

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram:**

- 1. Shri Bhanu Bhushan, Member**
- 2. Shri R. Krishnamoorthy, Member**

**Petition No. 117/2007**

**In the matter of**

Directions to the NR constituents to honour the power transfer limits and curb the overdrawals from the grid so that the entire NEW electricity grid is secure.

**And in the matter of**

Northern Regional Load Despatch Centre, New Delhi

**.....Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited, Lucknow.
2. Power Development Department, Govt. of Jammu & Kashmir, Jammu.
3. Rajasthan Rajya Vidyut Prasaran Nigam Limited, Jaipur.
4. Punjab State Electricity Board, Patiala.
5. Haryana Vidyut Prasaran Nigam Limited, Panchkula.
6. Delhi Transco Limited, New Delhi.
7. Himachal Pradesh State Electricity Board, Shimla.
8. Power Transmission Corporation of Uttaranchal Limited, Dehradun.
9. Electricity Department, UT Chandigarh, Chandigarh. **..... Respondents**

**The following were present:**

1. Shri S.R. Narasimhan, NRLDC
2. Shri S.K. Soonee, NRLDC
3. R.K. Porwal, NRLDC
4. Shri Rajesh Kumar, NRLDC
5. Shri D.D. Chopra, Advocate, UPPCL
6. Shri B.P. Pant, EE, UPPCL
7. Shri R.P. Katara, SE RVPN
8. Shri Randhir Singh, PSEB
9. Shri K.S. Jolly, PSEB
10. Shri Niraj Gulati, CE, HVPNL
11. Shri R.C. Malhotra, SE, HVPNL
12. Shri H. Vyas, SLDC Delhi
13. Shri R. Venugopal, SLDC Delhi
14. Shri Vikram Singh, NRPC

**ORDER**  
**(DATE OF HEARING : 16.10.2007)**

This petition has been filed by Northern Regional Load Despatch Centre (NRLDC) seeking directions to the constituents of the Northern Regional grid to honour the power transfer capability limits specified by NRLDC and curb the overdrawals from the grid so that the entire interconnected electricity grid is secure. It has also been prayed that State Load Despatch Centres (SLDCs) be directed to immediately follow the instructions given by NRLDC in real time. The petition was admitted by us vide order dated 28<sup>th</sup> September 2007 and parties were heard on 16<sup>th</sup> October 2007.

2. The petitioner has stated that synchronisation of the NR, ER and WR grids has led to a paradigm shift in system operation enabling the constituents of NEW (North-East-West) grid to reap the benefits on account of diversity in weather, loads, maintenance schedule of generating units and forced outage etc. However, it has also brought to sharp focus, the need to maintain real time power transfers within the operating limits (total transfer capability minus reliability margin) to ensure the grid security so that system can withstand at least a single contingency. Despite attempts to raise awareness of the constituents on this issue and also taking up the issue during real time system operation, the power transfer limits have been violated on several occasions. The petitioner has submitted that during such situations, any single contingency would have lead to cascade tripping leading to a black out. The petitioner has listed a few 'near-miss' situations when the grid narrowly escaped a large disturbance. NRLDC has stated that fortunately, in all such situations, the effect was localized. However, there is a serious danger of cascade failure and blackout in a

larger area including other interconnected regions. In this background, the petitioner has sought appropriate directions to the constituents and SLDCs.

3. On perusal of the details of overdrawal submitted by the petitioner for a week (14.09.2007 to 20.09.2007), we have noticed that every constituent State has resorted to overdrawal though number of occasions of overdrawal and extent of overdrawal may be varying. From the exhibits enclosed with the petition, we have observed that such overdrawals have led to sustained violation of Total Transfer Capability (TTC). This is a very serious situation as not only NR grid may be affected but entire NR-WR-ER-NER grid may suffer a blackout. If operation continues the way it has been for last few months, it is a tragedy waiting to happen. Demand in the NR is going to increase in winter months and therefore urgent action needs to be taken to tackle this problem. Only some of the constituents (namely UPPCL, RRVPNL, PSEB and HVPNL) were present during the hearing. They have tried to justify their overdrawal and have expressed their helplessness at times to follow instructions of NRLDC. However, the pace at which economy is growing, the demand of electricity is going to keep on increasing in all the regions, leading to perpetual and severe power shortages. If the State utilities do not exercise the necessary self-control, major grid disturbances in near future are very likely.

4. UPPCL in its affidavit dated 15.10.2007 has cited a number of reasons for overdrawing power from the regional grid during September 2007, e.g. demand increase by 9.3%, start of Ramazan, decrease of hydro generation by 20%, humidity, rise in temperature, dry spell, fall in Rihand reservoir level and NTPC's request to

maintain the level, SCADA data being incorrect. It has prayed that in the light of the above no adverse action may be taken against it.

