



**THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION
LUCKNOW**

Petition No. 2132 of 2024

QUORUM

Hon'ble Shri Arvind Kumar, Chairman

Hon'ble Shri Sanjay Kumar Singh, Member

IN THE MATTER OF

Petition under Section 86(1)(k) of the Electricity Act, 2003 read with Regulation 7.4 and 7.5 of UPERC (Power System Development Fund) Regulations, 2023 and Regulation 15 of UPERC (Conduct of Business of Regulations), 2019 for approval of the disbursement of fund for Upgradation of on-site IT data center (DC Lucknow and DR-Modipuram, Meerut) established for website (www.upsldc.org) and the Energy Accounting and Settlement System application for UPSLDC.

AND

IN THE MATTER OF

U P State Load Despatch Centre Limited (UPSLDC)

Phase-II, Vibhuti Khand, Gomti Nagar

Lucknow, Uttar Pradesh-226010.

..... Petitioner

THE FOLLOWING WAS PRESENT

1. Sh. Divyanshu Bhatt, Advocate, Petitioner
2. Sh. Suresh Chandra, CE, UPSLDC
3. Sh. Vivek Martoliya, SE, UPSLDC
4. Sh. S.D. Misra, EE, UPSLDC
5. Sh. Shashank Singh, EE, UPSLDC
6. Sh. Badshah Hussain Rizvi, EE, UPSLDC
7. Sh. Swapnil Singh, AE, UPSLDC

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ORDER

(DATE OF HEARING: 05.11.2024)

1. The instant Petition is filed under Section 86(1)(k) of the Electricity Act, 2003 ("Act") read with Regulation 7.4 and 7.5 of UPERC (Power System Development Fund) Regulations, 2023 and Regulation 15 of UPERC (Conduct of Business of Regulations), 2019 for approval of the disbursement of fund for Upgradation of on-site IT data center (DC Lucknow and DR-Modipuram, Meerut) established for the Energy Accounting and Settlement System ("EASS) application and website for UPSLDC. The Prayers of the Petitioner are as follows:
 - (a) Admit and take the amended Petition on record; and
 - (b) Approve the proposal submitted by UPSLDC, as Nodal Agency, in the captioned petition, and issue necessary directions under Regulation 3.3 of PSDF Regulation to decide/prescribe, on the basis of the proposal provided in the petition, the minimum amounts to be maintained in respective accounts under clauses (a) to (c) of Regulation 3.1 of PSDF Regulations before transfer to the credit of PSDF;
 - (c) Approve the Total Project Cost of Rs. 37.82 Cr. as grant under Regulation 7.4 and 7.5 of PSDF Regulation to be granted to UPSLDC from the PSDF account as the project entity for the upgradation of on-site IT data center (DC Lucknow and DR-Modipuram, Meerut) established for website (www.upsldc.org) and the EASS application;
 - (d) Pass such orders that the Commission deems fit.

Brief of the Petition

2. UPSLDC has submitted an amended Petition dated 04.11.2024 in compliance with the Commission's directive issued vide Order dated 16.10.2024. The brief of the same is listed subsequently.
3. UPSLDC being Nodal Agency under PSDF has sought approval of disbursement of funds for upgradation of on-site IT data center (Data Centre Lucknow and DR-Modipuram, Meerut) established for UPSLDC's website and the

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EASS application amounting to Rs. 37.82 Crores. The brief historical background of the same is as follows:

- i. On-premise Data Center (DC) was setup of hardware and associated network infrastructure at UPSLDC Lucknow in 2010.
 - ii. The DC hosts the Application Software for Scheduling and Energy Accounting Systems.
 - iii. In 2016, this DC setup was upgraded by adding new hardware and associated components and a Disaster Recovery Center ("DR") was set up in Modipuram Meerut to host the new EASS developed by M/S PWC.
 - iv. Over the past 8 years, EASS system has been operational and serving stakeholders, such as UPPTCL, UPPCL, UPRVUNL, conventional and RE generating companies, Private Discom, open access consumers, and traders. However, now the IT DC is in need of urgent upgradation.
 - v. EASS application and website are used for Grid Management Tasks such as energy scheduling, energy accounting, DSM settlement, open access transaction management, outage management and data sharing APIs.
4. CEA Guidelines for Cyber Security in Power Sector 2021 ("CEA Guidelines 2021") provides for phasing out of Legacy System according to which IT systems equipment shall be phased out after completion of the useful life of the equipment.

