; or
 - c. Unpredictable rise/fall in demand in the State of Rajasthan.
- (d) Despite the unprecedented circumstances on account of shortage of power supply accompanied with the unprecedented rise in the demand of power, RVPN has duly taken pro-active steps to mitigate the over-drawal and to maintain the stability of the Grid including load shedding by itself and/or by giving directions to other state entities.
- (e) The demand increased primarily due to the sudden and severe heat-wave

reported in various parts of the Country including the State of Rajasthan, depleted capacity, technical snags, etc. It is relevant to note that, in the Year 2022, the State of Rajasthan has recorded the highest demand over the last 5 years, with peak demand of 15,749 MW in the months of March, 14,167 MW in the month of April, 15,898 MW in the month of May and 16,102 MW in the month of June. Approx. 12.17 %& 22.45% demand growth in month of March 2022 and April 2022 respectively observed as compared to corresponding period of year 2021. This was far high in comparison to previous years.

- (f) At certain instances, the overdrawl occurred due to compulsion of change of sign of deviation from schedule as per Clause (10) of Regulation 7 of DSM regulation,2014.
- (g) RVPN/SLDC and its officials took various pro-active actions in the real time to avoid possible breach of the system parameters to maintain within the Grid Code i.e., limits of Frequency- 49.90-50.05 Hz and deviation - plus or minus 250 MW.
- (h) RVPN, on receipt of the messages from NRLDC, as per the existent manual demand mechanism (in terms of Regulation 6.4.7 of the Grid Code), gave immediate directions/instructions *via* telephonic messages (verbally) and in writing by forwarding NRLDC messages to RUVNL to contain the drawal within the schedule so as to avoid any threat to the security of the Grid.
- (i) State of Rajasthan, as at present, has a manual load shedding mechanism which is a dynamic and cumbersome process. There are about 128 No. 220 KV Grid Sub-stations & 467 No. 132 KV Grid Sub-stations, total 595 No. in the State of Rajasthan, which are required to be communicated with telephonically to issue directions, which leads to an inadvertent time-lag. The load shedding takes about further 05-30 minutes, to follow.
- (j) It has been proactively taking active steps for the commissioning of the ADMS scheme in the State of Rajasthan. The work of implementation of the ADMS scheme has progressed to quite extent and it is likely to be

implemented in 2023 in the State of Rajasthan.

- (k) The imposition of penalty under Section 142 of the Electricity Act, 2003 is quasi-criminal in nature and ought not be in the absence of any deliberate act or conduct on the part of the person concerned, particularly, when it is an entity such as RVPN discharging statutory function.
- (I) Regarding NRLDC's allegation of non-availability of spinning reserves, it is submitted that availability of spinning reserves is dependent upon the power-situation of the state. In the instant case due to the critical power shortage experienced during the stipulated period, it was not feasible for the state to resort to spinning reserves.

Submissions by HVPNL/ SLDC Haryana

11.HVPNL/ SLDC Haryana vide affidavit dated 06.10.2022 has submitted as follows:

(a) SLDC, Haryana has always carried out demand estimation on the basis of the available historic data, however, in the present case due to an unanticipated incremental increase in the total energy consumption in the month of May & June, 2022, it was not possible to accurately schedule its power. The total energy consumption in the month of May and June, 2022 was 5641.09 MUs & 6350.74 MUs respectively which is 28.97% & 11.44% higher than the energy consumption in May 2021 & June 2021. Further, the frequency in the month of May & June, 2022 remained in the IEGC band for 72.2 % & 73.4% of the time compared to 74.5 % of the time in the month of May & June, 2021 respectively.

(b) SLDC, Haryana re-iterated its earlier submission made in August 2022.Following actions have been taken collectively by the Haryana Power Utilities to meet the shortage of power:

- a. HPPC had purchased a quantum of 5478.38 LUs & 5109.66 LUs at an average cost of Rs 8.20/Kwh & Rs. 7.35/Kwh during the month of May and June 2022 respectively.
- b. Since power supply still fell short of the requirement, load shedding was carried out in May 2022 & June 2022 to the tune of 51.47 MUs & 20.08 MUs respectively.

c. SLDC Haryana both on the receipt of the over-drawl messages from NRLDC and also on its own had issued a number of instructions/ advisory notices to the Discoms to curtail over-drawl. SLDC, Haryana has also conveyed the emergent need to maintain grid discipline and curtail over-drawl to DISCOMS on various platforms.

Submissions by RVPNL vide affidavit dated 24.11.2022:

- 12.RVPN vide affidavit dated 24.11.2022, has re-iterated its earlier submissions as per affidavit dated 23.09.2022 and further submitted as follows:
- (a) RVPN has fulfilled its role and responsibilities as the State Load Despatch Centre for ensuring grid-security and management under Section 31 and 32 of the Electricity Act, 2003 and Regulation 2.7 of the Grid Code. There has been no deliberate action or inaction on the part of RVPN in harming the grid security or stability.
- (b) RVPN, during the relevant period, has taken various steps to arrest the Grid frequency when the frequency was below 49.85 Hz. A study of Rajasthan's SCADA system reveals that Rajasthan was in over drawl in 139 instances and Rajasthan brought over drawl either in under drawl or within permissible limit in 122 instances (87.77%) up to next 15-minute time block and on another 11 instances in 2nd 15 time block (7.91%). Rajasthan has been able to achieve 95.68 % of compliance within next two time blocks of 15 minutes.
- (c) RVPN has certain physical constraints due to which it can only impart necessary directions to the Generators or Distribution Companies in order to curtail the net drawal. RVPN is not involved in the sale or purchase of power and the same falls solely under the domain of RUVNL, the Distribution Licensees and the Generators. However, RVPN have been resorting to load shedding as and when required to control over drawl under precarious grid conditions

Hearing dated 29.11.2022:

13. During the hearing dated 29.11.2022, the representatives of the Petitioners pointed out the number of instances when the over-drawal status was not

changed to underdrawal by the Constituents after the issuance of over-drawal messages by the Petitioners (including when the frequency was below 49.85 Hz) to Northern Region (from 1st March – 24th to April, 2022) thereby constituting the repeated non-compliance of the instructions issued by the Petitioners. The representatives of the Petitioners further submitted that on many occasions the Petitioners also had to take emergency physical regulatory measures such as the opening of identified radial feeds to contain the over-drawal and to restore the grid frequency within the safe operating limits. The Commission directed the NRLDC to convene a meeting with the Respondent SLDCs of the concerned State and to prepare a State-wise report inter-alia including the actions measures to be taken by the concerned SLDCs at the State level in the event of overdrawals at the lower frequencies after having the detailed discussions/consultations in this regard and file a report thereafter and the Commission reserved the matter for order.

