KERALA STATE ELECTRICITY REGULATORY COMMISSION
THIRUVANANTHAPURAM

Petition No: OP 83/2023

Present : **Sri. T.K. Jose, Chairman**
Adv. A. J. Wilson, Member
Sri. B. Pradeep, Member

In the matter of : Petition filed for the approval of Capital Investment proposal for the year 2023-24

Petitioner : M/s Technopark, Trivandrum

Represented by : Sri. Madhavan Praveen, GM Projects
Sri. Viswanathan N, Deputy Manager (Finance)
Sri. Anfal, Deputy Manager (Electrical)

Respondent : M/s Kerala State Electricity Board Limited

Represented by : Sri. Ajith Kumar K.N, Executive Engineer, KSEB Ltd
Sri.Shan B.S, Asst. Executive Engineer, KSEB Ltd
Smt. Archana M, Asst. Engineer, KSEB Ltd

Date of Hearing : 27.02.2024

ORDER DATED 23.04.2025

1. M/s Technopark, Thiruvananthapuram, is a deemed distribution licensee for distribution of electricity in the Technopark campus. M/s. Technopark has four licence areas namely (1) Technopark Phase I, (2) Technopark Phase II & III, (3) Technocity Pallippuram and (4) Technopark Kollam. The licensee submitted the petition for the Capital Investment Approval for the year 2023-24 and has proposed an investment of Rs.517.95 lakh. Out of these investments, Rs.213.63 lakh is to be funded from Grant and Rs.304.32 from Own fund. The following proposal is submitted for approval.

Table 1
Capital Investment proposal for the year 2023-24 (Rs. lakh)

	Project	Grant	Own Fund	Amount
a	Revamping 11 kV Power distribution system at Phase 1	150.00	284.24	434.24
b	SITC of 35 kWp Roof Top Grid connected Solar PV Plant	-	13.63	13.63
c	Solar Plant of 15.5 kWp above Hybrid Electric Vehicle charging station	-	6.45	6.45
d	SITC of 25 kWp On Grid Solar PV Plant at Park Centre Building and 78 kWp On Grid Solar PV plant on the Pump House water Tank	63.63	-	63.63
	Total	**213.63**	**304.32**	**517.95**

Hearing on the Petition

2. The Commission admitted the petition as **OP No. 83/2023** and the hearing on the petition was conducted on 27-02-2024 at the Court Hall, Office of the Commission. The petitioner, M/s Technopark was represented by Sri. Madhavan Praveen – G.M. Projects, Sri. Anfal - Deputy Manager (Electrical) and Sri. Viswanathan – Deputy Manager (Finance). Sri. Anfal, presented the details of the petition, briefed on the necessity of investments, costs and benefits, funding pattern and responded to the queries of the Commission.

3. Sri. Ajith Kumar K.N, Executive Engineer, Sri.Shan B.S, Asst. Executive Engineer, Smt. Archana M, Asst. Engineer, represented KSEB Ltd. Sri.Shan B.S submitted the comments on the proposed capital expenditure plan and submitted written remarks on the matter.

Analysis and decision of the Commission

4. The Commission has carefully considered the petition for approval of Capital Investment proposal for the year 2023-24, the counter statements furnished by the KSEB Ltd and the views presented by the licensee during the hearing. The analysis and decisions of the Commission on the petition are detailed below.

a. Revamping 11 kV Power distribution system at Phase 1 – Rs 434.24 Lakh

Power to Technopark Phase-I Campus is supplied from the 110 kV Substation in Kazhakuttam operated by KSEB Ltd., through four dedicated 11kV feeders. There are around 25 HT consumers and 587 LT consumers with a maximum power demand of 15 MVA. As part of the development of Technopark Phase-I campus, new buildings by M/s Brigade, M/s STPI, Prefab IT Building of Technopark and a Commercial building of Technopark are under construction. To facilitate the operations, there is requirement for new 11kV HT connections in their plot from Technopark. Being a power distribution licensee, Technopark is obligated to provide power supply to the consumers at the point of supply, as per the Kerala Electricity Supply Code, 2014 and agreement between Technopark and consumer.

Technopark does not have any additional feeders available at the consumers plot to meet the power requirements of these consumers. There is no spare capacity in the 11 kV UG system to meet the single contingency (n-1) criteria for providing uninterrupted supply. The cables are more than 25 years old and failures occur frequently causing supply interruption and losses resulting in more maintenance and costs. Accordingly, it has been proposed to add new feeders for providing power to new consumers at their premises and to replace and reroute aging cables, provide additional cables to enhance network capacity and to meet the

single contingency criteria and introduce Ring Main Units (RMUs) with SCADA for the power distribution system. The investment is necessary to address the following business requirements:

- Strengthen the system to meet the load growth.
- Ensuring 24x7 uninterrupted power supply.
- Provide additional power feeders to new consumers.
- Replacement of unreliable and old cables.
- Creation of back-up facilities for redundancy for reliability.
- Remote monitoring and controlling.

