

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 98/MP/2019

Coram

Shri P.K.Pujari, Chairperson

Dr. M. K. Iyer, Member

Shri I.S. Jha, Member

Date of Order: 27.6.2019

In the matter of

Submission under sub-section (4) of section 28 of Electricity Act 2003 read with Regulation 6 & Regulation 29 of Central Electricity Regulatory Commission (Fees & charges of Regional Load Despatch Centre and other related matters) Regulations, 2015 for approval of Performance Linked Incentive for ERLDC for the financial year 2017-18 with reference to ERLDC Charges for the control period 1.4.2014 to 31.3.2019.

And in the matter of

Eastern Regional Load Despatch Centre
14, Golf Club Road, Tollygunge, Kolkata - 33

....Petitioner

Vs

1. Chairman, Bihar State Holding Co. Ltd.,
Vidyut Bhavan, Bailey Road, Patna, Bihar-800021.
2. Chairman, Jharkhand Urja Vikash Nigam Limited,



Dhurwa Road, Ranchi, Jharkhand-834002.

3. Chairman, Damodar Valley Corporation,
DVC Tower, VIP Road, Kolkata, WB-700054.
4. Chairman, Grid Corporation of India Ltd,
Janpath, Bhubaneswar, Odisha-751022.
5. Secretary, Power Deptt., Govt. of Sikkim,
Kaji Road Sikkim Gangtok-731101.
6. Chairman, West Bengal State Electricity Distribution Corporation Limited,
Bidyut Bhavan, Saltlake, Kolkata WB-700091.
7. Executive Director, ERTS – I, Power Grid Corporation Limited,
Board Colony, Shastri Nagar, Patna-800023.
8. Addl. General Manager, NTPC Vidyut Vyapar Nigam Limited,
Lodhi Road New Delhi-110003.
9. The DGM(Commercial), Power Grid Corporation Of India Ltd.,
RHQ, ERTS-II, CF-17, Action Area-1C, New Town, Kolkata-700156, West Bengal.
10. General Manager, Farakka Super Thermal Power Plant-I&II,
NTPC Ltd., Farakka, WB-742236.
11. General Manager, Kahalgaon Super Thermal Power Plant-I NTPC Ltd,
Bhagalpur Bihar-813214.
12. General Manager, Kahalgaon Super Thermal Power Plant-II NTPC Ltd,
Bhagalpur Bihar-813214



13. Executive Director, Talcher Super Thermal Power Stn-I NTPC Ltd,
Nayapalli, Odisha-751012.
14. Chief Engineer (Elect), Teesta V HEP,
NHPC, Singtam, East Sikkim-737134.
15. Chief Engineer, Rangit Hydro Electric Project NHPC,
P.O. Rangit Nagar South Sikkim-737111.
16. Chairman, Damodar Valley Corporation DVC Tower,
VIP Road West Bengal Kolkata-700054.
17. General Manager, Farakka Super Thermal Power Plant-III,
NTPC Ltd., Farakka, WB-742236.
18. CEO, Maithon Power Limited MA-5 Gogna Colony,
P.O: Maithon, Dhanbad, Jharkhand-828027.
19. Addl. General Manager, National Thermal Power Corporation Limited,
BARH Thermal Power Station, Patna, Bihar-803213.
20. President & Director - Projects, GATI Infrastructure Pvt.Ltd,
268, Udyog Vihar, Phase-IV, Gurgaon, Haryana-122001.
21. DGM (Electrical), Adhunik Power & Natural Resource Limited
Village: Padampur, PS: Kandra Tata-Seraikela Road, Jharkhand-832105.
22. Addl. General Manager(Commercial), Talcher Solar PV, ER-II Headquarters, NTPC
Limited, 3rd Floor, OLIC Building, Plot No.: N-17/2, Nayapalli, Odissa
Bhubaneswar-751012.



23. GM (Power Sales & Regulatory), GMR Kamalanga Energy Ltd,
Plot No.-29, Satyanagar, Bhubaneswar, Odissa-751007.
24. Head Power & Sales, Jindal India Thermal Power Ltd.,
Plot No.12,Local Shopping Complex,Sector-B1,Vasant Kunj, New Delhi- 110070.
25. Advisor(Power), Ind-Barath Energy Utkal Ltd , Sahajbahal,
PO Cgarpali Barpali, Dist - Jharsuguda, Odisha-768211.
26. Head Commercial, Tata Power Trading Co. Ltd.,
C-43, Sec-62, UP Noida-201307.
27. Sr. General Manager (PP), Grid Corporation of India Ltd.,
Janpath, Orissa, Bhubaneswar-751022.
28. AGM ,Dans Energy Pvt. Ltd. 5th Floor, DLF Building No. 8,
Tower C, DLF Cyber City, Phase – II, Gurgaon- 122002, Haryana.
29. The General Manager(O&M), Bharatiya Rail Bijlee Company Ltd. Nabinagar,
Khera Police Station Dist.-Aurangabad, Bihar-824303.
30. Sr. Vice President(O&M), Teesta Urja Ltd. (Teesta -III HEP) Vijaya Building,
2nd Floor,17 Barakhamba Road New Delhi New Delhi-110001.
31. VP(Commercial), Sneha Kinetic Power ,roject Private Ltd,1366,
Road no. 45, Jubilee Hills, Hyderabad-500033, Telangana.
32. President –Technical, Shiga Energy Private Ltd.,
5th Floor, DLF Building No.8, Tower C, Phase-II, Gurgaon-122002,Haryana.
33. GM(C&RA),OPGC, Zone-A,7th Floor,



Fortuna Towers, Chandrashekharpur, Bhubaneswar-751023, Odisha.