Submissions of NRLDC:

- 14.NRLDC in compliance to RoP for hearing dated 29.11.2022, has submitted as follows:
- (a) NRLDC convened meetings with all respondent SLDCs as per details given below:

Sr. No.	SLDC	Date of Meeting	Time of Meeting	Mode of Meeting
1	Haryana	22.12.2022	11:00 Hrs - 14:00 Hrs	Offline
2	Himachal Pradesh	22.12.2022	15:00 Hrs - 17:30 Hrs	Offline
3	Jammu & Kashmir	23.12.2022	11:00 Hrs - 13:00 Hrs	Online
5	Rajasthan	26.12.2022	11:00 Hrs - 13:00 Hrs	Offline
4	Punjab	27.12.2022	12:30 Hrs - 15:30 Hrs	Offline
7	Uttar Pradesh	28.12.2022	15:00 Hrs - 17:00 Hrs	Online
6	Uttarakhand	02.01.2023	15:00 Hrs - 17:00 Hrs	Online



- (b) The action plan for implementation by all the Respondent SLDCs, which was discussed during the meeting conducted by the NRLDC is summarized as follows:
 - i. Initial deadline for ADMS implementation was 1st January 2011 as per para 5.4.2 (d) of IEGC. Later, CERC has taken cognizance of nonimplementation of ADMS by states and given 30.06.2016 as deadline vide its order dt. 31.12.2015 in petition no. 5/SM/2014. Implementation deadline given by the statutory and regulatory body needs to complied by concerned SLDC / SEB / distribution licensee as per regulation no. 5.4.2 (c) &(d) of IEGC. Till the implementation of ADMS, SLDCs should expedite the action plan for the remote operation of few feeders directly from SLDC in case of emergency situations and the list of feeders to be operated through Discom Control Room along-with MW load relief may be shared with NLDC.
- Reduction in forecast error to less than 2% in the day ahead forecast and implementation of staggering of load in order to avoid sudden increase/ decrease demand.
- iii. State SLDCs should create real-time RE desk that shall look at renewable activities including REMC forecasts, analysis of these forecasts and coordinate with renewable power stations for accurate RE forecasting & Scheduling and till the establishment of REMC.
- iv. Early execution of SAMAST project which is expected by December'2023.
- v. Strict action to be taken to ensure adequate reserve at all the times and avoid over drawal from Grid for safe & secure operation of the Grid and Pursue generators to expedite revival of Thermal/ Hydro units under forced outage wherever feasible.
- vi. Efficient coordination with generators and staggering of power supply plan of agriculture feeders to be done on regular basis keeping in view the ramp constraints.
- vii. Enhancement of TTC/ATC limits for the import and export of power and to carryout long term demand estimation at all time horizons and plan for adequate generation accordingly.

- viii. Advance action should be taken for managing their demand portfolio and make prior arrangements for procurement of power and ensure portfolio balancing at all times without overdrawing power from the grid and the SLDC shall take immediate action to control overdrawal and ensure immediate compliance with warning messages issued by NRLDC and send a compliance report to NRLDC.
- ix. To carry out long term demand estimation at all time horizons and plan for adequate generation accordingly and to submit the long-term demand estimation with an adequate PPA/MW wise list. advance information on coal stock of thermal plants ensures generating units availability and it is very important during high demand season.
- x. In case of Hilly states, advance information on Water Availability or Forecast of Inflow may be expedited from hydro plants to ensure generating units availability. Further, during the rainy season many machines are closed due to high silt content in the water which poses challenges to grid operators. Real time monitoring of silt should be done in the control room which ensure better management of real time grid operation due to advanced information on likely impact of silt on major hydro generation outage.
- xi. Pursue with the State Regulator for the introduction of regulatory provisions for Intra-State Reserves and Ancillary Services in line with CERC vide its order dated 13.10.2015, in Petition No. 11/SM/2015, Reserves Estimation Procedure dated 2.12.2022 and the Forum of Regulators (FOR) technical committee report 'SANTULAN' which suggested modalities for rolling out a framework for intra-state reserves and ancillary services.
- xii. Proper coordination with generators should be done and SLDCs should develop some professional tools or take the help of forecast service provider for accurate demand forecasting which in turn will reduce overdrawal from grid.
- xiii. Demand ramp should be limited to not more than 100 MW. Efficient coordination with generators and staggering of power supply plan of agriculture feeders to be done on regular basis keeping in view the ramp constraints.

- xiv. SLDCs shall prepare a standard operating procedure/protocol to be followed by SLDC & Discom for immediate action to control overdrawal and to ensure immediate compliance of warning messages issued by NRLDC.
- xv. The SLDCs shall take immediate action to control overdrawal and ensure immediate compliance of warning messages issued by NRLDC and send a compliance report to NRLDC.
- xvi. Pursue with State Commission for flexibility in Intrastate thermal generator in line with IEGC 6.3B (1) "The technical minimum for operation in respect of a unit or units of a Central Generating Station of inter-State Generating Station shall be 55% of MCR loading or installed capacity of the unit of at generating station.
- (c) Based on the deliberations with the respective State SLDCs, NRLDC has sought appropriate directions to the Respondents and to adhere to action plan.

Analysis and decision:

- 15. We have perused the submissions of the Petitioner and Respondents and have also carefully perused the action plan submitted by the Petitioner after the discussion with different SLDCs as directed by the Commission. In view of the above discussions, the issue which arises for our consideration is whether any penal action against Respondents is required to be initiated under Section 29 and Section 142 of the Act and what should be the action plan for future?
- 16. The Petitioner has mainly contended that due to over drawal by some of the state entities, the frequency went below the lower limit (49.90 Hz) on multiple occasions during the period 1st March 2022 to 24th April 2022. The frequency remained below 49.90 Hz for a cumulative duration of 286 hours and below 49.7 Hz for a cumulative duration of 29 hours during the said period (1st March 2022 to 24th April 2022). On a few occasions, the grid frequency even touched