5. In its affidavit dated 19.10.2007 (filed on 30.10.2007), Punjab SEB has enumerated the (compelling) reasons for its overdrawal as outage of a generating unit at RTP, loss of generation due to wet coal, outages at Central generating stations, delay in commissioning of Lehra Mohabat stage-II, deficient rainfall, and a campaign by agricultural experts.

6. The reasons enumerated above for overdrawal are not new, and the Commission has heard them repeatedly. These eventualities, which keep occurring, can very well be expected and planned for. In any case, they do not justify unchecked overdrawal particularly when the entire grid is facing an imminent collapse. Further, in the present petition, the petitioner has not sought action against any particular party for its overdrawal during September 2007, but has sought general directions to all constituents of Northern Region.

7. PSEB in its affidavit dated 19.10.2007 has suggested that NRLDC should schedule liquid fuel based generation to overdrawing States at low frequency and injections above declared capacity (101 – 105%) should be scheduled to beneficiaries in proportion to their schedules. PSEB has pointed out that NRLDC insists on scheduling of un-requisitioned surplus power only after consent of seller entity and NTPC is submitted by the requisitioning entity along with open access application. According to PSEB, NVVNL has already obtained consent of surplus States surrendering power, offering them incentive for such power and this power is being

scheduled now through NVVNL only. Accordingly, it has been suggested that practice followed in WR for scheduling of un-requisitioned surplus power of RLNG and liquid fuel should be adopted in NR as well. PSEB has raised some other issues such as difference in UI energy calculated as per SCADA & SEM, different format adopted by various RLDCs for displaying inter-regional power flows on their websites and frequent changes in schedule by generators.

8. In accordance with the mechanism of decentralised scheduling prescribed in the IEGC, it will not be proper for RLDC to schedule on its own liquid fuel generation to overdraw States at low frequency. The best course of action would be for that State to decide as to whether it wants to purchase liquid fuel based generation or to carry out load shedding. It is needless to say that RLDC has powers under the Electricity Act, 2003 to issue suitable instructions if overdrawal of the particular State is likely to endanger grid security. Similarly, in accordance with principle of decentralized scheduling, insistence of NRLDC on consent of seller entity and generators along with open access application is in order. However, it is not mandatory to involve a trading licensee in the transaction. In so far as scheduling of injections above declared capacity is concerned, it should be appreciated that such injections occur in real time and can not be predicted before hand. Therefore, scheduling which is a day-ahead activity can not take care of such injection. We are constrained to say that difference in UI energy calculated from SCADA and SEM is not an issue and it only reflects lack of understanding of UI mechanism. UI mechanism does not warrant equalizing actual drawal with schedule. Rather it gives incentives for deviating from the schedule in such a manner, so as to improve the grid frequency. Therefore, this issue as well as issue of non-uniformity in the websites of

RLDCs and frequent change in the schedules is of no relevance in the context of matter under consideration.

9. When the NR was not synchronized with the other regions, such overdrawals by State utilities were causing the regional grid frequency to go down, leading to rise in the UI rate which induced the State utilities to check their overdrawal. It was also possible for the NRLDC to declare an emergency (primarily on account of abnormally low frequency, a parameter readily seen in all SLDCs), and ask for urgent corrective action. The circumstances have radically changed with the synchronization of NR-WR-ER-NER. With the synchronized installed capacity of nearly 100,000 MW, frequency does not fall as it used to earlier, and large overdrawals by the NR States cause the inter-regional links to NR getting overloaded before the frequency has come down. In other words, the frequency does not fall to a level where increased UI rate would discourage overdrawals, but line loadings reach dangerous levels. It is for this reason that the UI mechanism, which has worked well so far for controlling the situation, is not always effective, particularly in NR, any more, and needs being supported by a supplementary mechanism.

10. NRLDC has pointed out that while the above development has been explained to the constituents, they are not responding adequately to NRLDC's instructions to curtail their drawals when inter-regional links are getting overloaded. To a considerable extent it is because UI rate is not sufficiently high when such a situation arises (as has been explained in the previous paragraph), and UI rate does not offer enough incentive to initiate action to reduce overdrawal. Nevertheless, the success of UI mechanism confirms that an appropriate commercial mechanism is capable of

inducing a level of discipline which is difficult to achieve otherwise. Accordingly, there is a need to devise a suitable commercial mechanism to reduce transmission congestion in the interest of grid stability, as and when it occurs.