34. Chairman, East North Interconnection Company Ltd.,
C-2, Mathura Road, New Delhi-110065.
35. Executive Director, ER-I, Power Grid Corporation (I) Ltd,
Board Colony, Shastri Nagar, Patna- 800023.
36. General Manager, Powerlinks Transmission Limited Vidyut Nagar,
Siliguri, West Bengal-734015.
37. Head- Asset Management/O&M, Purulia & Kharagpur Transmission Comp. Ltd,
634A-Tulip New Minal Residency, J.K Road Near Ayodhya Bypass Road, Bhopal-
462023.
38. Sr.Vice President, Teestavalley Power Transmission Ltd.,
Vijaya Building, 2nd Floor, 17 Barakhamba Road, New Delhi -110001.
39. General Manager, A-26/03, Mohan Cooperative Industrial Estate,
Mathura Road, New Delhi-110044.
40. Project Director, F-1 Mira Corporate Suites,
1&2 Ishwar Nagar, Okhla Crossing, Mathura Road, New Delhi—110065.

.....**Respondents**

For Petitioner: Shri Manas Das, ERLDC

For Respondents: ----



ORDER

The petitioner, Eastern Regional Despatch Centre (ERLDC), has filed the present petition under Section 28 (4) of Electricity Act, 2003 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 for ERLDC for the Financial year 2017-18 for the control period 1.4.2014 to 31.3.2019.

Background

2. The Petitioner, Eastern Region Load Despatch Centre (ERLDC) is a statutory body set up under Section 27 of the Electricity Act, 2003 and performs the functions specified under Section 28 of the Electricity Act, 2003.

3. In exercise of powers conferred under section 178 of the Electricity Act, 2003, the Central Electricity Regulatory Commission vide notification dated 18th May 2015 issued the Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015. The said regulations are applicable for determination of fees and charges of NLDC and RLDCs for the control period 2014-19.

4. As per clauses 29 (1) to 29 (3) of the Fees & Charges Regulations, 2015, the recovery of performance linked incentive by NLDC & RLDCs shall be based on the achievement of key performance indicators (KPIs) as specified in Appendix V or such other parameters as specified by the Commission.

5. As per clause 29(6) of the Fees & Charges Regulations, 2015, 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 & VI of the Regulations.



6. The Petitioner has submitted that as per methodology specified in Appendix - V of the Fees & Charges Regulations 2015, the KPI score for ERLDC for the year (FY 2017-18) ending 31.03.2018 has been computed as under:

Sl. No	Key Performance Indicators	Weightage	Previous Year (as allowed by CERC) 2016-17	Current Year (2017-18)
1	Reporting of Interconnection meter error	10	10.00	10.00
2	Reporting of Grid Incidents and Grid Disturbance	10	10.00	10.00
3	Average processing time of shut down request	10	10.00	10.00
4	Availability of SCADA System	10	9.998	10.00
5	Voltage Deviation Index (VDI)	10	10.00	10.00
6	Frequency Deviation Index (FDI)	10	10.00	10.00
7	Reporting of System Reliability	10	10.00	10.00
8	Availability of Website	10	9.99	10.00
9	Availability of Standby Supply	5	5.00	5.00
10	Variance of Capital expenditure	5	3.83	3.83
11	Variance of Non Capital expenditure	5	5	4.96
12	Percentage of Certified Employee	5	5	5.00
	Total	100	98.82	98.79

7. The Petitioner has submitted that as per the methodology provided in the Regulation 29(5) of the RLDC Fees and Charges Regulations 2015, NLDC/RLDC shall be allowed 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 comes at 8.759% (For 90-95% additional 1% and for 95% to 98.79% additional 0.759%) of the Annual charges for the year 2017-18.

8. The Petitioner has submitted that as per Regulation 29(5) of the RLDC Fees and Charges Regulations 2015, NLDC/RLDC is allowed only upto a maximum of 9% of annual charges even after 100% achievement is considered. The bracket of 7-9% was sufficient for meeting the PRP expenses of POSOCO prior to 3rd wage revision, implemented in CPSEs w.e.f. 1.1.2017. This amount is now insufficient to meet the present PRP kitty requirement due to implementation of 3rd wage revision. Accordingly, the POSOCO on behalf of all RLDCs and NLDC had submitted a petition No. 344/MP/2018 on 8th November 2018 before the Commission to revise the Performance Related Kitty to be recovered for distribution of Performance Related Pay. Therefore, this Commission may consider the increase in PRP Kitty.

