

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Adjudication Case No. 1/2010

Coram: Shri V.S.Verma, Member & Adjudicating Officer

Date of final hearing: 10.8.2010

Date of Order: 21.9.2010

In the matter of

Maintaining grid security of the Southern Regional Grid by curbing over-drawals and effecting proper load management by TNEB.

And

In the matter of

Tamil Nadu Electricity Board

.....**Respondent**

The following were present:

1. Sh. C. P. Singh, Chairman, TNEB
2. Sh. V. Chandran, TNEB
3. Sh. V. K. Jain, TNEB
4. Sh. V. Suresh, SRLDC
5. Shri PR Raghuram, SRLDC
6. Ms. Jyothi Prasad, NRLDC
7. Sh. M. L. Batra, SRPC

ORDER

Southern Regional Load Despatch Centre (SRLDC) filed Petition No. 107/2010 alleging over-drawal at low frequency by the respondent during the period 24.2.2010 to 24.3.2010 despite A,B and C messages issued by SRLDC under para 5.4.2 (b) of the Indian Electricity Grid Code (the Grid Code) read with Section 29 of the Electricity Act, 2003 (the Act). The Commission, after hearing the parties and on

consideration of the material on record, appointed the undersigned as the Adjudicating Officer under section 143 of the Act vide its order dated 13.5.2010 to inquire into the matter and make appropriate orders.

2. In response to the show cause notice of 20.5.2010, the Respondent filed its reply vide affidavit dated 8.6.2010 and SRLDC filed its response thereto. The matter was heard on 6.7.2010 wherein the representative of the respondent and representative of SRLDC and Member-Secretary Southern Regional Power Committee participated. After hearing the parties, directions were issued, vide order dated 15.7.2010, for submission of the following information:

(a) Information to be submitted by SRLDC

(i) Copy of each "B" and "C" messages issued by SRLDC to TNEB during 24.2.2010 to 24.3.2010, i.e. the period mentioned in the petition.

(ii) The copy of response received by SRLDC in compliance of each "B" and "C" Message issued to TNEB during the subject period.

(iii) Copy of letters written by SRLDC to Chairman, TNEB for reducing over-drawal during 24.2.2010 to 24.3.2010 and the response received.

(iv) Report on adequacy of action taken by SLDC/TNEB and Chairman, TNEB on the instructions i.e. "B" and "C" messages issued by SRLDC and letters written by SRLDC to Chairman, TNEB.

(v) Details of forced outages of generating units and transmission lines as well as congestion in transmission system during the subject period and effect on power availability to TNEB.

b) Information to be submitted by the Respondent:

(i) Details of action, taken by the respondent on each “B” and “C” message issued by SRLDC to TNEB during 24.2.2010 to 24.3.2010 and effect of the action on over-drawal along with quantum and time.

(ii) Details of compliance reported to SRLDC by TNEB on each “B” and “C” message.

(iii) Details of planned, unscheduled, manual load shedding (quantum and time duration) vis-à-vis over-drawl by TNEB at each instance of “B” and “C” message and effect of load shedding on over-drawal.

(iv) Details of effect on availability of power to TNEB due to wind generation loss, forced outages of generating units and transmission lines and congestion in power system during the subject period.

(v) Details of daily power demand and availability in the State and the plan of action as well as actual action implemented including planned load shedding by TNEB/SLDC on each day during the subject period to manage the gap in demand and supply.

(c) Information to be submitted by Member Secretary, Southern Regional Power Committee:

(i) Details along with copies of RPC communication to the respondent advising action and action taken by the respondent

3. Based on the submissions made in the course of hearing, I observed that Chairman, TNEB plays a major role in the scheme of events because he was responsible for deciding the quantum of load shedding and consequent over-drawals. Besides, SRLDC had also sent several messages to him urging curtailment of over-drawal., I therefore, considered his presence necessary for taking a view of the matter and accordingly, issued directions under sub-section (2) of section 143 of

the Act requiring the presence of the Chairman, TNEB during the subsequent hearing of the case on 10.8.2010.

