

KERALA STATE ELECTRICITY REGULATORY COMMISSION
THIRUVANANTHAPURAM

Present : Shri. Preman Dinaraj, Chairman;
: Adv. A.J. Wilson, Member (Law).

OP. No. 07/ 2021

In the matter of : Petition of KSEBL under Clause 22 of the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020; for adopting MPLS Technology, for implementation of 'the Reliable Communication and Data Acquisition Project' of KSEBL.

Petitioner : Kerala State Electricity Board Ltd.(KSEBL), Thiruvananthapuram

Represented by : Sri. Pradeep.K.P, Chief Engineer, System Operation, KSEBL;
: Sri. Anand. S.R, DyCE, System Operation, KSEBL;
: Smt. Latha.S.V, AEE, TRAC, KSEBL.

Respondents : Nil

Date of hearing : 18.03.2021, thro' Video conference mode

Order dated 18.03.2021 in OP. No. 07/2021

1. Kerala State Electricity Board Ltd. (KSEBL), filed this Petition; for the approval of the Commission, under Regulation 22 of the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020; for adopting MPLS Technology in the place of SDH Technology, for implementation of 'the Reliable Communication and Data Acquisition Project' of KSEBL (SBU-T). The details provided in the Petition are as follows:
2. The DPR for the 'Reliable Communication and Data Acquisition Project' project was submitted by KSEBL to the Commission, along with the CAPEX proposal for SBU-T for the Control Period (2018 – 2022). The project cost is Rs. 147.52 Crores and 50% of the cost of the project is funded through PSDF grant, sanctioned vide the Order dated 15.11.2017 of the Ministry of Power, Government of India.

3. The DPR for the Project was prepared with 'Synchronous Digital Hierarchy (SDH)' technology for the fibre optic terminal equipments at the substations, based on the technology in vogue at that time. This technology is now becoming obsolete, and getting technical support and spares in future will be difficult. This technology is being replaced worldwide by 'Multi Protocol Label Switching (MPLS) Technology'. Moreover, for achieving the high speed data transfer and communication system required for the Power System Management in future, MPLS system will be essential. The advantages of the new technology and the reason for change of technology are detailed in *Para 4 to 11 of the Petition*, which are summarized below:

- SDH systems are voice centric, inflexible, difficult to scale and are not optimized for packet data transmission.
- MPLS technology has better scalability and reliability and has already been tested and endorsed by major players in the field.
- In the MPLS based optical terminal equipments, bandwidth between the stations is 1 Gbps, which is two times the band width available under SDH.
- Power Utilities/ Service Providers for transporting diverse traffic such as; SCADA, Office data, Voice, Multiple type of TDM circuits, Video packets etc., will depend in future more on Ethernet and Multi service Ethernet networks with more bandwidth, for cost effective backbone solutions.
- In future, Analogue Exchanges will be replaced by VOIP Exchanges and the Serial port will be replaced by Ethernet interface IEC 104 RTUs in the Communication equipments/ system, so that SDH technology will be forced to be replaced.
- MPLS is suitable for Utility application of Voice, Data, Tele protection (Distance and Differential) and Video services and is successfully being used worldwide for the last 8 years in the Telecom sector.
- Separation of critical and non-critical data and fixing priority of data is possible in the new technology.
- No change at Control Centre and RTUs is required and the cost involved is comparable.
- Support downward compatibility, Transmission of legacy TDM services like V.24 serial data, 4W E&M and E1 Channel are possible and interoperability is assured.
- MPLS –TP will be having better Bandwidth Efficiency, Finer Granularity, Protection Bandwidth, Ubiquitous connectivity, Operational simplicity, comparable cost, Future proof investment protection etc.

4. Considering the technological advances, ease of operation and futuristic expandability; KSEBL requested approval of NLDC (PSDF Secretariat) for

adopting the change in technology. The Project Monitoring Group (PMG) of PSDF accepted in principle the proposal and sought the expert opinion of CEA. CEA, vide letter dated 22.05.2020, recommended migration from SDH to MPLS technology for the project, subject to compliance of the provisions of the CEA ((Technical Standards for Communication System in Power System Operation) Regulations, 2020.