9. The petitioner has filed the present petition with the following prayers:

- a). Approve the proposed performance linked incentive based on the KPIs computed by ERLDC for the year ending 31.03.2018, the KPI score given at and PRP percentage of Annual Charges of the year 2017-18.
- b). Allow the Applicant to recover the fund for PLI from the users for the year 2017-18 as approved by this Commission.
- c). Allow the increase in PRP kitty as prayed in petition No. 344/MP/2018 on 8th November 2018.
- d). Pass such other order as this Commission deems fit and appropriate in this case and in the interest of justice.



Submissions

10. The matter was heard on 23.4.2019 and the representative of the Petitioner submitted that the copies of the Petition have already been served on the Respondents. The Commission vide RoP dated 29.04.2019 directed Petitioner to explain the procedure for measurement of parameter of "Availability of SCADA". After hearing the representative of the Petitioner, the Commission reserved order in the petition.

11. In response, the petitioner vide affidavit dated 2.5.2019 has submitted as under:

Availability of SCADA (KPI-4)

SCADA systems installed in RLDCs and NLDC is collection of software and hardware modules which provides essential functions like (i) real time data reporting from field, (ii) real time data exchange between various Load Despatch Centers, (iii) Historical data archiving & retrieving, (iv) network analysis studies, (v) Grid dispatcher training, (vi) document management system, and (vii) MIS reporting. The SCADA system at NLDC acquires real time data from RLDCs through dedicated communication links either on communication network implemented through Unified Load Despatch & Communication Scheme (ULDC) or through POWERTEL's 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 through ULDC communication network (in case, link is not available , POWERTEL's communication network is used). Real time data from the various SLDCs of the region is fetched through ICCP protocol on dedicated communication links provided through ULDC network with redundancy and communication network under POWERTEL network of POWERGRID.

Main reasons of outages of real-time data are listed below:

1. Failure of critical SCADA servers (hardware level)
2. Failure of critical SCADA applications (software level)



3. Communication failure

Critical infrastructure of SCADA is redundant server and network level to ensure standby operation and availability in case of any contingency. In case, data at main control centre is not available, then back-up control centre is utilized to visualize the real time data.

SCADA systems are covered under long term maintenance contract by System Integrator/OEM having financial implications in case of outages even in the component level. The System Integrator need to attend the issues as per time lines defined in the maintenance contract, failing which a portion of the maintenance charges can be deducted as penalty measures. Records of all incidences are maintained along with resolution details. The measures for the maintenance contract have been kept stringent so that it does not affect the overall SCADA system availability to the GRID Operators. The record for KPI is generated in line with above philosophy.

The methodology followed for calculation of SCADA system availability.

Both main and back-up SCADA systems have two SCADA servers working in redundant mode with one of the servers in master role and other in standby role. Consequently, services of SCADA system is considered available when at least one of the redundant servers is up. In the event of failure of both the SCADA servers at Main control centre, monitoring of regional grid can be done through SCADA system of back-up. Accordingly, for the purpose of computation of SCADA availability, the status of main and standby SCADA servers at Main and Backup control centers is checked. If any one of the servers is working at any instant and real time SCADA data is available to the control room, the SCADA is considered to be available. The SCADA system at Main and Backup control centers is checked for healthiness on daily basis based on server logs and system alarms of SCADA system in Hardware and Software levels. Daily check on healthiness of SCADA system components such as Servers, Networks, and Processes etc. is made by the system integrator and kept in record.



Measurement & Computation of SCADA Availability

There are different levels of severities depending upon the criticality of the failures. Loss of SCADA system to control room is categorized as Severity 1. The severity matrix as per maintenance contract is given below:

Category	Definition
Severity 1 - Urgent	Complete system failure, severe system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact availability, performance or operational capability.
Severity 2 - Serious	Degradation of services or critical functions such as negatively impact system operations. Failure of any redundant system component such that the normal redundancy is lost. Non-availability of System Integrator's Man-power at Control Centre during working hours, non-availability of spares.
Severity 3 – Minor	Any other system defect, failure, or unexpected operation.
Severity 4 – General/Technical	Request for information, technical configuration assistance, "how to" guidance and enhancement requests.

If due to any fault/malfunctions real time grid operation get affected, down time is recorded for the period for which the fault / malfunction persist. For example, if both Main & Back up servers of SCADA system are down and Grid operators are not getting any data through SCADA system, the incident is considered with highest severity and contributes to unavailability. As communication networks are provided by the ULDC/POWERTEL/Third party lease lines. As such the data outage due to communication network is not considered under SCADA availability calculation. The downtime for all such incidents reported in an month are accumulated to arrive at the total system downtime in that month based on the status of servers stored in SCADA database, month wise percentage



availability in terms of hours & percentage calculated. The same is compiled for computation of monthly/ quarterly/ availability of the SCADA system.

