

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 80/MP/2018

Coram:

Shri P.K. Pujari, Chairperson

Shri A.K. Singhal, Member

Dr. M.K. Iyer, Member

Date of Order: 9.10.2018

In the matter of

Petition under Section 28(4) of Electricity Act, 2003 read with Regulation 6 and Regulation 29 of Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015 for approval of Performance Linked Incentive for NERLDC for the financial year 2016-17 with reference to NERLDC Charges for the control period 1.4.2014 to 31.3.2019.

And

In the matter of

North Eastern Regional Load Despatch Centre,
Power System Operation Corporation Ltd. (POSOCO) B-9, Qutub Institutional Area, 1st
Floor, Katwaria Sarai, New Delhi -110016 **...Petitioner**

Vs.

1. APDCL, Bijuli Bhawan, Paltan Bazar,
Guwahati-781 001
2. MePDCL, Meter Factory Area, Short Round Road,
Integrated Office Complex,
Shillong-793 001
3. TSECL, Bidyut Bhawan, North Banamalipur,
Agartala-799 001
4. Department of Power, Government of Arunachal Pradesh,
Bidyut Bhawan,
Itanagar-791 111
5. P&E Department of Government of Mizoram,
Khatla, Aizwal-796 001
Dept. of Power, Government of Nagaland,
Kohima-797 001
6. MSPDCL, 3rd Floor, New Directorate Building, Near 2nd MR Gate,
Imphal-Dimapur Road,
Imphal-795 001, Manipur

7. Doyang HEP, NEEPCO,
Wokha, Nagaland
8. Ranganadi HEP, NEEPCO, P.O. Ranganadi Proj. Dist. Subansiri,
Andhra Pradesh-791 121
AGBPP, NEEPCO, Kathalguri,
9. Tinsukia, Assam
AGTPP, NEEPCO, Ramchandranagar,
Agartala, Tripura
10. KHANDONG HEP, NEEPCO, Umrangsoo,
N.C. Hills, Assam
11. KOPI LI HEP, NEEPCO, Umrangsoo,
N.C. Hills, Assam
12. KOPI LI-2 HEP, NEEPCO, Umrangsoo,
N.C. Hills, Assam
13. AGTP CC Extn. NEEPCO, Ramchandranagar,
Agartala, Tripura
14. NHPC Loktak HEP, Leimatak-795 124, Manipur
ONGC Tripura Power Company Ltd., 6 th Floor, A Wing, IFCI Tower-61, Nehru
Place, New Delhi-110 019
15. NTPC Ltd., BgTTP, Salakati (P), Dist: Kokrajhar (BTAD), Assam-783 369
16. Power Grid Corporation of India Ltd., NERTS, Lapalang, Shillong-793 006,
Meghalaya
17. North Eastern Transmission Company Ltd., 1 st Floor, Ambience Corporate Tower,
Ambience Mall, Gurgaon, 122 001, Haryana
ENICL, C-2 Mira Corporate Suite, Ishwar Nagar, Mathura Road, New Delhi-110
065

.....Respondents

Parties Present:

Shri Rajib Sutradhar, NERLDC, POSOCO

ORDER

The Petitioner, North Eastern Regional Load Despatch Centre (hereinafter referred to as “NERLDC”), has filed the present petition under Section 28(4) of Electricity Act, 2003 (hereinafter referred to as ‘the Act’) read with Regulations 6 and 29 of Central

Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015 (hereinafter referred to as “Fees and Charges Regulations”) for approval of Performance Linked Incentive (hereinafter referred to as “PLI”) for NERLDC for the financial year 2016-17 for the control period 1.4.2014 to 31.3.2019.

2. The Petitioner NERLDC is setup under Section 27 of the Act performs functions specified in Section 28 of the Act. NLDC and RLDCs are operated by Power System Operation Corporation Limited (POSOCO) in accordance with Government of India, Ministry of Power’s notification dated 27.9.2010.

3. As per Regulation 29 (1) to 29 (3) of the Fees and Charges Regulations, the recovery of performance linked incentive by NLDC and RLDCs shall be based on the achievement of Key Performance Indicators (KPIs) as specified in Appendix V of the Fees and Charges Regulations or other such parameters as specified by the Commission.

4. As per Regulation 29(6) of the Fees and Charges Regulations, RLDCs or NLDC are required to compute the KPIs on annual basis for the previous year ending 31st March and submit to the Commission for approval as per Appendix V and VI of the Fees and Charges Regulations.

5. The petitioner has submitted that as per methodology specified in Appendix-V of the Fees and Charges Regulations, KPI score for NERLDC for the year 2016-17 ending 31.3.2017 has been computed as under:

Sl. No	Key Performance Indicators	Weightage	Previous Year (as allowed by CERC (2015-16))	Current Year (2016-17)
1	Reporting of Interconnection meter error	10	10	10.00
2	Reporting of Grid Incidents and Grid Disturbance	10	10	10.00
3	Average processing time of shut down request	10	10	10.00
4	Availability of SCADA System	10	10	9.996
5	Voltage Deviation Index (VDI)	10	10	10.00
6	Frequency Deviation Index (FDI)	10	10	10.00
7	Reporting of System Reliability	10	7.78	10.00
8	Availability of Website	10	10	10.00
9	Availability of Standby Supply	5	5	5.00
10	Variance of Capital expenditure	5	3.51	5.00
11	Variance of Non Capital expenditure	5	5	4.995
12	Percentage of Certified Employee	5	5	4.724
	Total	100	96.29	99.715

6. The petitioner has submitted that as per the methodology provided in Regulation 29 (5) of Fees and Charges Regulations, the Petitioner is entitled to recover 7% of annual charges for aggregate performance level of 85% for three years commencing from 1.4.2014. The incentive shall increase by 1% of annual charges for every 5% increase of performance level above 90%. Accordingly, recovery of Performance Linked Incentive for the year 2016-17 works out as 8.943% of the annual charges (for 90-95% additional 1% and for 95% to 99.399% additional 0.880%).