11. In order to give commercial signal to reduce overdrawal and to increase the generation on the downstream of congested transmission corridor, we are proposing a commercial system of levying “congestion charge” of 300 paise/kWh for limited time. This congestion charge will be added to the prevailing UI charge. Whenever NRLDC comes to a conclusion that power transfer on inter-regional links to NR has reached a level which is threatening the grid security, it will notify all constituents of NR, the time block from which congestion charge would apply, giving them a notice of at least 30 minutes. Also, when power flow comes back to acceptable level, NRLDC will notify the time block from which this congestion charge will be lifted, again giving a notice of at least 30 minutes. It is needless to say that powers of the RLDCs under the Electricity Act, 2003 to issue directions for ensuring stability of grid operations remain undiluted and RLDCs shall be free to issue appropriate directions if need arises.

12. While the concept of congestion charge is not new, it is being proposed in India for the first time. We should therefore proceed cautiously. For the present, it shall apply only for deviations from schedules in the Northern Region, where overdrawals are the highest, are likely to continue in the coming months and are the primary cause of dangerous overloading of inter-regional links. Congestion charges @ 300 paise/kWh shall effectively be adding to the notified frequency-linked UI rate prevailing from time to time, both for over-drawal/injection and under-drawal/injection for all NR constituents. The congestion charge shall kick in from a time block to be notified by

NRLDC at least 30 minutes in advance, on its website and on the common screen (which is continuously displayed in all SLDCs), when inter-regional links to NR have crossed or are tending to cross their total transfer capability (TTC). When all the present links are in service, the congestion charge shall be triggered only when the total import of NR exceeds 3000 MW in normal course. However, in case of non-availability of one or more inter-regional links, NRLDC may decide to trigger the congestion charge at a lower import level, about which all SLDCs of NR shall be kept duly informed.

13. The levy of congestion charge shall be terminated when conditions have normalized, as indicated by NR import coming down to, say, 2500 MW. The time block from which the congestion charge shall not apply shall again be notified by NRLDC in a similar manner, ascertaining that there is no flip-flop.

14. The accounts for congestion charge shall be prepared and issued in the same manner as for UI. NRLDC shall open and operate a separate bank account for NR congestion charge. The Commission shall separately decide about the utilization of the balance amount in the congestion charge account, in due course.

15. The above scheme of levy of congestion charge as a contingency measure shall come into effect from 19.11.2007, provisionally for a period of three months. The Commission may however decide to prematurely terminate, modify or extend the scheme based on the experience gained. During the hearing on 16.10.2007, the Commission had asked the State utilities present, some of whom were opposing NRLDC's petition, to suggest an alternative remedy, if they could think of one. We



have not received any suggestion so far. The Commission shall however remain receptive to all suggestions in the matter.

16. During the hearing on 16.10.2007, the Commission had explained to UPPCL that the flexibility provided in India to deviate from schedules (which would be unacceptable elsewhere) must not be misused. It is premised on (i) all constituents reciprocally assisting each other in times of need, (ii) timely payment of resulting charges, through the UI mechanism, and (iii) all constituents promptly responding to RLDC's advice, in case of a contingency. Over-drawals are permissible only with the above riders, and are not a birth right. We are pained to note that UPPCL, after miserably failing to check its overdrawals (even after being informed NRLDC about grid contingency), has continuously defaulted in making payments for its UI, and then has the temerity to plead that no action be taken against it.

17. It also came to light during the hearing that a major grid disturbance did occur in the Northern Region on 12.10.2007, resulting in a black out in the western half of NR for a few hours. As per the preliminary report issued by NRLDC, it appears that the disturbance was triggered by tripping of the circuits of 400 kV D/C Mandola – Bawana and Ballabgarh – Bamnauli transmission lines, when carrying power much below their capability. This is a serious matter, and should be carefully investigated and corrected. Meanwhile, DTL (the owner of these lines) shall submit to the Commission the record of (i) relay operation on 12.10.2007 in respect of these lines, (ii) relay settings along with CT/VT ratio, and (iii) result of investigations at their end, within 15 days of this order.

18. NRLDC has also advised the Commission that the State utilities of M.P. and Rajasthan have still not agreed to close the 220 kV D/C Kota-Ujjain tie. This line can considerably strengthen the NR-WR linkage and enhance the inter-regional transfer capability, violation of which is the matter under discussion. We urge the concerned State utilities to resolve all issues expeditiously, and close the link without further delay.

Sd/-  
**(R. KRISHNAMOORTHY)**  
**MEMBER**

Sd/-  
**(BHANU BHUSHAN)**  
**MEMBER**

**New Delhi, dated the 7<sup>th</sup> November 2007**