Analysis and Decision

12. The relevant extract of the Regulation 29 (5) of the Fees and Charges Regulations, 2015, is given below:

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 pro-rata basis for the every 3% decrease on performance level below 85%.

13. We have considered the submissions of the petitioner. The parameter-wise submissions made by the petitioner have been examined in following paragraphs.

KPI-1: Reporting of Inter-connection metering error

14. 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. RLDCs are reporting the meter errors on weekly basis. These are made available on RLDC web sites as per the recommendations in the Regulations. Hence the possible no. 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. Accordingly, problems related to meters including those installed at inter- regional / inter-national tie points are being reported by RLDCs concerned to the utilities for corrective action. Accordingly, the processed meter data along with interconnection meter error is made available in public domain on regular basis for checking/verifications of regional entities. This information on interconnection meter error is published on the ERLDC website on a weekly basis



(Web-link <http://erldc.in/market-operation/metering-error/>). The discrepancy reports are discussed in detail in the different fora at RPC level. (Web-link: <http://erpc.gov.in/event-calendar/>).

15. The total weightage given for this parameter is 10. The petitioner has submitted the details as under:-

Performance during FY 2017-18(in %) A *	100
Marks Scored	10
*Formula for performance calculation:	(No. of weekly reports issued / 52 (Total no. of Weeks))*100
Documentary evidence: Record of weekly Reports on the Website	

16. We have considered the submission of the petitioner. The petitioner has complied with the provisions of the Regulation 6.4.22 of the Grid Code. As per Appendix VI of the RLDC Fees and Charges Regulations 2015, the weightage factor for reporting of inter-connection meter error is considered 10 out of 10.

KPI-2: Reporting of Grid Incidents and Grid Disturbance

17. The Petitioner has submitted that the Grid Incidents and Grid disturbances are reported by the RLDCs to NLDC on a monthly basis. The same are then compiled and independently verified by National Load Despatch Center. Afterwards the same is reported to the Commission on a monthly basis as a part of Monthly operational report issued by National Load Despatch Center in accordance to the Indian Electricity 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 also available in public domain on POSOCO website (<https://posoco.in/reports/monthly-reports/monthly-reports-2017-18/>).



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 are as under:

Grid Incidents and Grid Disturbance for FY 2017-18			
Category	Count(No's)	Recovery period (Hrs)	Loss of Energy (MUs)
GI-1	4	3:42:00	0.00
GI-2	13	28:18:00	0.00
GD-1	122	104:11:00	9.53
GD-2	0	0:00:00	0.00
GD-3	0	0:00:00	0.00
GD-4	0	0:00:00	0.00
GD-5	0	0:00:00	0.00
All	139	136:11:00	9.53

19. The petitioner has submitted performance-wise details as under:

Performance during FY 2017-18(in %) *	100%
Marks scored (in proportion of the percentage performance above)	10
*Formula for performance calculation :	(No. of weekly reports issued /12)*100

20. We have considered the submissions of the petitioner. Perusal of the above reveals that the petitioner is reporting incident of grid disturbance every month to the Commission. Accordingly, as per Appendix VI of the RLDC Fees and Charges Regulations, 2015 the weightage factor for reporting of grid incidents and grid disturbance is considered 10 out of 10.

KPI-3: Average processing time of shut down request (RLDC/NLDC)

21. The Petitioner has submitted that the shutdown process, uniform across all the RLDCs, has been discussed and approved at RPC level. Time allowed to NLDC for



approval of the shut-down requests is 26 Hours and RLDCs is 50 Hours (including NLDC Time). 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 & then prevailing grid conditions.

22. The Petitioner has submitted that the procedure to streamline the process of transmission outage coordination between SLDCs, RLDCs, NLDC and RPCs and Indenting Agencies was developed by NLDC in 2013 and approved in OCC fora. As per the approved process, RLDC approves the shutdown requests of inter-state transmission lines and NLDC approves the shutdown requests for inter- regional and all 765KV transmission lines. It may be noted 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).

23. As per above outage planning procedure, shutdown processing time for NLDC/RLDCs is as tabulated below:

Sl. No.	Activity	Day	Time
1	Request of shutdown from indenting agency to concerned RLDC.	D-3	1000 hrs
2	Forwarding request of shutdown requiring NLDC approval from RLDC to other concerned RLDCs and NLDC (along with the recommendations and study result)	D-2	1000 hrs
3	Comments of other RLDCs or NLDC	D-2	1600 hrs
4	Approval or Rejection of Request	D-1	1200 hrs

As per table above:



Shutdown Processing Time for NLDC is Calculated as: Sr.No.(4) - Sr.No.(2)= 26hrs
 Shutdown Processing Time for RLDC is Calculated as: Sr.No.(4) - Sr.No.(1)= 50hrs.

24. 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.