Article 7 of the CEA Guidelines 2021 necessitates upgrading the DC and DR Setup as the same fall under Critical Information Infrastructure. The relevant extract of Guidelines is being reproduced below:

"Article 7 Phasing out Legacy System

- (a) *As the life cycle of the Power System Equipment/System is longer than that of It Systems deployed therein, the Responsible Entity shall ensure that all IT technologies in the Power System Equipment/System should have the ability to be upgraded.*
- (b) *The Responsible Entity shall ensure that the Information Security Division shall draw the list of all communicable equipment/systems*

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nearing end life or are left without support from OEM. Thereafter CISO shall identify equipment systems to be phased out from the list drawn, firm up their replacement plan and put up the replacement plan for approval before the Board of Directors."

5. The DC & DR hardware and network equipment purchased in 2016 are now out of OEM support and require upgradation. In the absence of OEM support, any hardware failure may induce non-availability of the critical applications thereby hampering Grid Management.
6. Moreover, in July 2022 UPSLDC was declared as a Critical Information Infrastructure by NCIIPC and the U.P. State Govt. The cyber security guidelines for Critical Information Infrastructure necessitate upgrading the DC & DR Setup.
7. A brief summary of the project proposal for Upgradation of their IT Data Center and Disaster Recovery Center for Funding of amount up to Rs 37.82 Crores is being outlined below for consideration of the Commission:

Sr.No.	Name of Project	Details of Project
i.	Project Cost Estimate given by entity	Rs. 37,82,24,870.18 (Including GST)
ii.	Project Cost Estimate accepted by the Monitoring Committee	Rs. 37,82,24,870.18 (Including GST)
iii.	Project Duration	Commissioning 3 Months & Operations 60 Months
iv.	Category of funding (Regulation: 4 of the UPERC PSDF Regulations, 2023.	4.1(d) Grid Management
v.	Total grant recommended by the Monitoring Committee from PSDF	Total Project Cost: Rs. 37,82,24,870.18 (Including GST) CAPEX : Rs. 32,44,52,270.18 O&M : Rs. 5,37,72,600/-

The timeline of completion of the project is as follows:

Timeline of the Project / Scheme / Activity	
Duration of Project (in Months)	3 months + 60 Months
Likely Start Date	January, 2025
Likely Completion Date	March, 2029

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prestigious agency to ensure quality and completeness of system delivery.

- Monitoring Committee recommended UPSLDC's DC and DR upgradation project proposal for PSDF funding to the tune of Rs. 37.82 Cr.
- The Monitoring Committee directed the Nodal Agency to submit the project before the Commission for final approval.

11. Further, the Commission vide Order dated 16.10.2024, in this Petition, had directed the Petitioner as follows:

- (a) Open PSDF account.
- (b) Amend Petition to take directions of the Commission on minimum amounts to be maintained in respective accounts under clauses (a) to (c) of Regulation 3.1 before transfer to the credit of PSDF.
- (c) Submit its response on the queries asked by the Commission vide letter dated 27.09.2024.
- (d) Provide justification that how the proposed scheme in the Petition complements the objectives of the PSDF Regulations for funding/ utilization of PSDF fund.
- (e) Submit the status/statements of State Deviation Pool Account and State Reactive Energy Charges Account as on 30.09.2024.

12. The Petitioner, in its amended Petition, has submitted its response to the information sought by the Commission vide Order dated 16.10.2024, which is dealt subsequently.