49.5 Hz.

- 17. Petitioner issued a number of warning messages to the overdrawing States to control their over-drawal as per regulation 5.4.2 and 6.4.12 of the Grid code. Further, post 24.04.2022 also the states have continued to violate the Regulations 5.4.1, 5.4.2(a), 5.4.2(b) and 6.4.7 of IEGC and Regulation 7.1 (including second proviso) of the DSM Regulations on various occasions.
- 18. Petitioner has sought the necessary penal action against Respondents under section 29 for non-compliance of the directions issued by NRLDC and under section 142 of the Act for the repeated violations/non-compliances of regulation 5.4.1, 5.4.2(a), 5.4.2(b), 6.4.7 of IEGC and Regulation 7.1 of DSM Regulation, direction to the Respondents to maintain drawal from the grid as per drawal schedule and avoid overdrawing from the grid in compliance with Regulation 5.4.2 of the Grid Code and DSM Regulations, direction to Respondent to ensure the compliance of the directions of NRLDC issued under section 29 of the Act in the event of inadvertent deviation/Over drawal and adhere to schedule by suitable action and report the action taken to NRLDC and direction to Respondents to take all possible measures including but not limited to resource adequacy, load & RE forecasting, ADMS, ancillary service etc. to avoid over-drawal from the grid.
- 19. The respective SLDCs of Haryana, Himachal Pradesh, Rajasthan, Uttarakhand, Uttar Pradesh and Punjab have submitted that they have taken different steps to control the over-drawl so as to maintain the grid stability and security on the receipt of Overdrawl messages for the NRLDC. However, no submissions have been made by the Jammu and Kashmir Power Transmission Corporation Limited. The common cited reasons for the over-drawl during the

subject period by all the states are summarized as follows:

- a) Due to an un-anticipated incremental increase in the total energy consumption due to high temperature variation in the month of March & April, 2022, it was not possible for Discoms/ SLDCs to accurately forecast its demand. Also, boom in economy post covid-19 led to unprecedented rise in power demand.
- b) There was a shortfall in supply of power owing to the outage of the various generators due to shortage of coal. Due to less availability of coal in the country, there was shortage of power availability in power exchanges which resulted in shortage of power in DAM and RTM. Even the rates of power in exchanges reached to the tune of Rs. 20.00/unit.
- c) Fall in generation of thermal power plants of Central/State Sector due to low fuel supply /non- availability of sufficient Domestic Coal and high gas prices due to Russia –Ukraine war lead to lesser allocation/availability of power to various states from central sector Generating Stations (CSGS) and ISGS.
- d) There are essential services where uninterrupted power supply has to be ensured by the SLDCs. These services include the Indian Railways, Metro Services, Hospital, Defence, Irrigation, Water Services etc. These services, if affected, could cause a huge problem to millions of people who are directly or indirectly dependent on these services.
- e) Presently the load management is manual, and it takes certain time to increase or decrease the load of Discoms via manual communication channels through SLDC, ALDC, substation level 1 (usually 220KV), substation level 2 (usually 132 KV) successively.
- f) Infirm, intermittent and variable nature of the renewable generation which are subject to vagaries of nature.
- g) No power availability in the Short Term Market even at peak rate.

- 20. The Respondent SLDCs have submitted that demand estimation is carried out on the basis of the available historic data, however, in the present case due to an un-anticipated incremental increase in the total energy consumption in the months of March & April, 2022, it was not possible for SLDCs to accurately schedule its power. Despite of this, they have taken various steps to arrest the grid frequency when the frequency was below 49.85 Hz and to avoid the overdrawal from the Grid. Both on the receipt of the over-drawl messages from NRLDC and also on its own had issued a number of instructions/ advisory notices to the Discoms to curtail over-drawl. SLDCs have also conveyed the emergent need to maintain grid discipline and curtail over-drawl to DISCOMS on various platforms. Purchase of additional power was done by the different states even at higher rates apart from the load shedding.
- 21.SLDCs have submitted that they have acted in a manner so as to diligently comply with the provisions of the Grid Code and directions of NRLDC and taken all possible steps to curtail over-drawal of power. Regarding nonavailability of spinning reserves, hilly States like Himachal Pradesh and Uttarakhand have submitted that all the hydro generating stations, which are run of the river with or without pondage capacity up to three hours, usually exhausted during the peak hours and spinning reserve was not available.
- 22. We have considered the submissions of Petitioner and Respondents. We note that subsequent to the replies of the State SLDCs, no rejoinder has been filed by the Petitioner against the replies of the State SLDCs.
- 23. Let us persue various provisions under the Electricity Act and the various regulatory provisions. Section 29 of Electricity Act 2003, provides as follows:

"29. (1) The Regional Load Despatch Centre may give such directions and

exercise such supervision and control as may be required for ensuring stability of grid operations and for achieving the maximum economy and efficiency in the operation of the power system in the region under its control.

(2) Every licensee, generating company, generating station, sub-station and any other person connected with the operation of the power system shall comply with the direction issued by the Regional Load Despatch Centres under sub-section (1).

(3) All directions issued by the Regional Load Despatch Centres to any transmission licensee of State transmission lines or any other licensee of the State or generating company (other than those connected to inter State transmission system) or sub-station in the State shall be issued through the State Load Despatch Centre and the State Load Despatch Centres shall ensure that such directions are duly complied with the licensee or generating company or sub-station.

(4) The Regional Power Committee in the region may, from time to time, agree on matters concerning the stability and smooth operation of the integrated grid and economy and efficiency in the operation of the power system in that region.

(5) If any dispute arises with reference to the quality of electricity or safe, secure and integrated operation of the regional grid or in relation to any direction given under sub-section (1), it shall be referred to the Central Commission for decision : Provided that pending the decision of the Central Commission, the directions of the Regional Load Despatch Centre shall be complied with by the State Load Despatch Centre or the licensee or the generating company, as the case may be.

(6) If any licensee, generating company or any other person fails to comply with the directions issued under sub-section (2) or sub-section (3), he shall be liable to penalty not exceeding rupees fifteen lacs."

As per above if any licensee, generating company or any other person fails to

comply with the directions issued by RLDC under sub-section (2) or sub-

section (3) of Section 29 of the Act, he shall be liable to penalty not exceeding

rupees fifteen lacs.

24. Section 142 of Electricity Act 2003, provides as follows:

"Section 142. (Punishment for non-compliance of directions by Appropriate Commission):

In case any complaint is filed before the Appropriate Commission by any person or if that Commission is satisfied that any person has contravened any of the provisions of this Act or the rules or regulations made thereunder, or any direction issued by the Commission, the Appropriate Commission may after giving such person an opportunity of being heard in the matter, by order in writing, direct that, without prejudice to any other penalty to which he may be liable under this Act, such person shall pay, by way of penalty, which shall not exceed one lakh rupees for each contravention and in case of a continuing failure with an additional penalty which may extend to six thousand rupees for every day during which the failure continues after contravention of the first such direction.

As per above, if a person has contravened any of the provisions of the Act or the rules or regulations made thereunder, he shall be liable to penalty which shall not exceed one lakh rupees for each contravention and in case of a continuing failure with an additional penalty which may extend to six thousand rupees for every day during which the failure continues.

25. Further relevant provisions of IEGC 2010 and the DSM Regulations are reproduced as follows:

Regulation 5.2(m) of IEGC:

"(*m*) All Users, SEB, SLDCs, RLDCs, and NLDC shall take all possible measures to ensure that the grid frequency always remains within the 49.9-50.05 Hz band."