25. The total weightage for the parameter “average processing time of shut down” request is 10. The petitioner has submitted average processing time of shut down request during the financial year 2017-18 as under:

S.No.	Month	Total No of shutdown requests 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'17	95.00	2571.62	27.07
2	May'17	81.00	1868.11	23.06
3	June'17	79.00	1299.95	16.46
4	July'17	55.00	917.17	16.68
5	Aug'17	141.00	719.17	5.10
6	Sep'17	46.00	402.08	8.74
7	Oct'17	38.00	463.63	12.20
8	Nov'17	94.00	1756.35	18.68
9	Dec'17	126.00	2276.23	18.07
10	Jan'18	135.00	2830.43	20.97
11	Feb'18	123.00	3121.43	25.38



12	Mar'18	103.00	1063.28	10.32
	Total	1116.00	19289.46	17.28

Figures under column 'A' represents cumulative hour's month wise.

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

The formula for calculation of performance & performance calculated is as follows:

Performance during FY 2017-18(in %)*	100%
Marks scored (in proportion of the percentage performance above)	10
*Formula for performance calculation	$IF((A-B*50)>0,(1-(AB*50))/(B*50))*100, 100)$

27. We have considered the submission of the petitioner. Accordingly, as per Appendix VI of the RLDC Fees and Charges Regulations 2015, the weightage for average processing time of shut down request is considered 10 out of 10.

KPI-4: Availability of SCADA

28. 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 through ULDC communication network (In case, link is not available, POWERGRID's communication network is used). Real time data from the various SLDCs of the Region is fetched through ICCP protocol on dedicated communication links provided by POWERGRID ULDC with redundancy and communication network under POWERTEL department of POWERGRID.

Main reasons of outages of real-time data are listed below:



S. No.	Description	Remarks
1	Failure of critical Servers (hardware level)	Maintained by AMC vendor
2	Failure of critical Applications (software level)	Maintained by AMC vendor
3	Communication equipment failure	Provided and maintained by POWERGRID / Communication provider
4	Communication links failure	Provided and maintained by POWERGRID / Communication Provider

29. The Petitioner submitted that all critical systems are configured and operational in cold-standby mode so as to ensure availability of the corresponding system in case of any contingency. In addition to above, all Control Centers have their back-up control centre installed & operated at different locations (say ERLDC backup Control Centre is at NLDC, New Delhi). The real-time database is updated simultaneously from the master Control Centre. In case of any eventuality / site failure at main control centre, back-up control centre is utilized to visualize the real-time data for grid operation. Due to different level of hierarchy of back-ups, it leads to optimized (almost zero) downtime of the system. As all these systems are under comprehensive maintenance with the OEMs, records of the all the incidences are maintained and based on that, availability are being calculated. Low availability has financial implication to the AMC vendor. The records for KPI are prepared in accordance with the above details depending upon the real time availability of the data, Month wise percentage availability has been calculated. Then, percentage average availability of 12 months has been proportionately converted to marks scored.

30. The total weightage for this parameter is 10. The petitioner has submitted availability of SCADA during the financial year 2017-18 as under:



Availability of SCADA		
S. No.	Month	% Availability
1	April'17	100.00
2	May'17	100.00
3	June'17	100.00
4	July'17	100.00
5	August'17	100.00
6	September'17	100.00
7	October'17	100.00
8	November'17	100.00
9	December'17	100.00
10	January'18	100.00
11	February'18	100.00
12	March'18	100.00
	Average of 12 months	100.00

Performance during FY 2017-18*:	100%
Marks Scored (in proportion of the percentage performance above)	10.00
* Average of 12 months	

31. We have considered the submission of the petitioner. We have worked out the average of 12 months as 100. Accordingly, as per Appendix VI of the RLDC Fees and Charges Regulations 2015, the weightage for availability of SCADA is considered 10 out of 10.

KPI-5: Voltage Deviation Index (VDI)

32. The Petitioner has submitted that VDI is calculated in line with the methodology specified in Appendix VI of CERC (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015. Voltage deviation index of important substations is calculated on daily, weekly as well as monthly basis and same is intimated to utilities via daily, weekly and monthly reports. VDI for each important station is calculated as the percentage of time the voltage was outside the IEGC range



(380-420 kV at 400 kV level, 728-800 kV at 765 kV level). 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:

Station	%age of time Voltage below 728/380 kV	%age of time Voltage between 728/380 kV & 800/420 kV	%age of time Voltage above 800/420 kV	Voltage deviation index (%age of time voltage is outside IEGC band)	Maximum Voltage (kV)	Minimum Voltage (kV)
Ranchi New	0.00%	100.00%	0.00%	0.00%	792	769

Accordingly, Corrective actions are taken in Real Time Grid Conditions, by ERLDC at 400kV, 765kV & Inter-State level by opening /closing Shunt reactors, transmission lines etc.