7. The Petitioner has filed the present petition with the following prayers:

“(a) Approve the proposed performance linked incentive based on the KPIs computed by NERLDC for the year ending 31.03.2017 given at para 5, the KPI score given at para 6 and PLI percentage of Annual Charges of the year 2016-17 as per para 7 above.

(b) Allow the Applicant to recover the above mentioned incentives from the users for the year 2016-17 as approved by the Hon'ble Commission.

(c) Pass such other order(s) as the Hon'ble Commission deems fit and appropriate in this case and in the interest of justice.”

8. The petition was heard on 5.4.2018 and notices were issued to the Respondents to file their replies. However, no reply has been filed by the Respondents despite notice. Vide Record of Proceedings for hearing dated 5.4.2018, the Petitioner was directed to file the following information:

- (a) Whether the Petitioners have informed the Commission about each incident of grid disturbance as required under Appendix VI of the Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015.
- (b) With regard to Voltage Deviation Index (VDI), submit the details of No. of hours the voltage at all sub-Stations of 400 kV and above was out of range in a month.
- (c) With regard to Frequency Deviation Index (FDI), submit the details of No. of hours during which frequency was out of range in a month.
- (d) Submit the following with regard to System Reliability, (i) % of times N-1 criteria was violated in the inter-regional corridors, (ii) % of times ATC violated on inter-regional corridors, (iii) % of time Angular difference on important buses was beyond permissible limit.

9. The Petitioner vide affidavit dated 7.5.2018 has submitted the information called for which has been dealt with in succeeding paras of this order.

10. We have considered the submissions of the petitioner. As per methodology of the incentive specified in Regulation 29(5) of the Fees & charges Regulations, 2015 the relevant extract is stated here:

(5) The RLDCs or NLDC, as the case may be, shall be allowed to recover incentive of 7% of annual charges for aggregate performance level of 85% for three years commencing from 1.4.2014 and for aggregate performance level of 90% from 1.4.2017. The incentive shall increase by 1% of annual charges for every 5% increase of performance level above

90%: Provided that incentive shall be reduced by 1% of annual charges on prorata basis for the every 3% decrease in performance level below 85%.

11. The parameter wise submissions made by the petitioner have been examined & dealt with in the succeeding paragraphs:

A. Reporting of Inter-connection metering error (Parameter-1):

12. The Petitioner has submitted that the meter readings are processed on weekly basis and an error could only be detected after processing the same and after going through the validation process. These are made available on web sites as per the recommendations in the Regulation. Therefore, the possible number of reports in a year is 52 which have been converted to percentage based on the actual reporting. Percentage performance has been proportionately converted to marks scored.

13. The Petitioner has submitted that as per Regulation 2.3.2 of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (Grid Code), RLDCs are responsible for meter data processing. Regulation 2.3.2 of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 is extracted below:

"2.3.2 The following are contemplated as exclusive functions of RLDCs

- (a) System operation and control including inter-state transfer of power, covering contingency analysis and operational planning on real time basis;
- (b) Scheduling / re-scheduling of generation;
- (c) System restoration following grid disturbances;
- (d) Metering and data collection;
- (e) Compiling and furnishing data pertaining to system operation;

- (f) Operation of regional UI pool account, regional reactive energy account and Congestion Charge Account, provided that such functions will be undertaken by any entity(ies) other than RLDCs if the Commission so directs.
- (g) Operation of ancillary services

Accordingly, problems related to meters including those installed at inter-regional/inter-national tie points are reported by RLDCs concerned to the utilities for corrective action.

14. The Petitioner has submitted that as per Regulation 6.4.22 of the Grid Code, computations on metering data are to be made available to the regional entities for checking/verifications for a period of 15 days. The Relevant extract is reproduced below:

".....All computations carried out by RLDC shall be open to all regional entities for checking and verifications for a period of 15 days. In case any mistake/omission is detected, the RLDC shall forthwith make a complete check and rectify the same...."

Accordingly, the data on inter-connection meter error is made available in Public Domain on regular basis for checking/verifications of regional entities. The Petitioner has submitted that information regarding inter-connection meter error is published on NERLDC website on weekly basis. Web-link for the same is given below.

http://nerldc.org/SEMERROR_DB.aspx

The petitioner has submitted that the discrepancy reports are discussed in detail in the different forum at RPC level.

15. The total weightage of parameter "reporting of Inter-connection metering error" is 10. The petitioner has submitted performance during the financial year 2016-17 and marks scored as under:

Performance during financial year 2016-17 (In %) A* =	100
Marks scored (In proportion of the percentage performance above)	10
*Formula for performance calculation	[No. of weekly reports issued /52 (Total no. of Weeks)]*100

16. We have considered the submission of the petitioner. Since, the petitioner has complied with the provisions of the Regulation 6.4.22 of the Grid Code, the claim of the petitioner for weightage factor for reporting of inter-connection meter error is allowed as 10 out of 10.