Regulation 5.3(c) of IEGC: (Demand Estimation by states)

"(c) Each SLDC shall develop methodologies/mechanisms for daily/ weekly/monthly/yearly demand estimation (MW, MVAr and MWh) for operational purposes. Based on this demand estimate and the estimated availability from different sources, SLDC shall plan demand management measures like load shedding, power cuts, etc. and shall ensure that the same is implemented by the SEB/distribution licensees. All SEBs/distribution licensees shall abide by the demand management measures of the SLDCs and shall also maintain historical database for demand estimation."

Regulation 5.4.1 of IEGC:

"This section is concerned with the provisions to be made by SLDCs to effect a reduction of demand in the event of insufficient generating capacity, and inadequate transfers from external interconnections to meet demand, or in the event of breakdown or congestion in intra-state or inter-state transmission system or other operating problems (such as frequency, voltage levels beyond normal operating limit, or thermal overloads, etc.) or overdrawal of power vis-à-vis of the regional entities beyond the limits mentioned in UI regulation of CERC"

Regulation 5.4.2 of IEGC:

5.4.2 Demand Disconnection

- a) SLDC/ SEB/distribution licensee and bulk consumer shall initiate action to restrict the drawal of its control area, from the grid, within the net drawal schedule.
- b) The SLDC/SEB/distribution licensee and bulk consumer shall ensure that requisite load shedding is carried out in its control area so that there is no Over drawal.
- c) Each User/STU/SLDC shall formulate contingency procedures and make arrangements that will enable demand disconnection to take place, as instructed by the RLDC/SLDC, under normal and/or contingent conditions. These contingency procedures and arrangements shall regularly be / updated by User/STU and monitored by RLDC/SLDC. RLDC/SLDC may direct any User/STU to modify the above procedures/arrangement, if required, in the interest of grid security and the concerned User/STU shall abide by these directions.
- d) The SLDC through respective State Electricity Boards/Distribution Licensees shall also formulate and implement state-of-the-art <u>demand management schemes for</u> <u>automatic demand management</u> like rotational load shedding, demand response etc. before 01.01.2011 to reduce overdrawal in order to comply para 5.4.2 (a) and (b).A Report detailing the scheme and periodic reports on progress of implementation of the schemes shall be sent to the Central Commission by the concerned SLDC.
- e) In order to maintain the frequency within the stipulated band and maintaining the network security, the interruptible loads shall be arranged in four groups of loads, for scheduled power cuts/load shedding, loads for unscheduled load shedding, loads to be shed through under frequency relays/ df/dt relays and loads to be shed under any System Protection Scheme identified at the RPC level. These loads shall be grouped in such a manner, that there is no overlapping between different Groups of loads. In case of certain contingencies and/or threat to system security, the RLDC may direct any SLDC/ SEB/distribution licensee or bulk consumer connected to the ISTS to decrease drawal of its control area by a certain quantum. Such directions shall immediately be acted upon. SLDC shall send compliance report immediately after compliance of these directions to RLDC.
- f) To comply with the direction by RLDC, SLDC may direct any SEB/ distribution licensee/bulk consumer connected to the STU to curtail drawal from grid. <u>SLDC</u> <u>shall monitor the action taken by the concerned entity and ensure the reduction of</u> <u>drawal from the grid as directed by RLDC</u>.
- g) RLDCs shall devise standard instantaneous message formats in order to give directions in case of contingencies and/or threat to the system security to reduce deviation from schedule by the bulk consumer, SLDC/State Utility/ ISGS/Regional Entity/Injecting Utility at different overdrawal / underdrawal / over-injection/underinjection condition depending upon the severity. The concerned SLDC/other regional entity shall ensure immediate compliance with these directions of RLDC

and send a compliance report to the concerned RLDC.

- h) All Users, SLDC/SEB distribution licensee or bulk consumer shall comply with direction of RLDC/SLDC and carry out requisite load shedding or backing down of generation in case of congestion in transmission system to ensure safety and reliability of the system......
- i) The measures taken by the User's, SLDC SEB/distribution licensee or bulk consumer shall not be withdrawn as long as the frequency remains at a level lower than the limits specified in para 5.2 or congestion continues, unless specifically permitted by the RLDC/SLDC"

Regulation 6.4.7 and 6.4.8 of IEGC:

"7. The SLDC, SEB / distribution licensee shall <u>always restrict the net drawal of the</u> state from the grid within the drawal schedules keeping the deviations from the schedule within the limits specified in the Deviation Settlement Mechanism <u>Regulations.</u> The concerned SEB/distribution licensee/User, SLDC shall ensure that their automatic demand management scheme mentioned in clause 5.4.2 acts to ensure that there is no over-drawal. If the automatic demand management scheme has not yet been commissioned, then action shall be taken as per manual demand management scheme to restrict the net drawal from grid to within schedules and all actions for early commissioning of Automatic Demand Management Scheme (ADMS) shall be initiated.

8. The SLDCs/STUs /Distribution Licensees shall regularly carry out the necessary exercises regarding short-term demand estimation for their respective States/area, to enable them to plan in advance as to how they would meet their consumers' load without overdrawing from the grid."

Regulation 6.4.12 of IEGC:

"12. Notwithstanding the above, the RLDC may direct the SLDCs/ISGS/ other regional entities to increase/decrease their drawal/generation in case of contingencies e.g. overloading of lines/transformers, abnormal voltages, threat to system security. Such directions shall immediately be acted upon. In case the situation does not call for very urgent action, and RLDC has some time for analysis, it shall be checked whether the situation has arisen due to deviations from schedules. These shall be got terminated first, through appropriate measure like opening of feeders, if considered necessary by SLDC/RLDC, before an action, which would affect the scheduled supplies to the long term, medium term customers or short term customers is initiated in accordance with Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in Inter State Transmission and Related matters) Regulations, 2009 and Central Electricity Regulatory Commission (Open Access in Inter-State Transmission) Regulations, 2008.

In case Short Term/Medium Term Open Access or Long Term Access are

curtailed, RLDC(s) shall submit a report regarding the reasons due to which it was not able to curtail deviations from Schedule and agencies which had not taken necessary actions."

Regulation 7. (1) of DSM Regulations:

"The overdrawal/underdrawal of electricity by any buyer (except Renewable Rich States) during the time block shall not exceed 12% of its scheduled drawal or 150 *MW*, whichever is lower, when grid frequency is "49.85 Hz and above and below 50.05 Hz.

Provided that over-drawal/under-drawal of electricity by any Renewable Rich State during the time block shall not exceed limits as specified in Annexure-III, when grid frequency is "49.85 Hz and above and below 50.05 Hz"

.