13. Regarding opening of PSDF account – The Petitioner has submitted that the Power System Development Fund (PSDF) account has been duly opened on 29.10.2024 by UPSLDC, and as of present, the balance of said account stands at nil.

14. Regarding submission of response on the queries asked by the Commission vide letter dated 27.09.2024, the Petitioner, in its amended petition, has submitted query wise response, which is summarized as below:

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Query No.1: The initial expenditure incurred on setup of IT Data Centre (DC Lucknow and DR Modipuram, Meerut) established for EASS application and website. Further provide the details of source of funding.

Reply: The initial setup of IT system was implemented in year 2014 with expenditure of Rs 28.07 lakhs. Initial setup was installed at DC (Location- Lucknow) only for simple Scheduling Application.

Query No.2: The expenditure incurred on previous upgradation of IT Data Centre (DC Lucknow and DR Modipuram, Meerut) established for EASS application and website. Further provide the details of source of funding.

Reply: The previous upgradation of IT Data Centre (DC Lucknow and DR Modipuram, Meerut) established for EASS application and website was carried out in year 2017 with expenditure of Rs. 3.48 crore. The existing EASS software developer firm, M/s PwC, had prepared specification and design of this setup. It was implemented by UPDESCO. The existing EASS application and Website are hosted on this setup. The source of funding of the upgradation was internal resources (IR Fund) of UPPTCL.

Query No.3: Provide justification of how the cost has been increased from Rs. 25 Cr. as projected in Business Plan Petition to Rs. 37 Cr.

Reply: The provision of Rs 25 Crore was proposed for upgradation in Business plan of FY 2022-23 and 2023-24 based on the in house estimate and design of hardware/software items procured for upgradation. The estimate mentioned in Detailed Project Report has been taken after design and specification prepared by M/s PwC and budgetary quotation taken from Government agency UPDESCO and it has been vetted by IIT Kanpur. Hardware increased due to compliance of latest cyber security policies and ISO 270001 requirement, IT rules for protected system released by Ministry of Electronics and Information Technology ("Meity").

Query No.4: Provide details of PSDF account and how much amount is maintained in the same as on 01.09.2024.

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Reply: UPSLDC in compliance of the directions passed by the Commission has opened a Government Current Account on 29.10.2024 with HDFC Bank. The current available balance in the account is zero.

Query No.5: Provide a brief note clearly outlining the scope and objectives of the proposed project/scheme. It should also include detailed justification supported by technical studies along with cost benefit analysis and possible phasing of implementation and other relevant details.

Reply:

A) Comprehensive Infrastructure Upgrade: The primary objective of the project is to upgrade the end of life/support hardware/software of IT Data Centre (DC) infrastructure at UPSLDC Lucknow, and the Disaster Recovery (DR) Centre at Modipuram Meerut, to ensure that critical applications like EASS continue to operate with maximum reliability and availability.

B) Enhanced Cyber Security: The proposed project focuses on upgrading the UPSLDC Data Centre (DC) and Disaster Recovery (DR) Centre to align with the latest cyber security mandates issued by the Ministry of Power, NCIIPC, CERT-In, and the CEA. The project will enhance the overall security posture of the EASS, protecting critical infrastructure from threat actors. This includes implementing multiple security layers, such as internal and external firewalls, advanced antivirus solutions, and network segmentation into militarized and de-militarized zones.

C) Improved Business Continuity: The DC and DR centres will be configured to provide high availability and live disaster recovery capabilities, ensuring that the system can function uninterrupted, even in the event of hardware failure or cyber threats

D) Regulatory and Market Operations Compliance: The upgraded system will support scheduling, open access management, energy accounting, and DSM billing for the state's power sector, while also meeting upcoming regulatory requirements, including Discom-wise energy accounting and resource adequacy reporting.

