

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 1/2010 (Suo-motu)

**Coram: Dr. Pramod Deo, Chairperson
Shri S. Jayaraman, Member
Shri V.S. Verma, Member**

Date of hearing: 29.01.2010

Date of Order: 17.03.2010

In the matter of

Rate of Congestion charge in real time operation in inter-State transmission of electricity.

O R D E R

The Commission has notified the Central Electricity Regulatory Commission (Measures to relieve congestion in real time operation) Regulations, 2009(hereinafter "the Congestion charge regulations") on 22nd December, 2009. Regulation 5 of the Congestion charge regulations provides that the Commission may, from time to time, through an Order, specify the rate of congestion charge applicable to whole or a part of the region.

2. The Commission in its order dated 8.1.2010 proposed the rate of congestion charge as Rs.5.45/kWh and invited comments/suggestions thereon. The rationale behind the proposed congestion charge was explained in the said order as under:

“2. The rationale behind applying congestion charge is to ensure stability and security of the transmission system. Hence it is imperative that all possible grid conditions due to over drawl during system constraints at a frequency less than 50 Hz need to be curbed. As the Unsheduled Interchange charge at or just below 50 Hz. Is low, there is no commercial deterrent for the overdrawing State at this frequency to reduce overdrawal, though congestion may exist in the transmission corridor between importing and exporting areas/regions. In order to address the situation, the charge for energy drawn from the grid at normal frequency at or just below 50 Hz. Through a congested transmission corridor should be fixed high enough to discourage over drawl from the grid.

3. Prima facie we are of the view that the rate of congestion charge should be kept a little higher than the difference between the maximum Unsheduled interchange (UI) charge (which also denotes the max. Energy charge on liquid fuel) and the UI price at 50.0 Hz, as specified in the Central Electricity Regulatory Commission (Unsheduled Interchange charges and related matters) Regulations, 2009. In this way the congestion charge plus the UI charge will be higher than the maximum energy charge of the liquid fuel based power plants, which will serve as deterrent for over drawl by the regional entities at a frequency below 50 Hz through a congested transmission corridor and will incentivize the utilization of all generation on liquid fuel in the over drawing Region/State, if any, thus relieving congestion. If the UI charge plus congestion charge is higher than the energy charge of the liquid fuel based generation, then the overdrawing regional entity would find it commercially advantageous in increasing liquid fuel generation in the State instead of overdrawing from the grid.

4. Accordingly, the Commission proposes that the congestion charge shall be equal to difference of Maximum UI charges and UI charges at 50 Hz as per prevailing CERC (Unsheduled Interchange charges and related matters) Regulations. At present the Maximum UI charge is Rs.7.35 and UI charge at 50 Hz is Rs. 1.92 per kWh and the difference between the two comes to Rs. 5.43 per kWh. Accordingly, Congestion charge is proposed to be fixed at Rs. 5.45 which will be applicable to all regions.

5. It is important to note that at a frequency greater than 50 Hz, the congestion would not be caused by the overdrawing utility but by the utility injecting power into the congested transmission corridor and the congestion charge would instead be applied on the injecting utility. The detailed procedure for levy of congestion charge is given in the Congestion Charge Regulations. For the injecting utility, the remedy would be to reduce injection through reduction of generation in its control area.”

3. The Commission held a public hearing on 29.01.2010. List of persons who have submitted their written comments and list of persons who have made

oral submissions during the public hearing are given in the Annexure to this order. The objections/suggestions received in response to the proposed congestion charge are discussed in the succeeding paragraphs.

4. Representatives of Assam State Electricity Board(ASEB) and Tripura State Electricity Company Limited(TSECL) have submitted that the inadequate transmission development in North Eastern Region (NER) is the primary cause of congestion. Utilities in NER are not being able to draw their quota of power from the generating stations due to congestion in inter-State transmission System even if they require it. Hence congestion charge should not be applied for under-drawal on the utilities of NER as under-drawal is beyond the control of these utilities.