4. SRLDC, Member-Secretary Southern Regional Power Committee and the respondent have filed the information called for vide my order dated 15.7.2010. On 10.8.2010, Shri C.P.Singh, Chairman, Tamil Nadu State Electricity Board also participated in the adjudication proceedings.

5. The representative of SRDLC submitted that during the period 24.2.2010 to 24.3.2010, the respondent had resorted to over-drawal in violation of clause 5.4.2, 6.4.4 and 6.4.7 of the Grid Code and failed to comply with the directions of SRLDC issued under section 29 of the Act and thereby, endangered grid security. He pointed out that during the above period, the quantum of over-drawal by the respondent at frequency below 49.2 Hz was as high as 900 MW on 27.2.2010 in terms of MW and 4.57 MU on 24.3.2010 in terms of energy. This resulted in Southern Regional grid operation at frequency below 49.2 Hz for about 41.10% of the time on 24.3.2010. He mentioned that Southern Regional grid frequency remained below 49.2 Hz for more than an hour continuously on many days during this period, particularly on 4.3.2010, 9.3.2010, 16.3.2010 and 24.3.2010.

6. Representative of SRLDC further stated that the voltages at places like Chennai, Kalivanthapattu, Almathy were also critically below the minimum voltage level prescribed in the Grid Code, due to excessive MW/ MVarh drawal by the respondent. The voltage at Chennai, he pointed out, dropped to as low as 353 kV

and the MVArh drawal below 385 kV level from these three drawal points was alarmingly high at 7833 MVArh on 25.02.2010. He added that the excursion of SR grid frequency in the vulnerable lower range of 48.5 – 48.6 Hz, posed threat of tripping of critical unit auxiliaries of major generating stations and the same were apprehended and communicated by the ISGS stations. For example, NTPC communicated this vide messages dated 19.3.2010 and 25.3.2010. Representative of SRLDC further submitted that the excessive over-drawal by TNEB and continuous low frequency operation of SR Grid gave no elbow space for other constituents of the Southern Region for their demand side management and also led to operation of automatic Under Frequency Relays (UFRs) in their control area as was intimated by APTRANSCO vide letter dated 22.3.2010, though Andhra Pradesh was not overdrawing at these instances.

7. The representative of SRLDC also submitted that SRLDC being an apex body under the Act has primary responsibility for grid security and accordingly advised TNEB time and again for developing and implementing grid security mechanism through the following measures:

- Contingency plan for mitigating sudden loss of wind generation
- Special Protection Scheme for S1-S2 congestion
- Raising of UFR Setting of 48.8 Hz at least for Stage I
- Review and enhancement of Radial Feeder Load Relief
- Automatic Load disconnection scheme proportionate to over-drawal at low Frequency.

8. The representative of SRLDC also submitted that while TNEB assured its commitment for not overdrawing during low frequency and transmission constraints

conditions, its adherence to the above stated measures in practice was only partial. He pointed out that this was not the first instance of violation of Grid Discipline by the respondent and accordingly, prayed for suitable orders as deemed fit.

9. In response to the query as to whether the concerned official in SRLDC brought these instances to the notice of Chairman, TNEB on regular basis, the representative of SRLDC submitted that the information was first sent to Tamil Nadu-SLDC on real time basis, then to SRPC to take up the matter with Senior officials of TNEB and finally, matter was brought to the notice of the Chairman, TNEB. In response to my query as to whether affirmative actions were taken by TNEB, the representative of SRLDC replied in the negative.

10. The Chairman, TNEB while admitting the veracity of the submissions made by SRLDC submitted that as soon as the messages were received, immediate actions had been taken by TNEB by way of opening of radial feeders and resorting to load shedding. He submitted that though prompt actions could not be taken on many occasions for reasons beyond control, but TNEB as part of the regional grid had no intention to endanger the grid security. He attributed inadequate generation capacity available with TNEB to meet the demand of the State as the basic reason for over-drawals, According to him reduction of allocation of power, by the centre, from unallocated quota suddenly without prior notice on several occasions in the recent past together with the lack of augmentation of generation capacity in the State sector were primary reasons for the state of affairs. He also cited the fluctuation of wind generation as an additional factor leading to over-drawal. He