The proposed project estimate is Rs 434.24 Lakh. The project financing is through Government Grant of Rs.150 lakh (35%) and Technopark Equity / Bank Loans of 284.26 lakh (65%). The licensee has stated that the project will be implemented through Licensed Electrical EPC contractor. The scope of works includes the following;

- Installation of 11 numbers of RMUs,
- Addition of feeders for new consumers,
- Installation of new 11 kV UG cables,
- Installation of SCADA Centre
- Removal of old unusable cables.

The estimates prepared based on cost data from DSR publications or direct market enquiry with suppliers and vendors is tabulated below;

Table 2
Cost estimate for Revamping 11 kV distribution system at Phase 1 (Rs. lakh)

Item	Quantity	Amount	Remarks
RMU supply (Various Types)	11 Sets	108.18	MR
RMU installation	11 Nos	3.19	DSR 2018
Metering Cubicle Supply Installation	1 No.	1.82	MR+DSR 2018
HT Cable Supply & Installation (Various Types)	9430 m	166.00	MR+DSR 2018
FO Cable supply & installation	4700 m	5.49	MR+DSR 2018
HT Cable Joints and Terminations	67 Nos	15.63	DSR 2018
SCADA Control Centre	1 No	124.84	MR
Earthing Plates and protection	22 Nos	2.71	DSR 2018
HT Cable Removal	38 Nos	0.75	DSR 2018
Engineering and approvals	LS	5.00	MR
Civil Works	LS	0.60	DSR 2018
Total		**434.24**	

The licensee has stated that project is contemplated with the following primary objectives

- **Seamless Power Connections:** Facilitating power connections for the new HT consumers, enabling them to operate and contribute to the growth of Technopark.
- **Improved Power Infrastructure:** Upgrading the 11kV distribution network will enhance its efficiency, reliability, and fault tolerance, reducing power outages and enhancing the overall power infrastructure of Technopark.
- **Future Scalability:** The installation of new feeders will consider the present and future expansions and scalability, ensuring that Technopark can accommodate additional consumers and increased load demand.
- Replacement of old and unreliable cables.
- Provide automatic switching and control of the network using SCADA.

The proposed network employs RMUs fed with two input power cables and RMUs can ensure a reliable power supply to consumers even if a fault occurs in any one of the feeding cables ensuring single contingency reliability, which is a mandatory provision in the Act and other statutes. The Intelligent Feeder Remote Terminal Units (FRTU) provided in the RMUs allows remote operation of Ring Main Units through Supervisory Control and Data Acquisition (SCADA) systems and monitors the faults, which makes it easy to integrate with the Distribution Management System and in building a Smart Grid system thereby reducing the overall operational cost of the system. Since Ring Main Units have an interlocking mechanism, operational safety is ensured. The RMU is compact in design and takes less space than conventional HT panels and are not affected by climatic conditions and built to resist to weathering and environmental conditions. The operation and maintenance costs of RMUs are also low.

Benefits of Investment

- The proposed distribution system employs the ring main design using standard RMUs and additional cable capacity to ensure single contingency reliability and reduced down-time.
- The proposed HT distribution system in phase I area would have 6 numbers of Ring Main Circuits interconnecting the two main receiving stations (MRS-1 & 2) and contain a total of 11 numbers of RMUs for ensuring remote switching and n-1 reliability.
- Each RMU will be supplied by two separate cables. The RMUs will contain Remote Terminal Units (RTU) and electronic device for communicating with a central SCADA control centre.

Comment of KSEB Ltd

Technopark licensee is being provided with 4 numbers of 11kV feeders from KSEB's Kazhakuttom substation and also one 110kV feeder. Faults are occurring in these 11kV feeders frequently and each time KSEB's cable fault detection unit is being called for tracing the location of the cable fault. These faults are due to numerous joints in the cables which were broken during building constructions in the park, may be due to non-marking there of the cable path.

The licensee has stated that the construction of new building in their area in the past years has resulted in the inconvenient burial depths that has made maintenance and repairs challenging, frequent cable failures and due to inaccessibility of burial locations, both tracing and rectifying faults has become difficult and expensive. In this regard KSEB Ltd submitted that works such as cable laying may be done in trenches in a planned manner as their area is limited and enclosed. It is also requested to verify the utilization of capital works to its utmost.