5. ASEB, TSECL and Electricity Departments of Government of Manipur and Mizoram referring to the provisions of Regulation 4(3) of the Congestion charge regulations have argued that congestion charge should not be applied on upstream entities for underdrawal. Regulation 4(3) of the Congestion charge regulations is extracted as under:

“ (3) The congestion charge shall be payable by the overdrawing regional entity in addition to the Unsheduled Interchange charges which would be payable as per Central Electricity Regulatory Commission (Unsheduled Interchange charges and related Matters) Regulations,2009 or any re-enactment thereof.”

6. The purpose of the Regulation 4(3) as quoted above is to ensure that the overdrawing entity is made to pay the UI charges as well as charges for

congestion, since in the normal shortage scenario, the frequency is mostly below 50 Hz. and it would mostly be the overdrawing entity on the downstream side which would be at fault. However, this does not preclude the under-drawing entity from payment of congestion charges in case the frequency is above 50 Hz.

7. The Commission has studied the scenario for the North Eastern Region in discussion with the North Eastern Regional Load Despatch Centre and the Eastern Regional Load Despatch Centre. It is observed that under-drawal by utilities of NER takes place only for about three months in a year and, that also, when there is good South-West monsoon in the NER. Moreover, even if there is congestion because of good monsoon, the congestion occurs in the Eastern Region transmission system and not in the ER – NER transmission system. Hence congestion charge would rarely apply on utilities of NER for under-drawal. The reason for utilities of NER not being able to draw power is mainly due the transmission and distribution constraints in the intra-State systems in the States of the region, which results in under-drawl. Since congestion charge would be applied to Unscheduled Interchange (UI) charges only, utilities in NER should take steps to sell the power they are unable to draw in order to avoid UI charges and therefore, congestion charges in the season when congestion is likely to occur.

8. Gujarat Urja Vikas Nigam Limited (GUVNL) has submitted that there should be no congestion charge for under drawal during high frequency as

the only corrective action that can be resorted to by the under-drawing utility is to reduce its own generation or reduce its schedule from Central Generating Stations (CGSs) for avoiding congestion charges because the utility has no control for increasing the demand within its control area. Moreover, reduction of schedule from CGSs would be possible only after 6 time blocks as per the regulations of the Commission.

9. NTPC has submitted that at frequency below 50 Hz, congestion charges should be levied in the control area at the tail end (receiving end) of the congested corridor. Conversely, at frequencies above 50 Hz, Congestion charge should be levied in the control area at the head end (sending end) of the congested corridor.

10. The representative of NLDC has submitted that congestion charge should be applied on regional entities up-stream as well as down-stream within the IEGC mandated frequency band (i.e. 49.2 Hz to 50.3 Hz.), since applying congestion charges on upstream entities or downstream entities separately based on prevailing frequency may lead flip-flop situation, when frequency goes above and below 50 Hz. frequently.

11. The Commission has carefully considered the suggestions of the utilities of the NER and GUVNL on the one hand, and NTPC and NLDC on the other. The remedy for utilities of NER has already been suggested above. The remedy for GUVNL is that it can reduce its own generation easily in case of

under-drawal at frequency above 50 Hz..

12. It is clear that congestion would be caused by over-drawing entities in the importing region when frequency is below 50 Hz. and by the under-drawing entity in the exporting region when frequency is above 50 Hz (when it would be considered as dumping power). Granting any exemption to entities in NER would be discriminatory. However, NLDC's stand that it should be applied to both sides in the frequency range 49.2 Hz. to 50.3 Hz would be penalizing the non-guilty. Their apprehension about flip-flop situation can only happen when frequency is hovering around 50 Hz. This can be taken care of by giving notice to both the regional entities guilty of over-drawal if the frequency alternates between the range below 50 Hz and above 50 Hz within a short span of time. However, application of congestion charge is a post-facto event and would be dictated by the average frequency in the 15 minute time blocks. Therefore the Commission is of the view that no change is required in the method for determination of congestion proposed in our order dated 8.1.2010.