B. Reporting of Grid Incidents and Grid Disturbance (Parameter 2):

17. The petitioner has submitted that the incidences of grid disturbance/ incidences are being reported by the Regional Load Despatch Centres (RLDC) to National Load Despatch Centre (NLDC) on a monthly basis which are thereafter compiled and are independently verified by National Load Despatch Centre and reported to the Commission on a monthly basis as a part of monthly operational report issued by National Load Despatch Centre in accordance with the provisions of the Grid Code. As the reporting on Grid incidences and Grid disturbances is generated on monthly basis, target reports to be generated have been considered to be 12. Percentage performance has been measured based on the actual number of reports generated, which has been proportionately converted to marks scored. A copy of the report is made available on public domain on POSOCO website (<https://posoco.in/reports/monthly-reports/>).

18. The Petitioner has submitted that as against the total weightage of 10 for parameter reporting of grid incidents and grid disturbance, actual incidents of such events during the financial year 2016-17 and marks scored as under:

Grid Incidents and Grid Disturbance for financial year 2016-17			
Category	Count (Nos)	Recovery period (Hrs)	Loss of Energy (MUs)
GI-1	37	9:09:00	0.46
GI-2	76	10:18:11	1.14
GD-1	284	16:16:38	0.48
GD-2	4	1 : 52 :00	0.33
GD-3	0	0 : 00 :00	0.00
GD-4	1	0 : 37 :00	0.10
GD-5	1	2 : 12 :00	0.33
All	403	40:24:50	2.84

Performance during financial year 2016-17 (In %) * =	100
Marks scored(In proportion of the percentage performance above)	10
*Formula for performance calculation :	(No. of monthly reports issued /12) *100

21. We have considered the submissions of the Petitioner. Perusal of the above reveals that the Petitioner is reporting incident of grid disturbance each month to the Commission. As per our direction, the Petitioner has placed on record the details of reporting to the Commission. Accordingly, the claims of the Petitioner for weightage factor for reporting of grid incidents and grid disturbance is allowed for the purpose of incentive.

C: Average processing time of shut down request (Parameter 3):

22. The Petitioner has submitted that the shut-down process, uniform across all the RLDCs, has been discussed and approved at RPC level. Time allowed to NLDC and RLDCs for approval of the shut-down requests is 26 hours and 50 hours (including NLDC Time) respectively. This methodology has been devised considering primarily the planned

outages approved in the monthly OCC meetings of RPCs which are processed by RLDCs on D-3 basis (3-day ahead of actual day of outage) based on confirmation from the shutdown requesting agency and then prevailing grid conditions. The Petitioner has submitted that RLDCs after processing the shut down requests at regional level forward the list to NLDC for impact assessment at national level. After clearance from NLDC, the final list of cleared shut down requests is intimated by respective RLDCs to the requesting agencies on D-1 (i.e. one day ahead of the proposed date of outage). The Petitioner has submitted that the procedure to streamline the process of transmission outage coordination between SLDCs, RLDCs, NLDC, RPCs and Indenting Agencies was developed by NLDC in 2013 and was approved in OCC forum. As per the approved process, RLDC approves the shutdown requests of inter-State transmission lines and NLDC approves the shut down requests for inter-regional and all 765 KV transmission lines. Therefore, NERLDC consults NLDC for approval of outage requests. Relevant extracts of NRPC approved procedure is as under:

“7.1. Request for outages which are approved by OCC must be sent by the indenting agency of the transmission asset at least 3 days in advance to respective RLDC by 1000 hours as per Format II.(For example, if an outage is to be availed on say 10th of the month, the indenting agency would forward such requests to the concerned RLDC on 7th of the month by 1000 hours.)

7.3. Approval of Outage where Approving Authority is NLDC:

7.3.1. SRLDC shall forward the request for shutdown along with their consent and observation as per Format-III to NLDC/other concerned RLDCs with clear observations regarding possible constraints / contingency plan and consent including study results by 1000 hours of D-2 day. Other concerned RLDCs would forward their observations/ consent/reservations by 1600 hours of D-2.

7.3.2. NLDC shall approve the outage along with the clear precautions/measures to be observed during the shutdown and inform all concerned RLDCs.

7.3.3. The proposed outages shall be reviewed on day ahead basis depending upon the system conditions and the outages shall be approved/refused latest by 1200 Hrs of D-1 day. A suggested format for approval/refusal of outage is enclosed as Format IV.”

The petitioner has submitted that as per the formula used for calculating KPI score for this parameter, performance will be considered 100%, if the time taken for processing shut down requests is less than the prescribed time i.e. 26 hours for NLDC and 50 hours for RLDCs. If the time taken is more than the prescribed time, then the performance will come down in the same proportion e.g. if the time taken in processing the request is more than 5% of the prescribed time then the percentage performance will be 95%. Percentage performance has been proportionately converted to marks scored.