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Technical Justification:

A. Critical Infrastructure Status: UPSLDC has been declared a Critical Information Infrastructure ("CII") entity, mandating the adoption of enhanced security measures, as stipulated by NCIIPC. The proposed design includes advanced cyber security components like firewalls, layered and segmented architecture, defense in depth features, secure log servers, and backup solutions to ensure compliance.

B. End of Original Equipment Manufacturers Support: The hardware and network infrastructure installed in 2016 are no longer supported by the OEMs. This creates a risk of system downtime due to potential hardware failures, software bugs and other vulnerabilities, which could seriously disrupt grid management operations.

Query No.6: Whether there is any upgradation of software proposed.

Reply: Following list is proposed:

- (a) Operating Systems Upgrade: Upgrade to the latest versions of AIX, Linux and Windows for enhanced security and virtualization support.
- (b) Database Upgrade: Upgrade Oracle Database from Standard to Enterprise version, providing advanced analytics, improved data security, and automated backup solutions.
- (c) New Database features (Add-on) will be implemented in the following manner
 - (i) Database Partitioning tool
 - (ii) Active data guard
 - (iii) Real Application clustering for faster data retrieval, query optimization and DC-DR synchronization.
- (d) Backup Solution: Implement a new 30TB online backup solution with automated processes, offsite replication, and disaster recovery capabilities to ensure data availability and regulatory compliance.

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(e) Antivirus Solution: Complete Antivirus solution is proposed for every physical and virtual servers for cyber security requirements and compliance with Enterprise level support.

Query No.7: Whether UPSLDC is able to report intrastate and interstate source wise energy into the state grid.

Reply: UPSLDC is able to report intrastate source wise energy into the grid. UPSLDC is unable to report interstate source wise energy into the state grid as the Energy transactions through Power exchange are not disclosed source wise. All other interstate energy is reported source wise.

Query No.8: Whether real time data of T-D interface points of all 132 kV and above substations are communicated to UPSLDC.

Reply: Real time data of T-D interface points of all 132 kV and above substations except 2 no. 132 kV interface points (132 kV Singrauli - Renusagar & 132 kV Laxmi sugar Mill - Gangalheri) are communicated to UPSLDC.

Query No.9: Whether AMR data is being captured by UPSLDC for accounting purpose.

Reply: A total 4919 out of 5000 meters AMR data are being captured by UPSLDC in EASS software for accounting purpose.

15. Further, directive at point no. (d) of Order dated 16.10.2024 regarding justification as to how the proposed scheme in the Petition complements the objectives of the PSDF Regulations for funding/utilization of PSDF fund, the Petitioner has submitted that Regulation 4.3 of the PSDF Regulations provides that the funding of project/scheme from PSDF shall be subject to the ceiling of Rs. 20 Crore or such amount as considered deem fit by the Commission considering need of proposed project/scheme. Regulation 4.3 of the PSDF is reproduced as below:

"4. Utilization of the Power System Development Fund:

4.3 The funding of project / scheme from PSDF shall be subject to the ceiling of Rs. 20 Crore or such amount as considered deem fit by the Commission considering need of proposed project / scheme."

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Further, Regulation 4.1(d) of the PSDF Regulations provides the heads/subject matters for which the PSDF fund can be utilized for any other project/scheme in furtherance of the above objectives such as capacity building, grid management, ancillary services, conducting technical studies, pilot and demonstrative projects on new and emerging technologies including but not limited to energy storage system, virtual transmission or as provided by the Commission through an order. The said scheme to upgrade IT Data Center at the SLDC is essential for enabling analysis for granular energy & demand variation and growth pattern temporally as well as geographically. A responsive IT infrastructure will enable timely insights on demand impacted by weather events in any sub-area of Uttar Pradesh.

Further, given the anticipated growth of market operations in Uttar Pradesh, increase in the number of entities subject to Open Access regulations will raise demand of IT infrastructure for Energy accounting. An upgraded IT Data Center will enable the SLDC to meet these emerging obligations. Furthermore, this upgrade is critical for the future development of discom-wise energy accounting, resource adequacy.