13. NLDC has also submitted that if congestion is between two control areas of incomparable sizes, then the major relief would be obtained from action by the smaller control area. In such a case, the imposition of congestion charge should not be guided by the above mentioned philosophy and congestion charge may be applied only on the entities of the smaller area.

14. The Commission is of the view that penalty for congestion cannot be imposed on a control area, primarily because it is smaller in size, though it may have a greater effect. As stated above, the prevalent frequency would decide which side is responsible for the congestion and congestion charge shall be applied accordingly. It is therefore prudent that the size of the control area does not dictate on whom congestion charge is to be applied. .

15. The representative of NLDC has further submitted that price differential arising in Power Exchanges due to congestion may also be factored in deciding rate of congestion charge.

16. In this regard, an exercise was carried out by the Commission to find out congestion charge during January, 2009 to September, 2009 in the Power Exchanges. It was found that during this period on many occasions, prices shot up above Rs 15 per kWh in the Northern Region (downstream side) due to market splitting and in this case, the congestion rate (the difference between the Market Clearing Price (MCP) of NR and MCP of upstream Regions) was calculated to be Rs 9 per kWh. The variation in congestion rate also varied from 35 paise per kWh to Rs 9 per kWh. The congestion rates prevailing in the power exchanges reflects the congestion based on bids for selling and buying of power on the power exchange, as perceived on a day-ahead basis, whereas the congestion charge proposed in the draft order

reflects the real-time congestion, which also includes unscheduled interchange. Hence this method was not adopted. This rate also did not give any objective signal.

17. CSPTCL has suggested a new method for calculating the quantum of congestion charge, without giving the rationale for such calculation. The Commission feels that the rate proposed in the Commission's order dated 8.1.2010 gives the rationale behind the proposed congestion charge. We are of the view that the congestion charge proposed in our order of 8.1.2010 gives an objective signal for utilizing all liquid based generation in the importing region.

18. MSEDCL has submitted that the delay in commissioning of transmission projects and forced outages of lines are causes of congestion and CTU/ STU need to be held responsible for the same.

19. As far as delay in commissioning of transmission project is concerned, the schedule of drawal is given by the NLDC/RLDCs/SLDCs on the basis of Available Transfer Capability (ATC) on day-ahead basis, and therefore, this factor will not figure in the congestion occurring in real-time. Forced outages of the line cause availability of the transmission system to reduce thereby affecting recovery of fixed charges of the Central Transmission Utility (CTU) as per the relevant regulations of the Commission. However we are in agreement that congestion charge should not be levied for congestion in a

transmission corridor, if the power flow on the corridor is as per the schedule, but the congestion is caused by forced outage of a line in the corridor, which occurs after the drawal schedule has been fixed. Such contingencies would have to be tackled through emergency instructions by the concerned SLDC/RLDC/NLDC to the concerned entities in order to relieve the congestion, on grid security considerations. All such instructions would have to be followed by the entities immediately, as already mandated in the Indian Electricity Grid Code.

20. Indian Energy Exchange (IEX) has submitted that even on imposition of congestion charge at a frequency of 50 Hz., the price of overdrawn power will be Rs. 7.37 per kWh which is still lower than the average price of power on the exchange platform i.e. Rs. 7.48 per kWh (Source: CERC Market Monitoring Cell report July, 2009). The exchange prices are a reflection of the utility of power, which is quite high and a congestion charge of Rs 5.45 per kWh may not serve as a deterrent for over drawal, especially during peak hours in summer and winters. IEX has further submitted that the congestion charge rate of Rs 5.45 per kWh does not consider the losses and charges and other operational charges which will be applicable on the power bought within the region, which when applied, would result in an even higher cost of power. Moreover, it may not be economical for a generator to start its operations for a small period of time during which congestion charge would remain applicable. They would support a higher rate of congestion charge or

a scale of congestion charge which varies with the limit by which ATC is transgressed.