23. The Petitioner has submitted average processing time of shut down request during the financial year 2016-17 as under:

S.No.	Month	Total No of shutdown request in a month (B)	Total time (hrs) taken to approve the shutdown in a month(A)	Total time(hrs) taken to approve the shutdown in a month/Total No of shutdown requests in a month(C=A/B)
1	Apr'16	95	3045.00	32.05
2	May'16	113	3758.68	33.26
3	June'16	62	2038.06	32.87
4	July'16	66	1801.17	27.29
5	Aug'16	75	2623.72	34.98
6	Sep'16	81	3049.65	37.65
7	Oct'16	38	592.38	15.59
8	Nov'16	83	2882.92	34.73
9	Dec'16	63	2285.83	36.28
10	Jan'17	72	3029.47	42.08
11	Feb'17	77	2847.08	36.98
12	Mar'17	87	3202.08	36.81
	Total	912	31156.04	34.16

Figures under column 'A' represents cumulative hours month wise.

The petitioner has further submitted that the total time allowed for approval of shutdown requests to NLDC and RLDC are 26 hours and 50 (Including NLDC Time) Hours respectively.

24. The total weightage for the parameter "average processing time of shut down request" is 10. The Petitioner has submitted the performance calculated during FY 2016-17 and marks scored as under:

Performance during the financial year 2016-17 (In %)	100
Marks scored (In proportion of the percentage performance above)	10
*Formula for performance calculation	$IF((A-B*50)>0,(1-(A-B*50)/(B*50))*100,100)$

25. We have considered the submission of the Petitioner. As per Appendix VI of the Fees and Charges Regulations, weightage for average processing time of shut down request is allowed as 10 out of 10.

D. Availability of SCADA (Parameter 4):

26. The Petitioner has submitted that the SCADA system at NLDC acquires real time data from RLDCs through dedicated communication links either on ULDC communication network or through POWERGRID own communication network provided by the CTU. Similarly, the SCADA system at RLDC acquires real time data from Remote Terminal Unit (RTU)/ Sub-Station Automation System (SAS) for central sector stations and IPP stations installed in respective Region by using ULDC communication network (wherever it is not available, POWERGRID's own communication network is being used) and real time data from the various SLDCs of Region is fetched through ICCP protocol by using dedicated

communication links provided by POWERGRID ULDC with redundancy and communication network under POWERTEL department of POWER GRID. The petitioner also submitted that all critical systems are configured and operational in hot-standby mode so as to ensure availability of the corresponding system in case of any contingency. In addition to above, all Control Centres have their back-up control centre at different locations. The real-time data is updated simultaneously from source. In case, data at main control centre is not available, then back-up control centre is utilized to visualize the real-time data. Due to different level of hierarchy of back-ups it leads to minimum (almost zero) downtime of the system. As all these systems are under comprehensive maintenance with the OEM, records of the all the incidences are maintained which also has financial implication to the AMC vendor. The records for KPI are made in accordance with it. Depending upon the real time availability of the data, Month wise % age availability has been calculated. Then, %age average availability of 12 months has been proportionately converted to marks scored.

27. The total weightage for this parameter is 10. The Petitioner has submitted month wise percentage availability of SCADA has 100% for 11 months except for August, 2016. The availability of SCADA for the month of August 2016 is 99.54%. The marks claimed by the petitioner are as follows:

Performance during the financial year 2016-17*	100
Marks scored (In proportion of the percentage performance above)	9.996
* Average of 12 months	

28. We have considered the submission of the Petitioner. We have worked out the average of 12 months as $(100+ 100+ 100+ 100+ 99.54+ 100+ 100+ 100+ 100+ 100+ 100+ 100)/12=99.96$. Accordingly, the marks scored for availability of SCADA has been allowed as 9.996 out of 10.

E. Voltage Deviation Index (Parameter 5):

29. The petitioner has submitted that VDI is calculated in line with the methodology specified in Appendix-VI of CERC (Fee and Charges of Regional Load Despatch Centre and other related matters) Regulation), 2015. Voltage Deviation Index (VDI) of important substations is calculated on daily, weekly and monthly basis and same is intimated to utilities via daily, weekly and monthly reports. VDI for each substation is calculated as percentage of time the voltage was outside the IEGC range (380-420 kV at 400 kV, 728-800 kV at 765kV). For this purpose, data recorded by SCADA is used. The percentage of samples lying outside the IEGC specified range constitutes the VDI for the station. A sample calculation is shown below:

Table-1: Sample VDI calculation for a typical day at a 765kV substation in WR

Station	%age of time Voltage below 728kV	%age of time Voltage between 728kV & 800kV	%age of time Voltage above 800kV	Voltage deviation index (%age of time voltage is outside IEGC band)	Maximum Voltage(kV)	Minimum Voltage(kV)	Average Voltage(kV)
Agra	0.00%	100.00%	0.00%	0.00%	796	755	777

30. The Petitioner has submitted that Clause 2.2.4.6 of the NLDC Operating Procedure, 2016 provides the corrective actions to be taken in the event of high voltage and low voltage. The relevant extract of the Clause 2.2.4.6 of the NLDC Operating Procedure, 2016 is extracted as under:

"Following corrective measures shall be taken in the event of voltage going high /low:-

i) In the event of high voltage (when the bus voltage going above 410 kV), following specific steps would be taken by the respective grid substation/generating station at their own, unless specifically mentioned by NLDC/RLDC/SLDCs.