33. The Petitioner has submitted that for voltage deviations taking place in / resulting from Inter-State system, ERLDC write regularly to the constituents/utilities and also discuss in the OCC meetings of ERPC. Apart from these, persistent High Voltage and Low Voltage are being reported in the NLDC Operational feedback every quarter. Link for NLDC operational feedback is <https://posoco.in/documents/operational-feedback-on-transmission-constraints/>. This information is being discussed in Standing Committee on Power System Planning of different regions with all the stake holders. Corrective action is also being discussed in standing committee meetings and OCC meetings.

34. The Petitioner has submitted that at ERLDC, reporting of VDI for important 400 kV and above substation was considered for KPI-5 for 2017-18. However, VDI for all 400kV and above substations is calculated on daily, weekly and monthly basis and are available at following link <http://erldc.in/mis-reports/vdi-daily/>; <http://erldc.in/mis->



[reports/vdi-weekly/](#) and <http://erlhc.in/mis-reports/vdi-monthly/>.

35. The petitioner has submitted Voltage Deviation Index (VDI) for 72 important substations in the country.

S. No.	Name of the 400/765 kV substation	S. No.	Name of the 400/765 kV substation
A	B	A	B
1.	765 kV Angul	37.	400kV Sterlite
2.	765 kV Jhars	38.	400kV Subhasgram
3.	765kV Nranchi	39.	400kV Talcher
4.	765kV Gaya	40.	400kV Teesta_V
5.	765kV Sasaram	41.	400kV Talcher_HVDC
6.	400kV Angul	42.	400kV Darbhanga_
7.	400kV Jhars	43.	400kV Dikchu
8.	400kV Nranchi	44.	400kV IBEUL
9.	400kV Gaya	45.	400kV Chandwa
10.	400kV Sasaram	46.	400kV Chaibasa
11.	400kV APNRL	47.	400kV Bokaro_a
12.	400kV Baharampur	48.	400kV DSTPS_DV
13.	400kV Banka	49.	400kV Koderma_DV
14.	400kV Barh	50.	400kV Mejia_B_DV_
15.	400kV Biharshariff	51.	400kV Raghunathpur_DV
16.	400kV Bolangir	52.	400kV TISCO_DV_
17.	400kV Durgapur	53.	Duburi(NEW)_GR
18.	400kV Farakka	54.	400kV GMR_GR
19.	400kV Indravati	55.	400kV Indravati_GR
20.	400kV Jamshedpur	56.	400kV Arambag_WB
21.	400kV Jeypore	57.	400kV Bakreswar_WB
22.	400kV JITPL	58.	400kV Jeerat_WB
23.	400kV Kahalgaon	59.	400kV Kolaghat_TP_WB
24.	400kV Kalabadia	60.	400kV PPSP_WB
25.	400kV Keonjhor	61.	400kV Sagardighi_WB
26.	400kV Maithon	62.	400kV Meeramundali_GR
27.	400kV Malda	63.	400kV Mendhasal_GR
28.	400kV MTHRB	64.	400kV Bidhannagar_WB
29.	400kV Muzaffarpur	65.	400kV Haldia_WB
30.	400kV Patna	66.	400kV Alipurduar
31.	400kV Purnea_New	67.	400kV Kishanganj



32.	400kV Ranchi	68.	400kV Pandiabili
33.	400kV Rangpo	69.	400kV Gokarna_WB_
34.	400kV Rengali	70.	400kV Nabinagar
35.	400kV Rourkela	71.	400kV Lakhisarai
36.	400kV Binaguri	72.	400kV Kharagpur_WB

36. The total weightage for the parameter Voltage Deviation Index (VDI) is 10. Petitioner has submitted the formula for measurement of performance & performance calculated as under:

Performance during FY 2017-18*	100%
Marks scored (in proportion of the percentage performance above)	10
* Formula for performance calculation	$((\text{No. of daily reports issued} / 364 (\text{Total no. of days in FY 2017-18})) * 100) + (\text{No. of weekly reports issued} / 52 (\text{Total no. of weeks in FY 2017-18})) * 100 + (\text{No. of monthly reports issued} / 12) * 100) / 3$

37. 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. Accordingly, as per Appendix VI of the RLDC Fees and Charges Regulations 2015, the weightage for Voltage Deviation Index (VDI) is considered 10 out of 10.

KPI-6: Frequency Deviation Index (FDI)

38. The Petitioner has submitted that FDI is calculated in line with the methodology specified in Appendix VI of CERC (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2015. FDI is calculated as the percentage of time frequency is outside IEGC band. Ten second synchrophasor data is used for the calculation. The percentage of samples lying below 49.9 Hz and above 50.05 Hz together constitute FDI.

The sample is shown below:



Date	Percentage of time frequency is			Freq Deviation Index (FDI)	Average Frequency (Hz)
	<49.9 Hz	49.9 - 50.05Hz	>50.05 Hz		
01-05-17	13.16	77.05	9.79	22.95	49.97

39. The Petitioner has submitted that 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 for daily, 52 for weekly and 12 for monthly) has been converted to KPI scores based on the actual reporting. ERLDC uploads the information on Frequency Deviation Index (FDI) on website in daily, weekly and monthly reports. The relevant web links are available as follows- <https://erldc.in/mis-reports/daily-ppsp-report/>; <https://erldc.in/mis-reports/weeklyreports/> and <https://erldc.in/mis-reports/system-reliability-indices/>.