5. As per Regulation 22 of the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020, approval of the appropriate Commission is required for change in technology. Hence, PSDF Secretariat, vide letter dated 27.10.2020 has intimated KSEBL to get the approval of this Commission for change in technology; for availing the PSDF Grant already sanctioned by Gol. This Petition is filed by KSEBL to comply with the above requirement.
6. It is submitted that the cost for providing MPLS technology could be at par with that of SDH technology. Moreover, other States like Rajasthan, Tamil Nadu and Jharkhand are also opting for MPLS technology in similar projects being executed in those States.
7. In Kerala, the installation of fibre optic cables for this project has already started and the terminal equipments have to be procured shortly. To avail the Grant, approval of the PSDF Secretariat is required before commencement of the tendering process. PSDF will issue the final/ disbursement order, only after getting the formal order/ approval of the Commission for the change in technology. Hence KSEBL through this Petition requested the approval of the Commission for the change in technology for the project.
8. The petition was registered by the Commission as OP. No. 07/2021. Hearing on the petition was held at 11 AM on 18.03.2021, through Video conference mode. The technical details of the project and the requirement of this petition were presented by Shri.Pradeep K.P, Chief Engineer and Shri. Anand S.R, Deputy Chief Engineer during the hearing. The representatives of KSEBL also answered the queries raised on the petition and requested for early approval.

Analysis and Decision

9. On reviewing the Petition, the CEA Regulations and the related documents, it is observed that:

i) 'The Reliable Communication and Data Acquisition Project', for which the DPR was already submitted along with the CAPEX proposal for SBU-T for the current control period (2018 – 2022), is a major project for the Transmission & SLDC system development in the State. The project is costing Rs. 147.52 Crores and 50% of the cost (Rs. 73.76 Crores) is to be funded through the PSDF Grant, sanctioned by Gol, vide order dated 15.11.2017. The project involves laying of 3624 km of OPGW, installation of 250 Nos RTUs/ terminal equipments, 250 sets of Battery & charger systems and auxiliary power supply systems in all the substations in the voltage level of 110 kV and above etc. The capital cost for the portion involving the proposed change in technology, is only 10 to 12 % of the total project cost and no additional cost than envisaged originally is involved.

ii) Due to the reasons mentioned in Para 3 above, KSEB Ltd decided to change the interface technology of the project, from SDH to MPLS Technology, in view of the future developmental requirements and considering the better, convenient and compatible technology/ system. The proposal for the change in technology was informed to NLDC for approval and was approved in principle.

iii) For availing the PSDF Grant, NLDC (PSDF Secretariat) demanded approval of the State Commission for the change in technology, in compliance to the provision under Regulation 22 of the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020; which reads as follows:

Regulation 22. Adoption of new technologies. - *Plan shall be made for introduction and adoption of new technologies, with the approval of the Appropriate Commission or as per the regulations or pursuant to the reforms programme of the appropriate Government.*

Hence, approval of the Commission is necessary for adoption of new MPLS technology, from the one envisaged in the DPR for 'the Reliable Communication and Data Acquisition Project' of KSEBL.

iv) The MPLS technology is already included in the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020 as shown below:

Regulation 6 – Interface requirements –

(3) The standards for interfacing to Communication system shall be as specified in Schedule II.

Schedule II: MPLS-TP & MPLS- IP Interfaces are included, indicating that the Standards shall be as per Industry practice.

v) In view of the reasons and advantages detailed in the petition, and the details presented during the hearing, adoption of MPLS technology for the project will be appropriate and technically feasible.

vi) This petition is filed only for fulfilling the statutory requirement provided in the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020 and the Commission is requested to issue the necessary approval for the change in technology, after following the due procedures.

10. During the hearing, Chairman, KSERC made it clear to the petitioner that the relief sought for is only to implement the PSDF funded Reliable Communication Scheme with MPLS technology instead of SHD technology for the Reliable Communication and Data Acquisition Project. Hence the issue under consideration of the Commission in this petition is only to approve the adoption of the change in technology from SDH to MPLS and grant of approval for tendering or it's finalization is not in the scope of this petition. If required the licensee can move a separate petition for approval of the tendering process including its documents. Chairman, KSERC also directed that KSEB limited shall strictly follow the tendering process.

Order of the Commission

11. The Commission, after examining the Petition dated 23.01.2021 filed by KSEB Ltd, as per the provisions of the Electricity Act, 2003 and the CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020; hereby approve the adoption of the change in technology from SDH to MPLS, for the implementation of 'the Reliable Communication and Data Acquisition Project' of KSEBL.

The petition is disposed off accordingly.

Sd/-
Adv. A. J. Wilson
Member (Law)

Sd/-
Preman Dinaraj
Chairman

Approved for Issue

Sd/-
Secretary