a. The bus reactor is switched in

b. The manually switchable capacitor banks is taken out

c. The switchable line/tertiary reactor or convertible line reactor (if the line kept open for High voltage wherever possible are taken in. Optimize the filter banks at HVDC terminal

e. All the generating units on bar shall absorb reactive power within the capability curve

f Operate synchronous condensers wherever available for VAR absorption

g. Operate hydro generator / gas turbine as synchronous condenser for VAR absorption wherever such facilities are available

h. Bring down power flow on HVDC terminals so that loading on parallel EHV AC network goes up, resulting in drop in voltage.

i. Open lightly loaded lines in consultation with RLDC/SLDC for ensuring security of the balanced network To the extent possible, it must be ensured that no loop of transmission lines is broken due to opening of lines to control the high voltage.

ii) In the event of low voltage (when the bus voltage going down below 390kV), following specific steps would be taken by the respective grid substation/generating station at their own, unless specifically mentioned by NLDC/RLDC/SLDCs.

(a) Close the lines which were opened to control high voltage in consultation with WRLDC.

(b) The bus reactor be switched out.

(c) The manually switchable capacitor banks be switched in

(d) The switchable line/tertiary reactor are taken out

(e) Optimize the filter banks at HVDC terminal

(f) All the generating units on bar shall generate reactive power within capability curve

(g) Operate synchronous condenser for VAR generation

(h) Operate hydro generator/gas turbine as synchronous condenser for VAR generation wherever such facilities are available

(i) increase power flow on HVDC terminal so that loading on parallel EHV network goes down resulting in rise in voltage....."

Accordingly, corrective actions are being taken in Real Time Grid Conditions, by WRLDC. Apart from these, based on feedback from RLDCs, region wise persistent High Voltage and Low Voltage issues are being reported in 'NLDC Operational Feedback' every quarter. As an example, the web link for NLDC operational feedback for the quarter July'16-September'16 is given below:

https://posoco.in/download/nldc-operational-feedback_oct_2016_q2_final/?wpdmdl=7213

Nodes in North Eastern region experiencing low/high voltage are listed on page no. 73-75 of the above quarterly 'Operational Feedback'. This information is being discussed in meeting of the Standing Committee Meeting (SCM) on Power System Planning with all the stake holders. Corrective action is also being discussed in Operational Coordination Committee (OCC) meetings of NERPC.

31. Vide Record of Proceedings for the hearing dated 5.7.2018, the Petitioner was directed to submit the details of No. of hours the voltage at all sub-stations of 400 kV and above and clarify whether these were out of range in a month. The Petitioner vide its affidavit dated 7.5.2018 has submitted that number of hours, the voltage remained out of the range stipulated in the Grid Code for all 12 months in the financial year 2016-17 (April 2016 to March 2017).The Petitioner has submitted that in compliance to the KPI-5 w.r.t the Appendix-VI of the Fees and Charges Regulations, NERLDC uploads the information regarding VDI on its website on daily, weekly and monthly basis as a part of its daily,

weekly and monthly reports. The Petitioner has submitted the relevant web links as under:

KPI-5 (VDI)	Web Link on NERLDC website
Daily VDI	http://www.nerlhc.in/DR_VDI.aspx
Weekly VDI	http://www.nerlhc.in/WR_VDI.aspx
Monthly VDI	http://www.nerlhc.in/MR_VDI.aspx

32. The total weightage for the parameter Voltage Deviation Index (VDI) is 10. The Petitioner has submitted the performance calculated during FY 2016-17 and marks scored as under:

Performance during financial year 2016-17*	100
Marks scored (In proportion of the percentage performance above)	10
* Formula for performance calculation	$\left[\left(\frac{\text{No. of daily reports issued}}{365(\text{Total no. of days in financial year 2016-17}) * 100} + \frac{\text{No. of weekly reports issued}}{52(\text{Total no. of weeks in financial year 2016-17}) * 100} + \frac{\text{No. of monthly reports issued}}{12 * 100} \right) \right] / 3$

33. We have considered the submission of the Petitioner. It is observed that intimation of VDI is given to utilities for corrective action through daily, weekly and monthly reports and there has been no default by the petitioner during the period 2016-17. Accordingly the weightage for Voltage Deviation Index (VDI) is considered as 10 out of 10.

F. Frequency Deviation Index (Parameter 6):

34. The Petitioner has submitted that FDI is calculated in line with the methodology specified in Appendix-VI of CERC (Fee and Charges of Regional Load Despatch Centre and other related matters) Regulation, 2015. FDI is calculated as percentage of time

frequency is outside IEGC band. Ten second synchrophasor used for calculation. The percentage of sample lying below 49.90Hz and above 50.05Hz together constitutes FDI.

The sample is shown below:

Date	Percentage of time frequency is			Frequency Deviation Index(FDI)	Average Frequency (Hz)
	<49.9 Hz	49.9-50.05 Hz	>50.05 Hz		
01-May-2017	3.36	73.47	23.17	26.53	50.00

The deviation indices are being reported on daily basis for the critical nodes along with weekly and monthly as per regulation. The possible no. of reports which could be generated (365 daily, 52 weekly, and 12 monthly) have been converted to KPI scores based on actual reporting.