21. It may be clarified that the rate of congestion charge is based on over-drawal/under-drawal on real-time basis. The average price in the power market is based on assessment of demand and supply on day-ahead basis and may or may not include congestion for different lengths of time. Congestion charge rate and UI charge rate are pre-fixed, whereas market clearing price is determined depending on quotes of buyers and sellers on the Power Exchanges. Besides, frequency in the case of congestion has been considered as 50 Hz by IEX for the purpose of comparison, whereas the average frequency in the Power Exchange is likely to be much lower than that. At a frequency of 49.2 Hz, the total charge for over drawal would be Rs 12.80 per kWh, which is a sufficient deterrent.

22. In view of the discussion in the foregoing paragraphs, we find that there is no objection to the proposed rate of congestion charge. Therefore, based on the rationale given in our order dated 8.1.2010, the following directions are issued:

- (a) The rate of congestion charge has been fixed at a rate higher than the difference between maximum UI charge and UI charge at 50 Hz which is expected to serve as deterrent against over drawal by the regional

entities at a frequency below 50 Hz through a congested transmission corridor and to incentivize the utilization of all generation on liquid fuel in the over-drawing Region/State, if any, thus relieving congestion.

- (b) The maximum UI charge is Rs.7.35 and UI charge at 50 Hz is Rs. 1.92 per kWh and the difference works out to Rs. 5.43/ kWh. Accordingly, we direct that congestion charge be fixed at Rs. 5.45/kWh which will be applicable to all regions. The levy of congestion charge shall come into force with immediate effect and shall remain in force till further order of the Commission.
- (c) At frequency below 50 Hz, congestion charge would be levied for overdrawal in the importing control area and at frequencies above 50 Hz, congestion charge would be levied for under-drawal in the exporting control area.
- (d) No congestion charge shall be levied for congestion in a transmission corridor, if the power flow on the corridor is as per the schedule, but the congestion has been caused by forced outages of a line in the corridor, which occurs after the drawal schedule has been fixed.
- (e) Such contingencies would have to be tackled through emergency instructions by the concerned SLDCs/RLDCs/NLDC to the concerned regional entities in order to relieve the congestion on the considerations of grid security.

23. National Load Despatch Centre and Regional Load Despatch Centres are directed to ensure compliance with our directions in para 22 above in accordance with the provisions of Congestion charge regulations.

24. Petition No. 1/2010 (Suo-motu) is disposed of in terms of the above.

**Sd/
[V. S. Verma]
Member**

**Sd/
[S. Jayaraman]
Member**

**Sd/
[Dr. Pramod Deo]
Chairperson**

Annexure

The following stakeholders submitted the both written and oral submissions before the Commission on draft Congestion charge order dated 08.01.2010: Public Hearing held on 29.01.2010:

1. Assam Power Distribution Company Ltd.
2. Tripura State Electricity Corporation Ltd.
3. NTPC Ltd.
4. National Load Despatch Centre (NLDC)
5. Indian Energy Exchange (IEX)

The following stakeholders submitted the written submissions before the Commission on draft Congestion charge order dated 08.01.2010:

1. Assam Power Distribution Company Ltd.
2. Tripura State Electricity Corporation Ltd.
3. Maharashtra State Electricity Distribution Company Ltd.
4. P&E Department, Govt. of Mizoram
5. Chhattisgarh State Power Transmission Company Ltd.
6. Electricity Department, Govt. of Manipur
7. Gujarat Urja Vikas Nigam Ltd.
8. Jaipur Vidyut Vitaran Nigam Ltd.
9. NTPC Ltd.
10. National Load Despatch Centre (NLDC)
11. Indian Energy Exchange (IEX)
12. Shri A.Raja Rao, Bengaluru