pointed out that the State, in tune with the policy of Government of India on renewable energy, had gone ahead in a big way to support the green energy and the installed capacity of wind energy which is an infirm source of energy, has reached 5000 MW,. He pointed out that there are also large seasonal variations of wind generation in Tamil Nadu as borne by the fact that on 8.8.2010, the wind generation was 3000 MW; on 9.8.2010 it was 2000 MW and on the morning of 10.8.2010, wind generation was 900 MW. This sharp decline in wind generation, he submitted, resulted in one fourth of the State undergoing load shedding. He submitted that these reasons are not advanced for justifying the over-drawal by Tamil Nadu but only to clarify that these situations make it little difficult to react to the directions of SRLDC promptly. Chairman, TNEB highlighted the following steps which have been taken by the respondent to mitigate the situation:

- a) From, 2008 onwards, TNEB has been imposing 20-40% energy cut on H.T and commercial consumers.
- b) Supply agricultural loads only for 10 Hours in two spells of 6 hours during the day and 4 hours during night.
- c) Load shedding on regular basis from 6:00 AM to 6.00 PM throughout the State except Chennai for duration of mostly two hours, but during the period mentioned for three hours.
- d) In the evening, heavy restrictions on industrial and high end consumers by way of declaring complete non-supply period from 6:00 PM to 10:00 PM.

11. Chairman, TNEB further contended that the main reason for the present state of affairs is that the respondent could not add any generation capacity between years 2000 and 2008 which is attributable to the fact that TNEB could not properly anticipate and predict the demand growth in the State. He pointed out that capacity additions during 8th and 9th Plan Period did not materialise as expected and the

State Government, in the anticipation of such private investment did not initiate any concrete action for generation capacity addition, which led to the present shortage scenario. He highlighted that while allowing large scale installation of wind generation in Tamil Nadu, a very important point was missed i.e. the infirm generation should not be more than about 15-20% of the total installed capacity. In the case of Tamil Nadu, wind energy generation is about 40%. He submitted that Government of Tamil Nadu as well as Government of India have now gone for large scale capacity addition in Tamil Nadu to correct the imbalance. He submitted that investment of around Rs.40,000 crore for addition of 8,000 MW coal based generation is on the anvil in the State. He submitted that first 600 MW unit is expected to be commissioned in the middle of the next year and thereafter the State would be commissioning at least one unit of 550 MW or 600 MW every three month. Thus, the State would be adding 2,000 MW generation capacity every year for the next four years. He submitted that the power supply position of Tamil Nadu is going to improve substantially and this kind of situation would not arise in future.

12. Chairman, TNEB also submitted that respondent was buying costly power to the tune of 150 MW from Naptha based NTPC Kayanakulam generation, which was to be compensated by the cheaper power from the NTPC stations at Farakka and Kahalgaon in Eastern Region. Government of India during September-October, 2009 withdrew the power from Eastern Region stations because of farmers' unrest in Punjab and Haryana which was restored only a month back to some extent at the behest of the State. He also submitted that there were forced outages of generating

units because of which Tamil Nadu could not get around 1500-1800 MW power. Despite these constraints, he pleaded that with whatever means were available, the respondent took action as soon as the messages were received from SRLDC.

13. Taking responsibility for the incidents of grid violations brought to the notice of the Commission, he submitted that he was aware and alive to the prevailing situations and assured that the respondent would follow the Grid Code and would never like to violate the grid discipline. He submitted that during period June to September, wind generation was good in Tamil Nadu which benefited not only the state but the whole country as Utilities were getting cheaper power injected from wind generation. Concluding his submission, Chairman TNEB requested the Adjudicating Officer to consider all the attending circumstances and constraints while passing the order.

14. In reply to my query whether the quantum over-drawal and load shedding were decided with his consent, the basis of deciding the quantum of load shedding and whether such decisions were ad hoc in nature or some criteria was adopted, the Chairman TNEB clarified that TNEB had prepared the anticipated demand and availability for next three to four years. In addition, Tamil Nadu was making purchase of large quantity of power at very high rates from the power market in order to reduce over-drawal from the grid and maintain grid discipline. However, the corridor constraint prevented the State from getting the available power.