<u>Provided that no over-drawal of electricity by any buyer shall be permissible when</u> <u>grid frequency is 'below 49.85 Hz" and no under-drawal of electricity by any buyer</u> <u>shall be permissible when grid frequency is '50.05 Hz and above'.</u>

<u>....</u>

Annexure-III

<u>S. No.</u>	States having combined installed capacity of Wind and Solar projects	<u>Deviation Limits (MW)-</u> <u>"L"</u>
<u>1</u>	<u>1000-3000 MW</u>	<u>200</u>
<u>2</u>	<u>>3000 MW</u>	<u>250</u>

Deviation Limits for Renewable Rich States

....."

As per above, it is required that all regional entities viz. states/distribution licensees/bulk consumers must take requisite measures to adhere to their drawal schedule and must not over-draw from the grid when grid frequency is 'below 49.85 Hz" and must not under-draw from the grid when grid frequency is '50.05 Hz and above, for reliable & secure operation of the grid and also to adhere the instructions of the concerned RLDC.

26. Operating Procedure for the Northern Region of July 2021 issued by NRLDC in compliance with Regulation 5.1 (f) of Indian Electricity Grid Code provides as

under:

***5.8 Normal, Alert & Emergency Messages Issued by NRLDC**

NRLDC shall issue Normal, Alert and Emergency messages on Frequency limits, Voltage limits & equipment loading limit violation based on values appearing in SCADA. In Addition, message for violating the requirement of changing sign of deviation & allowable limits of deviation from schedule as per CERC DSM Regulation would also be issued by NRLDC from time to time based on the SCADA data. The logic for issuance of Normal, Alert & Emergency messages is enclosed as Annex VIII & Annex IX.

...

Annex-VIII

	Violation Type and Cat	egory	Duration of issuance of			
		-	Message			
	>50.1 Hz or <49.7 Hz	Emergency	Message will be issued if violation continues for atleast 5 minutes			
Frequency Violation	50.05-50.1 Hz or 49.9 Hz-49.7 Hz	Alert	Message will be issued if violation continues for atleast 15 minutes			
	49.9 Hz-50.05 Hz	Normal				
Voltage Violation	>420 kV or < 380 kV	Emergency	Message will be issued if violation continues for atleast 15 minutes			
	415 kV-420 kV or 390 kV-380 kV	Alert	Message will be issued if violation continues for atleast 15 minutes			
	>390 kV to <415 kV	Normal				
Loading Violation	>Thermal Loading under n-1 contingency	Emergency	Message will be issued if violation continues for atleast 15 minutes			
	=Thermal Loading under n-1 contingency	Alert	Message will be issued if violation continues for atleast 15 minutes			
	< Thermal Limit under n-1 contingency	Normal				
Loading Violation	1 Failure (issued 14 th time block)	Emergency	Message will be issued if violation continues for atleast 5 minutes			
	Issued in 11 th time block if the direction not changed for 10 time blocks	Alert	Message will be issued if violation continues for atleast 15 minutes			
	Zero crossing done within 10 time Blocks	Normal				
Deviation violation	>20% or 250 MW (whichever lower)	Emergency	Message will be issued if violation continues for atleast 5 minutes			
	12%-20% or 150 MW to 250 MW (which ever lower)	Alert	Message will be issued if violation continues for atleast 15 minutes			

<12% or 150 MM	/ Normal	
(whichever lower)		

Note:

- 1. General Approach is to issue Alert Message before reaching Critical level
- 2. Generally every Alert is considered for maximum of 15 Minutes
- 3. Generally, any Emergency considered for maximum of 5 minutes
- 4. Only after Emergency message, if correction does not effected in say 5 minutes, Non-Compliance Message will be issued Separately.

....."

- 27. We observe from the liist of Over Drawal messages submitted by NRLDC that it had issued total 1146 number of overdrawl messages (including Alert, Emergency & Non-Compliance) to states to control their over-drawal as per regulation 5.4.2 and 6.4.12 the Grid Code during the period 1st March - 24th April 2022.
- 28. Further, apart from the Non-Compliance Messages, Alert and Emergency messages were also issued to the respective States during the period 1st March 2022 to 24th April 2022 as follows:

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	35540	23-03-2022	22:11:09	3148	3506	358	Alert
2	35545	24-03-2022	5:09:50	2754	3012	258	Alert
3	35593	24-03-2022	22:13:19	3124	3497	373	Alert
4	35601	25-03-2022	4:18:30	2805	3611	806	Alert
5	35812	04-04-2022	19:17:29	4362	4438	76	Alert
6	35879	06-04-2022	22:18:09	4840	5104	264	Alert
7	35881	06-04-2022	22:33:38	4564	4751	187	Alert
8	35901	07-04-2022	5:44:03	3745	4145	400	Alert
9	35905	07-04-2022	6:31:31	4249	4751	502	Alert
10	35948	07-04-2022	23:19:22	5246	5495	249	Alert
11	35949	07-04-2022	23:24:05	5246	5403	157	Alert
12	35954	08-04-2022	0:10:02	4200	4751	551	Alert
13	36044	09-04-2022	23:24:33	4430	4629	199	Alert
14	36046	09-04-2022	23:32:37	4349	4513	164	Emergency
15	36078	10-04-2022	20:07:28	4651	4840	189	Alert
16	36080	10-04-2022	22:14:55	4651	4840	189	Alert

i. Haryana

17	36120	12-04-2022	0:17:39	4539	5146	607	Alert
18	36158	12-04-2022	18:40:55	4410	4581	171	Emergency
19	36161	12-04-2022	19:14:23	4740	4841	101	Emergency
20	36207	13-04-2022	15:40:16	4171	4295	124	Emergency
21	36212	13-04-2022	15:47:33	4138	4227	89	Emergency
22	36216	13-04-2022	16:33:50	4100	4282	182	Alert
23	36222	13-04-2022	19:19:47	5306	5437	131	Alert
24	36227	13-04-2022	22:28:58	5626	5780	154	Emergency
25	36268	15-04-2022	23:04:31	5050	5686	636	Emergency
26	36409	19-04-2022	16:43:17	3819	3914	95	Alert
27	36410	19-04-2022	16:47:53	3764	3952	188	Alert
28	36416	20-04-2022	0:35:42	3511	4803	1292	Emergency
29	36440	20-04-2022	15:13:04	3894	4252	358	Alert
30	36447	20-04-2022	17:12:55	3566	3634	68	Emergency
31	36450	20-04-2022	17:51:21	3527	3670	143	Emergency
32	36453	20-04-2022	18:56:54	3738	3959	221	Alert
33	36522	22-04-2022	23:07:57	3782	4320	538	Emergency
34	36524	22-04-2022	23:32:08	3625	4096	471	Emergency