40. The total weightage for the parameter Frequency Deviation Index (FDI) is 10. The petitioner has submitted month-wise FDI during 2017-18 and submitted the performance as under:

Performance during FY 2017-18 (in %)*	100
Marks Scored	10.00
*Formula for performance calculation:	$((\text{No. of daily reports issued}/365(\text{Total no. of days in FY 2017-18})) * 100) + (\text{No. of weekly reports issued}/52(\text{Total no. of weeks in FY 2017-18})) * 100 + (\text{No. of monthly reports issued}/12 * 100) / 3$

41. 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. Accordingly, as per Appendix VI of the RLDC Fees and Charges Regulations 2015, the weightage for Frequency Deviation Index (FDI) is considered 10 out of 10.

KPI-7: Reporting of System Reliability



42. The Petitioner has submitted that 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 for daily, 52 for weekly and 12 for monthly) has been converted to KPI scores based on the actual reporting. With reference to the System Reliability, the percentage of times N-1 criteria (X) (i.e. Total Transfer Capability) was violated in the inter-regional corridors, ATC violation (Y) and Angular difference (Z) between important buses are being reported by ERLDC on daily, weekly and monthly basis. The relevant web links is as follows <https://erldc.in/mis-reports/system-reliability-indices/>.

43. 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)

44. The total weightage for the parameter System Reliability is 10. The petitioner has submitted month-wise FDI during 2017-18 and submitted the performance as under:

Performance during FY 2017-18*(in %)	100%
Marks scored (in proportion of the percentage performance above)	10
*Formula	$(X+Y+Z)/3$

X, Y, Z	100
*Formula	$((\text{No. of daily reports issued}/365(\text{Total no. of days in FY2016-17})*100)+(\text{No. of weekly reports issued} /52(\text{Total no. of weeks in FY2016-17}))*100)+ (\text{No. of monthly reports issued} /12)*100)/3$

45. We have considered the submission of the petitioner. We observe that petitioner



hosted daily, weekly & monthly reports on its website. Accordingly, as per Appendix VI of the RLDC Fees and Charges Regulations 2015, the weightage claimed for reporting system reliability is allowed as 10 out of 10.

KPI-8: Availability of website

46. The petitioner has submitted that different type of network monitoring tools have been deployed at different control centre to capture the outages of websites, some of those are PRTG, Trend Micro Anti-APT Deep Discovery 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. Depending upon the availability data, Month wise percentage availability has been calculated. Then, percentage average availability of 12 months has been proportionately converted to marks scored.

47. The total weightage for the parameter "availability of website" is 10. The petitioner has submitted the percentage of availability of website as 99.99% for all months of the year 2017-18.

48. We have considered the submissions of the petitioner. The weightage claimed for availability of website is allowed as 9.99 out of 10.

KPI-9: Availability of Standby Power Supply

49. 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. Trial runs are carried on weekly basis to check the DG set availability. 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 data, month wise percentage availability has been calculated. Then, percentage average availability of 12 months has been proportionately converted to



marks scored.

50. The Petitioner has submitted that availability of back-up Power Supply depends on the following sub systems (a) availability of UPS/Battery back-up, and (b) availability of DG set. It is submitted that in case main power supply fails and the system does not get any power supply, the duration shall be considered as Back Supply Failure. Failure of the above two sub systems is monitored & logged on daily basis. Availability of the back-up power supply is calculated on the basis of total failure hours during the calendar month. Percentage Monthly Availability = (Total hours during the month-Total failure hours of standby supply)/Total hours during the month x 100. Annual KPI shall be calculated on the basis of monthly availability.

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

Performance during FY 2017-18*	100
Marks scored (in proportion of the percentage performance above)	5
* Average of 12 months	

52. We have considered the submission of the petitioner. Keeping in view 100% availability of standby supply submitted by petitioner, the weightage claimed for availability of Standby power supply is considered 5 out of 5.

KPI 10: Variance of Capital expenditure

53. The total weightage for the parameter “Variance of capital expenditure” is 5. The petitioner has submitted the details of Variance of Capital Expenditure as under:

(Figures in Rs. lakh)

Capital Expenditure allowed by CERC (A)	Actual Expenditure incurred (B)	% Variation $C=ABS((A-B)/A)*100$
128.92	232.23	80.13



54. 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 2017- 18 have been considered. The petitioner has submitted the performance as under:

Performance during FY 2017-18*:	76.62
Formula	IF(C>10, 100-(C-10)/3,100)#
Marks Scored (in proportion of the percentage performance above)	3.83
* Average of 12 months	
#Upto 10% variation, performance is proposed to be considered 100% 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 RLDC Fees and Charges Regulations 2015	

55. We have considered the submission of the petitioner. The weightage claimed for variance of capital expenditure is considered 3.83 out of 5.