16. Regarding the status/statements of State Deviation Pool Account and State Reactive Energy Charges Account as on 30.09.2024, the Petitioner has submitted that in compliance of the Order passed by the Commission dated 17.02.2023 in suo-moto Petition Nos. 59SM of 2022, 60SM of 2022 and 61SM of 2022, UPSLDC has been maintaining and operating DSM pool account since 01.04.2023. The status and statements of State Deviation Pool Account and State Reactive Energy Charges Account as on September 2024:

Sr. No.	Month	Name of the Bank	Name of the Account	Account No.	Deposited Amount (In Lakhs)		Total Available Balance (In Lakhs)
					Deposited Amount	MOD Amount	
1.	30.09.2024	SBI	Intra State DSM Pool A/c	41628785424	10.83	8442.39	8453.22

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2.	30.09.2024	SBI	Wind and Solar Generation DSM Pool A/c	41628783493	10.56	1770.74	1781.31
3.	30.09.2024	ICICI	DSM Pool (UI) A/c Old	628105033632	0.00	7804.25	7804.25
4.	30.09.2024	ICICI	DSM Pool A/c UPSLDC Limited	237605002585	1.0	20380.03	20381.03
5.	30.09.2024	ICICI	State Reactive Pool Account UPSLDC Limited	237605002575	3.64	115.00	118.64
Total Amount in all Accounts					26.03	38512.41	38538.45

17. The Petitioner has further submitted that UPSLDC in order to comply with its obligations under the PSDF Regulations and to commence the PSDF Fund, proposes, as a one-time measure, to transfer Rs. 150 Crores to the PSDF fund. Pertinently, the amount of Rs. 150 Crores to be transferred to the PSDF fund is approximately 50% of the total amount available in the respective DSM Pool Accounts except Solar and Wind DSM. Moreover, the above proposal of transfer of Rs. 150 Crore to PSDF fund is prepared keeping in mind that UPSLDC is able to ensure payments to those entities that are entitled to receive it, even if there is a delay or default on part of those entities, which are liable to pay deviation settlement payments to UPSLDC. Further, the Petitioner has submitted that sample size of one year is not sufficient to conclude the requirement of transfer of payment thus, after completion of the financial year 2024-25, it will approach the Commission with a fresh petition containing the proposal as required under Regulation 3.3 of PSDF Regulations.

18. Sh. Divyanshu Bhatt, Counsel on behalf of the Petitioner submitted that he has filed an amended Petition on 04.11.2024 in compliance with the Commission's directive issued vide Order dated 16.10.2024.

19. He submitted that PSDF account has been duly opened with the HDFC bank on 29.10.2024. The Commission enquired whether the requisite board approval for the opening of the PSDF account had been obtained. Sh.

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Divyanshu Bhatt responded affirmatively, stating that board approval had indeed been obtained and the account could not have been opened in absence of the approval of the board but was inadvertently omitted from the amended petition due to the subsequent need to address additional queries.