35. The Petitioner vide Record of Proceeding for the hearing dated 5.7.2018 was directed to submit the details of number of hours the frequency was out of range in a month. The Petitioner vide its affidavit dated 7.5.2018 has submitted the details of number of hours the frequency remained out of the range as stipulated in the Grid Code for all 12 months in the financial year 2016-17 (April 2016 to March 2017). The Petitioner has submitted that in compliance to the KPI-6 w.r.t the Appendix-VI of the Fees and Charges Regulations, NERLDC uploads the information regarding FDI on its website on daily, weekly and monthly basis as a part of its daily, weekly and monthly reports for which the relevant web links are as under:

KPI-6 (FDI)	Web Link on NERLDC website
Daily FDI	http://www.nerldc.in/DR-FDI.aspx
Weekly FDI	http://www.nerldc.in/WR_FDI.aspx
Monthly FDI	http://www.nerldc.in/MR_FDI.aspx

36. The total weightage for the parameter "Frequency Deviation Index (FDI)" is 10. The Petitioner has submitted the performance calculated during FY 2016-17 and marks scored as under:

Performance during financial year 2016-17*	100
Marks scored (In proportion of the percentage performance above)	10
*Formula for performance calculation	$\left[\left(\frac{\text{No. of daily reports issued}}{365} \times 100 \right) + \left(\frac{\text{No. of weekly reports issued}}{52} \times 100 \right) + \left(\frac{\text{No. of monthly reports issued}}{12} \times 100 \right) \right] / 3$

37. We have considered the submission of the petitioner. It is observed that intimation of FDI is given to utilities for corrective action through daily, weekly and monthly reports and there has been no default by the petitioner during the period 2016-17. Accordingly the weightage for Frequency Deviation Index (FDI) is allowed as 10 out of 10.

G. Reporting of System Reliability (Parameter 7)

38. The Petitioner has submitted that deviation indices are being reported on daily basis for the critical nodes along with weekly and monthly as per the Fees and Charges Regulations. The Petitioner has submitted that the possible number of reports which could be generated (365 for daily, 52 for weekly and 12 for monthly) have been converted to KPI scores based on the actual reporting.

39. The total weightage for this parameter Reporting of System Reliability (RSR) is 10. The Petitioner has submitted the month-wise reports of system reliability to the commission on the following aspects:

- (a) Reporting of (N-1) violations (weightage X)
- (b) Reporting of ATC violations (weightage Y)
- (c) Reporting of Angle difference between important buses (weightage Z)

40. The petitioner has submitted that it has given intimation of RSR to utilities for corrective action through daily, weekly and monthly reports without any default during FY 2016-17.

41. The Commission in the instant petition vide RoP dated 11.04.2018 directed the petitioner to submit the following with regard to System Reliability:

- (i) % of times N-1 criteria was violated in the inter-regional corridors.
- (ii) % of times ATC violated on inter-regional corridors.
- (iii) % of time Angular difference on important buses was beyond permissible limit

In response, the petitioner has submitted the reply on dated 3.5.2018 with reference to the System Reliability, the percentage of times N-1 criteria was violated in the inter-regional corridors, the percentage of times ATC (i.e. Available Transfer Capability) was violated in the inter-regional corridors and the percentage of times the angular difference on important buses was beyond the permissible limits, is being reported by NRLDC on daily weekly and monthly basis. The relevant web links are given under:

- (i) % of times N-1 criteria was violated in the inter-regional corridors.

KPI-7	Web Link on NERLDC website
Daily	http://www.nerldc.in/DR_SR.aspx
Weekly	http://www.nerldc.in/WR_SR.aspx
Monthly	http://www.nerldc.in/MR_SR.aspx

(ii) % of times ATC violated on inter-regional corridors.

KPI-7	Web Link on NERLDC website
Daily	http://www.nerldc.in/DR_SR.aspx
Weekly	http://www.nerldc.in/WR_SR.aspx
Monthly	http://www.nerldc.in/MR_SR.aspx

(iii) % of time Angular difference on important buses was beyond permissible limit.

KPI-7	Web Link on NERLDC website
Daily	http://www.nerldc.in/DR_AD.aspx
Weekly	http://www.nerldc.in/WR_AD.aspx
Monthly	http://www.nerldc.in/MR_AD.aspx

42. The total weightage for the parameter "Reporting of System Reliability" is 10. The Petitioner has submitted the performance calculated during FY 2016-17 and marks scored as under:

Performance during FY 2016-17 of X, Y, Z (in %)	100%
*Formula	$\frac{(((\text{No. of daily reports issued}/365(\text{Total no. of days in FY2016-17})*100)+(\text{No. of weekly reports issued}/52(\text{Total no. of weeks in FY2016-17}))*100)+ (\text{No. of monthly reports issued}/12)*100)}{3}$
Marks scored (In proportion of the %age performance above)	10

*Formula	$(X+Y+Z)/3$
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43. We have considered the submission of the Petitioner. Reporting of System Reliability is being done by the Petitioner as per Appendix VI of the Fees and Charges Regulations. Accordingly, weightage claimed for reporting system reliability is allowed as 10 out of 10.

H. Availability of website (Parameter 8)

44. The Petitioner has submitted that different type of network monitoring tools are being deployed at different control centre to capture the outages of websites, some of those are PRTG, Trend Micro Anti-APT Deep Discover etc. This network management software generates the comprehensive reports. Similarly with the ISP service provider's user interface, user can see the availability of the ISP links which is commercially linked also. The petitioner also submitted that depending upon the availability data, month wise percentage availability of 12 months has been calculated.