15. To another query as to whether the Chairman, TNEB was aware that heavy over-drawal from the grid at frequency below 49.2 Hz affected the health and life of the generating machines and equipments, he replied in the affirmative and further submitted that whenever the messages were received from SRLDC, the officials of TNEB were taking necessary corrective actions.

16. The Superintending Engineer, SLDC, Tamil Nadu submitted that Tamil Nadu was now restricting over-drawal by increasing quantum of load shedding and also it had accepted the SPS scheme in the previous day's meeting. When inquired about the status of Under frequency Relays (URFs), the Superintending Engineer of the respondent, stated that all the UFRs were working properly. The representative of SRLDC elaborated that the UFRs setting was presently at 48.5 Hz which need to be increased at 48.8 Hz. He also clarified that during the meeting on 12th July 2010, in Chennai, Tamil Nadu had agreed for raising the setting to 48.8 Hz. However, this had to be done at the regional level, for which other constituents also had to give consent which was not available.

17. At this stage, Member Secretary, SRPC submitted that the grid security could be improved by raising the UFRs settings. The Stage I setting had to be raised from 48.5 Hz to 48.8 Hz; State II from 48.2 Hz to 48.5 Hz and State III from 48.0 to 48.2 Hz. With the enhanced settings of UFRs, there would be greater load relief by automatic operations of these relays. However, no consensus could be achieved on raising up of the UFR settings.

18. After hearing the parties and examination of the pleadings, I pointedly asked the Chairman of TNEB, to ensure that Grid Code and UI Regulations are complied with and grid discipline is maintained, even if the wind generation was not available, by way of arranging more power from the market and increasing the quantum of load shedding. Chairman, TNEB assured to do the needful. I also cautioned him that this would be last opportunity available to Tamil Nadu to abide by the provisions of Grid Code and UI Regulations.

19. Upon hearing the parties and perusing the records, I cannot but feel a sense of frustration over the repeated cases of this nature. The Officers of TNEB have been attending various proceedings in the Commission on Grid Code violations and expressing their helplessness in arresting the overdrawal from the grid. While I am alive to and appreciate the problems expressed by the Chairman, TNEB, especially those which are beyond the control of the State, such as sudden withdrawal of unallocated quota by the Centre, diversion of power from the Eastern Region to Punjab and Haryana, non-availability of transmission corridor for reaching the power contracted at a high price, high percentage of infirm power capacity installed probably due to keenness for increased reliance on renewable sources, completely unpredictable fluctuations in wind generation, etc. I must emphatically record that these problems, in no way serve as justification for over-drawal which jeopardises grid security. Even the Chairman of TNEB accepted that these circumstances were not justification for over-drawal at low frequency. However, the acts of over-drawal cannot be viewed in isolation and needs to be perceived together with the context in

which they had occurred. Further, I could also sense the seriousness of purpose and sincerity in the Chairman's assurances. Accordingly, I propose to adopt a reformative, rather than a punitive approach in the matter.

20. Taking a view of the totality of the circumstances, I direct as under:

- (a) The Superintending Engineer, SLDC, Tamil Nadu shall strictly comply with the instructions of SRLDC.
- (b) The Chairman, TNEB shall separately address the issues of capacity addition in the State and allocation of power from the Central Generating Stations so that the possibility of over-drawal can be eliminated.
- (c) Grid operation being a common service, laws governing them need to be followed in letter and spirit, as grid failure would lead to suffering by all the States. Member Secretary, SRPC shall pursue the efforts for building consensus on raising the UFR settings. If he does not success in his efforts, he may approach the Commission as provided under the Grid Code Regulations, 2010.

21. Accepting the assurances and commitments by the Chairman, TNEB that there would not be any further violation of grid discipline and that diligent action would be taken by SLDC Tamil Nadu on the instructions issued by SRLDC, I direct that these proceedings be dropped and the file be consigned to records.

Sd/-
[V S VERMA]
Member & Adjudicating officer