ii. Uttar Pradesh

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	35200	08-03-2022	5:12:00	3176	3448	272	Alert
2	35484	22-03-2022	11:22:26	7168	7361	193	Alert
3	35543	23-03-2022	22:23:15	8811	9152	341	Alert
4	35697	28-03-2022	18:14:17	5235	6036	801	Alert
5	35721	30-03-2022	14:24:56	5782	6016	234	Alert
6	35813	04-04-2022	19:17:57	8483	8589	106	Alert
7	35830	05-04-2022	17:45:16	4872	5422	550	Alert
8	36045	09-04-2022	23:32:07	7260	7596	336	Emergency
9	36172	12-04-2022	23:17:53	7854	8370	516	alert
10	36175	13-04-2022	1:05:42	7427	7914	487	Alert
11	36197	13-04-2022	14:27:59	2907	3188	281	Alert
12	36199	13-04-2022	14:47:23	3131	3451	320	Alert
13	36201	13-04-2022	14:51:52	3131	3365	234	Emergency
14	36205	13-04-2022	15:31:04	2951	3488	537	Alert
15	36208	13-04-2022	15:42:34	2951	3269	318	Emergency
16	36211	13-04-2022	15:46:11	2907	3068	161	Emergency
17	36217	13-04-2022	16:37:18	4536	4852	316	Emergency
18	36254	15-04-2022	16:38:00	3477	3977	500	alert
19	36298	17-04-2022	1:13:44	7282	7885	603	Alert
20	36523	22-04-2022	23:08:48	7368	7725	357	Emergency
21	36525	23-04-2022	0:17:09	7325	7773	448	Alert
22	36527	23-04-2022	0:21:47	7325	8261	936	Emergency
23	36559	23-04-2022	23:42:07	6988	7360	372	Alert

iii. Jammu & Kashmir

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	35542	23-03-2022	22:12:14	1476	1629	153	Alert
2	35594	24-03-2022	22:13:46	1638	1808	170	Alert
3	35604	25-03-2022	6:37:47	1816	2070	254	alert
4	35605	25-03-2022	6:52:39	1826	2056	230	Alert
5	35671	27-03-2022	9:26:15	1127	1722	595	Alert
6	35674	27-03-2022	9:52:12	1114	1693	579	Alert
7	35675	27-03-2022	10:14:09	1100	1664	564	Alert
8	35676	27-03-2022	10:33:36	1090	1596	506	Alert
9	35677	27-03-2022	10:50:16	1091	1568	477	Alert
10	35696	28-03-2022	18:13:33	1235	1459	224	Alert
11	35785	03-04-2022	20:33:38	1421	1793	372	Alert
12	35811	04-04-2022	19:16:49	1605	1727	122	Alert
13	35857	06-04-2022	9:36:04	1058	1521	463	Alert
14	35864	06-04-2022	14:19:18	1477	1799	322	Alert
15	36050	10-04-2022	0:07:00	1046	1206	160	Emergency
16	36267	15-04-2022	23:03:46	1360	1489	129	alert
17	36303	17-04-2022	3:14:13	975	1386	411	Alert
18	36307	17-04-2022	4:14:11	1145	1406	261	Alert
19	36371	18-04-2022	17:17:54	1053	1398	345	Alert
20	36550	23-04-2022	13:42:43	936	1062	126	Alert

iv. Rajasthan

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	35176	06-03-2022	9:07:36	5068	5262	194	Alert
2	35177	06-03-2022	9:16:35	4696	5053	357	Alert
3	35541	23-03-2022	22:11:47	2293	2739	446	Alert
4	35544	24-03-2022	4:14:36	796	1073	277	Alert
5	35546	24-03-2022	5:10:26	1907	2152	245	Alert
6	35589	24-03-2022	22:11:26	2889	3153	264	Alert
7	36079	10-04-2022	20:08:12	3927	4054	127	Alert
8	36125	12-04-2022	4:21:55	1218	1471	253	Emergency
9	36159	12-04-2022	18:42:26	2464	2659	195	Emergency
10	36162	12-04-2022	19:23:48	3366	3450	84	Emergency
11	36171	12-04-2022	22:33:58	2536	2797	261	Alert
12	36206	13-04-2022	15:39:35	2719	2973	254	Alert
13	36209	13-04-2022	15:44:19	2719	3061	342	Emergency
14	36210	13-04-2022	15:45:44	2784	2912	128	Emergency
15	36446	20-04-2022	17:12:28	2784	2806	22	Emergency

v. Uttarakhand

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	35592	24-03-2022	22:12:54	992	1117	125	Alert
2	35950	07-04-2022	23:24:28	708	1000	292	Alert
3	36110	11-04-2022	19:36:02	1146	1199	53	Alert
4	36163	12-04-2022	19:27:22	239	248	9	Emergency
5	36266	15-04-2022	23:02:46	838	1039	201	Alert
6	36269	15-04-2022	23:05:43	838	1034	196	Emergency
7	36565	24-04-2022	0:09:37	1021	1242	221	Emergency

vi. Punjab

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	35602	25-03-2022	4:28:05	1789	1894	105	Alert
2	35720	30-03-2022	14:14:39	3390	3504	114	Alert
3	35902	07-04-2022	05:45:09	2903	3023	120	Alert
4	36048	10-04-2022	0:06:10	1723	2013	290	Emergency
5	36170	12-04-2022	22:33:17	2658	3096	438	alert

vii. Himachal Pradesh

SI. No.	Message ID	Date	Time	Schedule (MW)	Actual (MW)	Deviation (MW)	Message Type
1	36365	18-04-2022	16:37:48	427	587	160	Alert
2	36367	18-04-2022	16:48:45	408	609	201	Alert
3	36368	18-04-2022	17:01:29	442	758	316	alert
4	36370	18-04-2022	17:17:16	448	768	320	Emergency
5	36526	23-04-2022	0:18:09	354	479	125	Alert

From the above data, it is observed that there were number of instances of overdrawal by the respective States resulting in issuance of Alert/ Emergency messages by the NRLDC. We are of the view that the continuous over-drawal from the Grid by the respective States could have been detrimental for the security and reliability of the Grid. Therefore on several occasions, NRLDC was constrained to take the emergency measures. This is a matter of concern for all the respective States and such kind of act is undesirable for the secured operation of grid.