KPI 11: Variance of Non-Capital expenditure

56. The total weightage for the parameter “variance of non-capital expenditure” is 5. The petitioner has submitted the details of variance of non-capital expenditure as under:

(Figures in Rs. lakh)

Capital Expenditure allowed by CERC (A)	Actual Expenditure incurred (B)	% Variation $C=ABS((A-B)/A)*100$
2347.92	2633.58	12.17

57. The petitioner has submitted that in Non-Capital Expenditure, HR Expenses & O&M Expenses have been considered. In column A, figures as per the RLDCs Fees and Charges Orders by CERC for the control period 2014-19 have been considered. In Column B, value as per Balance Sheet of FY 2017-18 has been considered. The Petitioner has submitted the performance as under:



Performance during FY 2017-18*:	99.28
Formula	$IF(C > 10, 100 - (C - 10) / 3, 100) \#$
Marks Scored (in proportion of the %age performance above)	4.96
* Average of 12 months	
#Upto 10% variation, performance is proposed to be considered 100% 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 RLDC Fees and Charges Regulations 2015	

58. We have considered the submission of the petitioner. The weightage claimed for variance of non-capital expenditure is allowed as 4.96 out of 5.

KPI 12: Percentage of certified employees

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 a 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) entrusted with the responsibility of training initially”. Accordingly, 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 six Basic Level certification and five specialist level certifications have been conducted (Two on Regulatory Framework in Power Sector and Two on Power System Reliability and one on Power System Logistics). 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.

(a) “Eligible”- Includes all Executives 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.).

- (b) “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.

60. The petitioner has submitted that performance is considered 100% for certification level of 85% and above, and it shall decrease by 1% for every 3 % decrease in the certification level below 85%, in line with the methodology of the incentive calculation prescribed in the Regulation 29(5) of the RLDC Fees and Charges Regulations 2015. Percentage performance has been converted proportionately to marks scored.

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

Name of RLDC	ERLDC	
No. of Eligible Employees for Certification as on 31.3.2017 (A)	No. of Employees Certified as on 31.3.2017 (B)	Percentage of Employees Certified as on 31.3.2017 $C=B/A*100$
46	45	97.83%
Performance during FY 2017-18*:	100%	
* Formula	$IF(C<85, (100-(85-C)/3),100)\#$	
Marks Scored (in proportion of the percentage performance above)	5.0	
* Average of 12 months		
# Upto 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 2015		



62. We have considered the submission of the petitioner. The weightage claimed for percentage of certified employees is allowed as 5 out of 5.

63. We have considered the submission of the petitioner with regard to KPIs as above. The Key Performance Indicators allowed as per the Assessment Table in Appendix-V of the RLDC Fees and Charges Regulations, 2015 are as under:

Sl. No	Key Performance Indicators	Weightage	Claimed for (2017-18)	Allowed for (2017-18)
1	Reporting of Interconnection meter error	10	10.00	10.00
2	Reporting of Grid Incidents and Grid Disturbance	10	10.00	10.00
3	Average processing time of shut down request	10	10.00	10.00
4	Availability of SCADA System	10	10.00	10.00
5	Voltage Deviation Index (VDI)	10	10.00	10.00
6	Frequency Deviation Index (FDI)	10	10.00	10.00
7	Reporting of System Reliability	10	10.00	10.00
8	Availability of Website	10	10.00	9.99
9	Availability of Standby Supply	5	5.00	5.00
10	Variance of Capital expenditure	5	3.83	3.83
11	Variance of Non Capital expenditure	5	4.96	4.96
12	Percentage of Certified Employee	5	5.00	5.00
	Total	100	98.79	98.78

64. Perusal of the above table reveals that the Petitioner has achieved 98.78% Key Performance Indicators out of 100%. Further, the Commission in its order dated 10.06.2019 in Petition No. 344/MP/2018 has provided as under:



62.

.....in exercise of provisions of "Power to Relax" under Regulation 35 of Fees and Charges Regulations, 2015 we hereby relax Regulation 29(5) of Fees and Charges Regulations, 2015 and direct that RLDCs or NLDC, as the case may be, shall be allowed to recover incentive of 15% of annual charges post implementation of pay revision w.e.f 1.1.2017 subject to ceiling as per DPE Guidelines in place of 7%, keeping other provisions of Regulation 29(5) same. In case of shortfall as per DPE Guideline, the balance amount shall be paid from the LDCD fund

65. In view of the above, the petitioner is allowed to recover incentive as 16.756% of annual charges for the financial year 2017-18 subject to ceiling as per DPE Guidelines. In case of shortfall as per DPE Guidelines, the balance amount shall be paid from the LDCD fund.

66. Petition No. 98/MP/2019 is disposed of in terms of above.

Sd/-
(I.S. Jha)
Member

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

Sd/-
(P.K. Pujari)
Chairperson