45. The total weightage for the parameter "availability of website" is 10. The Petitioner has submitted the details of percentage of availability of website is 100% for all months.

The marks claimed by the petitioner is as follows:

Performance during financial year 2016-17*	100
Marks scored (In proportion of the percentage performance above)	10
* Average of 12 months	

46. We have considered the submission of the Petitioner. Since, the Petitioner is reporting availability of website as per Appendix VI of the Fees and Charges Regulations, the weightage claimed for availability of website is allowed as 10 out of 10.

I. Availability of Standby power supply (Parameter 9)

47. The Petitioner has submitted that powers to all the critical infrastructures are supplied through redundant UPS system and battery system. Inputs to these UPS are being supplied either through incoming feeders or DG sets (in case of failure of main inputs). These auxiliary systems are also under AMC and are being checked/tested on regular basis. The Petitioner has submitted that trial runs are carried out on weekly basis to check the DG set availability and daily records are being maintained at each of the locations. The corresponding data is used to calculate the availability of standby power supply. Depending upon the availability of 12 months has been proportionately converted to marks scored.

48. The total weightage for the parameter “availability of standby power supply” is 5. The Petitioner has submitted availability of standby power supply as under:

Performance during financial year 2016-17*	100
Marks scored (In proportion of the percentage performance above)	5
* Average of 12 months	

49. We have considered the submission of the Petitioner. Since, the Petitioner has claimed availability of standby power supply as per Appendix VI of the Fees and Charges Regulations, weightage claimed for availability of standby power supply is considered as 5 out of 5.

J. Variance of Capital expenditure (Parameter 10)

50. The Petitioner has submitted that the figures (Capital and Non-Capital) in the Fees and Charges Petitions for the control period 2014-19 have been considered as targets and the figures as per the balance sheet have been taken as actual performance. Limit of upto 10% variation has been considered for claiming 100% performance and for any additional 3% variation beyond initial 10%, performance shall decrease by 1% in line with the methodology of the incentive calculation prescribed in the Regulation 29(5) of the Fees and Charges Regulations. Percentage performance has been proportionately converted to marks scored.

The Petitioner has submitted the details of Variance of Capital Expenditure as under:

(Rs.in lakh)		
Capital Expenditure allowed by CERC (A)	Actual Expenditure incurred (B)	% Variation $C = ((A-B)/A) * 100$
300.00	1846	515.41

51. The petitioner has submitted that the allowed amount in FY 2015-16 of Rs. 2176.74 Lakhs consist of SCADA up-gradation and purchase of land for back-up NERLDC at Guwahati. The activities could not be completed in FY 2015-16 and percentage score was reduced accordingly in FY 2015-16. Due to appropriate action, both the works were completed in FY 2016-17 and as a result there has been large variation in the positive side. The petitioner requested that variation in FY 2016-17 may be condoned and requested for grant of 100% performance.

52. The Petitioner has submitted that the amount considered in the column A above is for the control period 2014-19 as per CERC order dated 26.12.2016 in petition No 240/TT/2015. The Petitioner has submitted that in Column B, value as per balance sheet for the year 2016-17 has been considered.

Performance during financial year 2016-17*	100
*Formula	IF(C>10,100-(C-10)/3,100)#
Marks Scored (in proportion of the percentage performance above)	5.00
*Average of 12 months	
# Up to 10% variation, performance is proposed to be considered 100% and for any additional 3% variation beyond entail 10%, performance shall decrease by 1% in line with the methodology of the incentive calculation prescribed in Regulation 29(5) of the Fees and Charges Regulations.	

53. The Petitioner has submitted that figures (capital and non-capital) indicating in the present petition has been considered as targets and the figure as per the balance sheet have been considered as actual performance. The Petitioner has submitted that limit of upto 10% variation has been considered for claiming 100% performance and for any additional 3% variation beyond initial 10%, performance shall decrease by 1% in line with the methodology of the incentive calculation prescribed in the Regulation 29(5) of the Fees and Charges Regulations. The Petitioner has submitted that percentage performance has been proportionately converted to marks scored.

54. We have considered the submission of the Petitioner. It is observed that the variation of capital expenditure is about 515%. As per formula mentioned at para no 50 and methodology mentioned at para 51, the performance of the petitioner is about 68.47% and the same is converted into marks, the petitioner is getting 3.42 marks. The weightage claimed for variance of capital expenditure is considered as 3.42 out of 5 in terms of Appendix VI of the Fees and Charges Regulations.

K. Variance of Non-Capital expenditure (Parameter 11)

55. The petitioner has submitted the details of variance of non-capital expenditure as under:

(Rs.in lakh)

Non Capital Expenditure allowed by CERC (A)	Actual Expenditure incurred (B)	% Variation $C = ((A-B)/A) * 100$
1500.83	1655.61	10.31

The petitioner has submitted that the amount considered in the column A above is as per the Fees and Charges Regulations for the control period 2014-19. The petitioner has submitted that in Column B, value as per balance sheet for the year 2014- 15 have been considered.