- 29. States have submitted that during the subject period, there were several factors such as un-anticipated incremental increase in the total energy consumption due to high temperature variation, shortfall in supply of power owing to the outage of the various generators due to shortage of coal & other reasons, no power availability in the Short Term Market even at peak rate, fall in generation of thermal power plants of Central/State Sector due to low fuel supply /non- availability of sufficient Domestic Coal and high gas prices and need for power supply to essential services which have resulted in over-drawal by the States on number of instances. We observe that the overdrawal by the States takes the grid to a stressed situation. To avoid such a situation, it is necessary that reserves are maintained by the States on day to day basis so that overdrawal is minimised. The States should plan to have adequate resources to meet demand in such adverse situations and comply with the directions of RLDC as the Grid cannot be left in vulnerable condition.
- 30.On a direction from the Commission, NRLDC convened meetings with all respondent SLDCs during December 2022- January 2023. NRLDC sought Action plan from respective State SLDC on the following issues:
 - (a) Real time load management (ADMS/load trimming schemes)
 - (b) Accurate Demand Forecasting/ Estimation
 - (c) Coordination for demand ramp management
 - (d) Accurate RE (Wind & Solar) Forecasting & Scheduling

- (e) Measure for Addressing the Generation Adequacy and Maintain balanced portfolio at all times
- (f) Fuel Security and Adequacy statements
- (g) Reserves and ancillary services (primary, secondary & tertiary) at state level
- (h) Ensuring fast response to Warning Messages issued by NRLDC
- (i) Emergency Measures to be taken by SLDC in event of overdrawl at the Lower Frequency
- 31. The action plan submitted by the State SLDCs was discussed during the abovesaid meetings with NRLDC during December 2022- January 2023. Subsequent to the meetings, State SLDCs submitted revised action plan. Considering the submissions of the Petitioner, Respondents and the detailed action plan submitted by NRLDC in discussion with the respective State SLDCs, we direct as follows:
 - (a) The states to expedite work on the implementation of ADMS (Automatic Demand Management Scheme). Till the implementation of ADMS, manual load shedding of radial feeders identified by SLDCs may be done based on instructions of the concerned SLDCs, without any delay during emergency conditions shall be shared with NRLDC. The Status of the implementation of ADMS shall be updated to the NRLDC on quarterly basis by the respective SLDC.
 - (b) All the Respondent states should have in place better demand forecasting/ estimation systems so that there is minimum deviation from the schedule allocated to each drawing entity. Due to the intermittent nature of renewable sources, accurate Forecasting & Scheduling of renewable energy is required. Therefore, SLDCs needs to improve its current forecasting infrastructure for accurate forecasting of renewable generation. Further, Specialized RE forecasting tools for accurate RE forecasting & Scheduling shall be developed so that variability of RE Generation can be handled in advance by the SLDCs. States should

focus on reduction in forecast error to less than 2% in the day ahead forecast.

- (c) Management of the load in such a manner that the demand ramp should be limited to not more than 100 MW. There should be efficient coordination with generators and staggering of power supply plan of agriculture feeders to be done on regular basis keeping in view the ramp constraints.
- (d) Action to be taken to ensure adequate generation resources & maintain balanced portfolio at all the times and avoid over drawl. Long term demand estimation at all time horizons may be carried out and adequate generation may be planned accordingly.
- (e) Advance information on coal stock of thermal plants should be available so as to ensure the availability of thermal generating units. Review of coal stock position of thermal plants should be carried out on regular basis and matter should take up with appropriate agencies/authorities well in advance to ensure fuel security for their generators.
- (f) In case of hilly states, advance information on Water Availability or forecast of Inflow may be expedited from hydro plants to ensure generating units availability. Real time monitoring of silt should be done in the control room to ensure better management of real time grid operation.
- (g) Tertiary reserves should be maintained in a decentralized fashion by each state control area for a quantum as assigned by NLDC or NRLDC.
- (h) The States should take advance action for managing their demand portfolio and make prior arrangements for procurement of power and ensure portfolio balancing at all times without overdrawing power from the grid.
- (i) To take prompt action to control overdrawal on receipt of the Non-Compliance, Alert and Emergency messages from the NRLDC, Discoms should ensure immediate compliance of warning messages issued by NRLDC and send a compliance report to NRLDC. The SLDCs shall

prepare a standard operating procedure/protocol to be followed by SLDCs & Discoms to control the overdrawl immediately.

- (j) In case grid frequency fall below the band, all the SLDCs should always be ready for implementation of emergency measures for controlling overdrawls under Low frequency conditions to safeguard the grid. In this regard healthiness and availability of AUFLS (Automatic Under Frequency Load Shedding) and df/dt load shedding must be ensured.
- (k) Strictly adhere to the provisions envisaged under the IEGC for safe, reliable and economical operation of the grid and maintain drawal from the grid as per drawal schedule and avoid overdrawing from the grid in compliance with prevailing Regulations of the Grid Code and DSM Regulations so as to ensure safety & security of the grid and obviate any possibility of a grid disturbance.

We direct the respondents to strictly adhere to the Action plan as above. SLDCs are directed to submit the quarterly report to the NRLDC on status of implementation of the action plan. Any modification in action plan keeping in view issues arising while implementation, may be discussed and finalised in RPC.

32. Haryana SLDC and Himachal SLDC have submitted that they have not received the over-drawl messages issued from the NRLDC on some instances. Although the non-delivery of message has not been denied by the Petitioner through rejoinder, however a State SLDC should itself monitor its overdrawl rather than waiting for message from RLDC. The SLDCs should be proactive in controlling their overdrawl based on grid parameters of frequency and voltage. However, keeping in view submissions of said SLDCs, we direct NRLDC, in consultation with respective State SLDCs, should devise a reliable message delivery System to the regional entities in real time so that the messages as per the operating procedure are delivered immediately so that necessary

compliance against the same may be taken by the respective State SLDCs.

33. We have perused the Operating procedure prevalent during the said period which specifically provided that "*Non-Compliance Message will be issued Separately only after Emergency message, if correction is not effected in say 5 minutes*". While analyzing the data furnished by the petitioner, it is noticed that non-compliance message have been issued without issuing emergency message. A snapshot of the list of messages as submitted by NRLDC is as follows:

Serial No.	Message ID	Date	Time	State	Msg Schedule (MW)	Msg Actual (MW)	Msg Deviation (MW)	Message Type
154	35357	17-03-2022	01:20:47	Haryana	3158	3385	227	Non Compliance
155	35358	17-03-2022	04:55:15	Haryana	3348	3708	360	Non Compliance
156	35360	17-03-2022	05:08:58	Uttarakhand	543	671	128	Non Compliance
157	35361	17-03-2022	05:18:22	Haryana	3311	3704	393	Non Compliance
158	35362	17-03-2022	05:23:11	Punjab	2244	2390	146	Non Compliance
159	35363	17-03-2022	05:24:57	Haryana	3311	3376	65	Non Compliance
160	35364	17-03-2022	05:51:42	Punjab	2043	2224	181	Non Compliance
161	35365	17-03-2022	06:09:57	Punjab	2152	2378	226	Non Compliance
162	35366	17-03-2022	06:10:56	Haryana	3648	3831	183	Non Compliance
163	35367	17-03-2022	06:11:16	Rajasthan	3368	3872	504	Non Compliance
164	35368	17-03-2022	06:11:43	J&K	1654	1852	198	Non Compliance
165	35369	17-03-2022	09:15:52	Rajasthan	3762	4152	390	Non Compliance
166	35370	17-03-2022	09:16:37	J&K	1883	1997	114	Non Compliance
167	35371	17-03-2022	10:31:37	Rajasthan	2564	3038	474	Non Compliance
168	35372	17-03-2022	10:32:05	Uttarakhand	681	994	313	Non Compliance
169	35373	17-03-2022	10:38:55	UP	6341	6630	289	Non Compliance
170	35374	17-03-2022	15:06:10	Haryana	3702	4664	962	Non Compliance
171	35375	17-03-2022	19:00:07	J&K	1666	1831	165	Non Compliance
172	35376	17-03-2022	22:06:31	UP	8500	9042	542	Non Compliance
173	35377	17-03-2022	22:23:03	UP	8110	8349	239	Non Compliance
174	35378	17-03-2022	23:04:33	UP	7719	8058	339	Non Compliance
175	35379	17-03-2022	23:16:33	UP	7508	8008	500	Non Compliance
176	35380	17-03-2022	23:23:11	Haryana	3760	3975	215	Non Compliance
177	35381	18-03-2022	00:09:14	J&K	1440	1641	201	Non Compliance
178	35393	18-03-2022	09:03:40	UP	5192	5710	518	Non Compliance
179	35394	18-03-2022	09:05:08	Haryana	2977	3294	317	Non Compliance
180	35395	18-03-2022	09:32:44	Rajasthan	2502	3094	592	Non Compliance
181	35421	19-03-2022	09:32:41	Rajasthan	2597	2982	385	Non Compliance
182	35429	20-03-2022	09:39:35	Rajasthan	3401	3981	580	Non Compliance
183	35430	20-03-2022	10:06:19	Haryana	3327	3478	151	Non Compliance
184	35433	20-03-2022	18:11:44	UP	8001	8434	433	Non Compliance
185	35435	20-03-2022	19:07:29	Punjab	2701	2897	196	Non Compliance
186	35436	20-03-2022	19:08:04	J&K	1764	1954	190	Non Compliance
187	35437	20-03-2022	19:25:26	J&K	1803	1973	170	Non Compliance
188	35440	20-03-2022	23:06:31	Rajasthan	2641	2916	275	Non Compliance

List of Over Drawal Messages issued by NRLDC Control Room from 1.03.22 to 24.04.22

From the above data, it is seen that Non-Compliance Messages to the States

A

have been issued continuously without issuance of any Alert/ Emergency Messages. Once a particular procedure has been provided in Operating Procedure, message should be issued accordingly so that stakeholders are clear about instructions they are receiving from RLDC.

34.We have also perused the message format provided under the Operating procedure as well as the actual message format in which the messages have been issued to the State SLDCs. A snapshot of the one of such messages is as below:

		प Tel.: 2651	ावर सिस्टम 18 - ए, शहीद 9406/26523869, CIN: आरे	उत्तर क्षे आपरेश जीत सिंह FAX: 268 U40105D	तेत्रीय भ न कॉर मार्ग, न 52747/26 L2009GC श / MES:	नार प्रेषण केन्द्र पोरेशन लिमित ई दिल्ली -110016 \$853082, http://:ww D1188682 SAGE Non Compli	टेड w.nrldc.org ance	
संदेश स0	/ Message	No	संदेश प्रकार / Message Type			दिनांव	समय / Time	
NRLDC/OD/Message-NC/35391			Non-Compliance		e	20-Apr-2022		1610 Hrs
प्रेषक /	FROM: S	HIFT IN	CHARGE, N	RLDC		सेवा में / TO : SHIFT INCHARGE.SLDC Himanel		
of Violation Deviation Violation N			Violation on - Compliance		IEGC Clause 5.4.2(a) 5.4.2(b) 6.4.6 6.4.7 6.4.10 6.4.12		ाववरण / Details Over Drawl from Grid	
क्षेत्रीय इकाई / Regional Entity	ीय इकाई / आहरण / संभरण Regional Drawal / Injecti Entity (MW		ा अनुसूची // वास्तविव on Schedule Actual)		क आहरण / संभरण // Il Drawal / Injection (MW)		वास्तविक विचलन / Actual Deviation (MW)	प्रादेशिक कंट्रोल त्रुटि Area Control Error (MW)
Himanchal Pradesh	Himanchal Pradesh 595			752		52	157	-171
वेश्वसनीय एवं सु ग° प्रे° के° के नि वेद्युत प्राधिकरा ह अतिक्रमण के 'ou are request ecure system of iolation of CEI f IEGC, 2010 a	रक्षित ग्रिड दिशों की अ ग ग्रिड के म न्द्रीय विदुर् ed to take peration.N VC Regula nd amend	संचालन वहेलना 1ानक / वि 1ात विनिय immedia on-comp tions / C	हेतु आप से अन् त्रिड सुरक्षा के f वेद्युत अधिनिय IIमक आयोग व te action to str plaince of the F EA Grid Stand	रूरोध है वि लेए न केव ाम 2003 व जो आइ. ई rictly adh LLDC din dards / E	के अपने वल खतन् का अतिद्र . जी. सी rection v lectricit	उपरोक्त अनुसूचि रनाक हैं अपितु के रुमण माना जाएग 2010 तथा इसके lesired drawl/ger would be a threa y Act,2003. The	ात आहरण / संभरण का ° वि° विनियामक आयो TI संशोधन के खंड 1.5 के teration as mentioned t to grid security and s same would be reported	कडा पालन करें। उ° क्षे° ग के विनियमकों / केन्द्री तहत, सूचित किया जाएग above for reliable and hall be treated as ed to CERC as per Cl. 1

From the above, it is observed that the format does not include Grid Frequency. Without the frequency, it is not possible to conclude whether a State was supporting the grid by deviating. We are of the view that the prevailing Grid Frequency should also be mentioned in the messages so that severity of the message should be clear to the overdrawing entity.

35. In light of above discussions and an action plan finalized in consultation with States, at present we are not levying any financial penalties. In case, the Petitioner faces any issues regarding implementation of action plan or noncompliance of directions issued by the Petitioner, it may approach the Commission as per law.

36. The Petition no. 156/MP/2022 is disposed of in terms of the above.

Sd/	Sd/	Sd/
(P. K. Singh)	(Arun Goyal)	(I. S. Jha)
Member	Member	Member