20. Further, the Commission asked the Counsel of the Petitioner about the rationale behind transfer of 150 crore in PSDF account. In response to this, Sh. Divyanshu Bhatt submitted that in compliance with Regulation 3.2 of the PSDF Regulations, UPSLDC is mandated to transfer the adequate amounts to the PSDF on a quarterly basis. The same needs to be done after making adequate provisions for sufficient funds to remain in these accounts to cover the charges payable to intra-state entities and the NRPC. Further, for the purpose of calculating receivables and payables in the respective Pool Accounts, UPSLDC has used the period from April 2023 to July 2024. The total amount payable by UPSLDC for DSM, excluding Solar and Wind DSM, during the period from April 1, 2023, to July 31, 2024, amounts to approximately Rs. 546 Crores, in which the maximum share of Rs. 395 crores need to be payable by UPPCL. The net payable amount to NRPC on a monthly basis comes to around Rs. 5 Crores. He further submitted that UPSLDC currently has a total available balance of approximately Rs. 288 Crores in the respective DSM Pool Accounts except Solar and Wind DSM. This balance is available with the UPSLDC in Intra State DSM Pool Account at SBI to the tune of Rs. 84.532 crores and in DSM Pool Account UPSLDC Limited at ICICI bank amounting to Rs. 203.810 crores.
21. Sh. Divyanshu Bhatt submitted that estimated cost for the upgrade of the IT Data Centre (located in Lucknow and DR Modipuram, Meerut), is based on budgetary quotation from the UPDESCO after the design being vetted by IIT Kanpur.
22. The Commission has set the monthly Load Dispatch Center (LDC) charges at Rs. 536.81 (MW/Month) for FY 2024-25, based on an approved ARR of SLDC of about Rs. 37.79 Crores. If the additional cost of the EASS Data Centre installation, estimated at 37.82 Crores and proposed to be funded

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from the PSDF account, were included in the ARR, it would have resulted in a 103% increase in LDC charges i.e. to Rs. 1090 (MW/Month). Therefore, it is suggested that the EASS infrastructure costs be treated as a one-time expenditure and funded through the PSDF project to avoid distortion in the normative charges.

Commission's View

23. After hearing the petitioner at length, the Commission observes that the new DSM framework has been implemented by the Central Commission after notification of Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2024, which came into force with effect from 16.09.2024. Thus, UPSLDC was not able to envisage the DSM liability due to introduction of new DSM framework by the Central Commission in such short period on various entities and for the NRPC. Therefore, it was difficult for UPSLDC at that stage to put forth proposal upon minimum amounts to be maintained in respective accounts under clauses (a) to (c) of Regulation 3.1 of PSDF Regulations before transfer to the credit of PSDF. Thus, considering the same, the Commission considers it prudent to transfer one time amount of Rs. 100 Crores at this stage in the PSDF account. Further, UPSLDC has to assess and determine the payable and receivable amounts against DSM and after taking into consideration the conclusion of the financial year 2024-25, the Petitioner shall approach the Commission regarding the minimum quantum of funds that are required to be maintained in respective accounts under clauses (a) to (c) of Regulation 3.1 of PSDF Regulations before transfer to the credit of PSDF. The Commission further directs the Petitioner to furnish a statement of the outstanding liabilities of UPSLDC for the financial years 2023-24 and 2024-25 (up to July 2024).
24. Further, the Commission observes that the Monitoring Committee has reviewed the proposal of Nodal Agency and has appreciated the design as reviewed by IIT Kanpur team. It has also recommended the project proposal for PSDF funding. Accordingly, the Commission has considered the proposal along with recommendation of the Monitoring Committee and approval by Board of Directors of UPSLDC. The Commission notes that the

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project/scheme is covered within the scope of the PSDF Regulations and thus, **approves the proposal of Nodal Agency having capital expenditure of Rs. 32.45 Crores for the Project. However, the Petitioner may consider Rs. 5.37 Crores on account of operation and maintenance cost in ARR separately as per UPERC PSDF regulations 2023 and Tariff Regulations.**

25. In nutshell, the approval of above project/scheme is subject to the following conditions: -

- (i) The Scheme shall be executed within the stipulated timeframe as indicated. No time overrun or cost overrun shall be allowed.
- (ii) The various equipments and material or execution of the schemes shall be procured or effected through a fair and transparent competitive bidding process.
- (iii) All works shall be carried out in compliance with the Act/ Regulations Rules/ Standards of Commission/CEA or any other competent authority, as applicable.
- (iv) The project entity shall submit the completion report indicating the actual cost incurred in implementation of the scheme. The final cost and quantity will be subject to verification by way of prudence check.

26. Accordingly, the Petition is disposed of.

(Sanjay Kumar Singh)
Member



(Arvind Kumar)
Chairman

Place: Lucknow

Dated: 03.12.2024