56. The total weightage for the parameter "variance of capital expenditure" is 5. The petitioner has submitted the performance during FY 2016-17 and marks scored as under:

Performance during financial year 2016-17*	99.90
*Formula	$IF(C > 10, 100 - (C - 10) / 3, 100)$#
Marks Scored (in proportion of the percentage performance above)	4.995
*Average of 12 months	
# Up to 10% variation, performance is proposed to be considered 100% and for any additional 3% variation beyond initial 10%, performance shall be decrease by 1% in line with the methodology of the incentive calculation prescribed in Regulation 29(5) of the RLDC Fees and Charges Regulations.	

57. The Commission vide RoP dated 11.4.2018 in the instant petition directed the petitioner to submit the financial statement pertaining to NLDC or RLDCs for the FY 2016-17. In response, the petitioner vide affidavit dated 3.5.2018 has submitted the copy of financial statement of NERLDC of FY 2016-17.

58. We have considered the submission of the Petitioner. Based on the percentage variance, the weightage claimed for variance of non-capital expenditure is allowed as 4.995 out of 5 in terms of Appendix VI of the Fees and Charges Regulations.

L. Percentage of certified employees (Parameter 12):

59. The Petitioner has submitted that the certification framework was introduced in 2011 based on recommendations of G.B. Pradhan Committee Report, which called for "Introduction of system of 'certification' of System Operators by an independent body such as the NPC/NPTI" and "Establishment of an institute for training of system operators.....National Power Training Institute (NPTI) may be entrusted with the responsibility of training initially."

57. Further it is submitted by Petitioner that a framework was developed for System Operators from the states and POSOCO for training and certification, with NPTI appointed as the certifying agency. The framework provides for Basic Level, Specialist Level and Management Level courses. Till date 5 Basic Level Certification and 4 specialists level certifications have been introduced (Two on Regulatory Framework in Power Sector and Two on Power System Reliability). The exams are held online on an all India basis. Basic Level Certification is a foundation level exam where all System Operators in the country can appear, whereas, Specialist level exams focus on a particular area of expertise. Validity of both certificates is three years, System Operators are required to have at least one certificate still in its validity period to be qualified as certified.

The term "Eligible"- Includes all Executive who are in Technical Functions posted in the respective RLDC/NLDC on the cut-off date (excluding HR, Finance, Legal, Company Secretariat, Executive Secretaries etc.).

The term "No. of Employees Certified"-is number of eligible employees who have at least one valid certificate (either basic level or specialist level) on the date specified.

58. The Petitioner has submitted that while evaluating KPI-12, the performance is considered 100% if the percentage of certified employees at th RLDC = 85%. When the

percentage of certified employees at the RLDC falls below 85%, their performance (KPI-12) shall decrease by 1% for every 3% decrease in the certification in line with the methodology of the incentive calculation prescribed in the Regulation 29(5) of the Fee and Charges Regulations, 2015. Percentage performance has been proportionately converted to marks scored.

59. The total weightage for the parameter “variance of percentage of certified employees” is 5. The Petitioner has submitted the details of variance of percentage of certified employees as under:

No. of Employees for Certification as on 31.3.2015(A)	No. of Employees for Certification as on 31.3.2015(B)	Percentage of Employees Certified as on 31.3.2015 (C=B/A*100)
38	26	68.42

Performance during financial year 2016-17*	100
*Formula	IF [C<85,(100-(85-C)/3),100]#
Marks Scored (in proportion of the percentage performance above)	4.956
*Average of 12 months	
# Up to 85% certification, performance is proposed to be considered 100% and for certification below 85%, performance shall decrease by 1% for every 3% decrease in the certification in line with the methodology of the incentive calculation prescribed in the Regulation 29(5) of the RLDC Fees and Charges Regulations.	

60. We have considered the submissions of the Petitioner. We have considered the submission of the Petitioner. Based on the percentage variation, the weightage claimed for percentage of certified employees is allowed as 4.83 out of 5 in terms of Appendix VI of the Fees and Charges Regulations.

We have considered the submission of the petitioner with regard to KPI. The Key Performance Indicators allowed as per the Assessment Table depicted in Appendix-V of the Fees and Charges Regulations as under:

Sl. No	Key Performance Indicators	Weightage	Petitioner claimed for financial year 2016-17	Allowed
1	Reporting of Interconnection meter error	10	10	10
2	Reporting of Grid Incidents and Grid Disturbance	10	10	10
3	Average processing time of shut down request	10	10	10
4	Availability of SCADA System	10	9.996	9.996
5	Voltage Deviation Index (VDI)	10	10	10
6	Frequency Deviation Index (FDI)	10	10	10
7	Reporting of System Reliability	10	10	10
8	Availability of Website	10	10	10
9	Availability of Standby Supply	5	5	5
10	Variance of Capital expenditure	5	5	3.42
11	Variance of Non Capital expenditure	5	4.995	4.995
12	Percentage of Certified Employee	5	4.724	4.724
	Total	100	99.715	98.135

61. Perusal of the above table reveals that the Petitioner has achieved 98.135% Key Performance Indicators out of 100%. Accordingly, the Petitioner is allowed to recover incentive of 8.627% of annual charges for the financial year 2016-17.

62. The Petition No. 80/MP/2018 is disposed of in terms of the above.

Sd/-
(Dr. M. K. Iyer)
Member

Sd/-
(A.K. Singhal)
Member

Sd/-
(P.K. Pujari)
Chairperson