High rise buildings in the license area is being fed with 11kV supply and each building has transformers for availing supply. The proposed plan is to provide two 11kV feeders to each building with one RMU unit so that if one cable fails, then the supply can be switched to other feeder for maintaining the supply. Generally RMU's can operate automatically if it is provided with SCADA system and the system is being programmed to change to the other healthy 11kV incomer in the event of fault. Otherwise it has to be done manually. From the petition is implied that the licensee intents to switch to other feeder immediately through SCADA control Center. KSEB Ltd submitted that Phase 1 and phase 2 projects are situated adjacent to each other and it is not clear whether the licensee is already having SCADA-RMU system for the Phase 2 project area. If such system exists, then another control center is not needed as only one control center is enough to monitor and control the entire area.

It is also submitted that the petitioner has stated that Rs.79.94 lakh has been received as Govt grant for revamping of 11 kV power distribution works. Thus depreciation, RoE, interest change shall not be allowed on the assets created out of Govt grant. It is further submitted that only that portion of the project cost, after deducting grant, shall be met from the regulatory surplus of the licensee and only the left over portion, if any, shall be met from equity of the licensee.

Technopark is a licensee as well as a developer (infrastructure). Hence, the recovery of cost for providing supply for load above 1MW is applicable to Technopark in its role as developer. Hence for infrastructure projects having capacity above 1 MW, the cost is to be incurred by the developer as per Regulation 36, which the developer is free to recover from the beneficiaries itself

as part of providing the infrastructure services. Thus, the cost thus recovered shall be deducted from Gross Fixed Assets and only the balance shall be eligible for depreciation.

Decision of the Commission

The scheme is similar in technical design used by the state utility KSEB Ltd in Thiruvananthapuram, Kochi and Kozhikode under R-APDRP scheme. As per the details submitted in the petition, project financing is through Government Grant of Rs.150 lakh (35%) and Technopark Equity / Bank Loans of Rs.284.26 lakh (65%). It is stated that Technopark has received Rs.74.94 lakh as grant out of the total outlay. Considering that the project is intended to meet the statutory requirement of n-1 contingency and for ensuring uninterrupted power supply, the Commission provisionally approves the cost of Rs. 434.24 lakh for Revamping the 11 kV distribution system at Phase 1. The licensee shall take necessary steps to avail/obtain the balance amount of the total grant already sanctioned by the Government for the purpose. The licensee shall ensure that the costs are market aligned during execution. The Commission shall verify market alignment of rates at the time of truing up and higher costs, if any, noticed will be disallowed.

b. Supply Installation Testing and Commissioning of 35kWp rooftop grid connected solar PV plant at 110kV substation at Technocity campus – Rs.13.63 lakh

The Technocity Campus is the newly developed industrial park area in Pallippuram in Thiruvananthapuram District. The proposal is for the Supply, Installation, Testing and Commissioning of 35kWp rooftop grid connected solar PV plant at 110kV substation at Technocity campus at the cost of Rs.13.63 lakh. Technopark has selected the latest technology, high-efficient, high-wattage Half Cut Mono Perc Solar modules for implementation. The expense is proposed to be incurred from the own funds of Technopark.

It is submitted that the cost estimation includes cost of materials used in the project, the cost of statutory approvals, the cost of installation, testing, commissioning and statutory approvals. For the Solar Plant, MNRE approved rate of Rs.41640/kW (dated 27-10-2021) has been used. DSR rate with MR has been used to estimate the price of meter and communication port accessories.

As per Section 86 (1) of the Electricity Act, 2003, and the National Tariff Policy, all distribution licensees are obliged to purchase a certain percentage of electricity requirement from renewable sources as the Renewable Purchase Obligation (RPO) and the State ERCs are mandated to fix the percentage of renewable energy. Accordingly, State Commission notified a regulation named ‘Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering)

Regulations, 2020' and its amendment determining the rate of renewable purchase obligation that distribution licensees, Captive Consumers and Open access consumers are required to follow. As per the regulation, Technopark has an obligation to purchase or generate 10.50% of the quantum of Energy Sales from Solar Resources and another 10.68 % energy from Non-Solar Renewable resources for the year 2023-24. The estimated RPO for the next five years are shown below along with approximate purchase cost of renewable energy certificate (REC), the alternate option to meet the RPO.

RPO	2022-23	2023-24	2024-25	2025-26	2026-27
Solar (kWh)	6753708	8692918	9374051	9918486	10289039
Required solar plant capacity (kWp)	3865	4974	5364	5675	5887
Non-Solar (kWh)	6592905	8841940	9534749	10088517	10465423
REC Cost (Rs Lakh)	265.80	353.454	379.11	405.43	412.91

**Solar REC cost =3500/cert and Non-Solar REC cost=1500/Certificate

The licensee has stated that there is limited option for Technopark to generate renewable power for Technopark whereas has commissioned 4nos of roof top solar plants with a total capacity of 285 kW within its campuses and 1090 kW roof top plant for consumers. The average annual energy generation was around 4 Lakh kWh from Own solar power plant and 16 Lakh kWh from consumers installed plant. To achieve the required RPO, Technopark has to install a rooftop solar power plant with a total capacity of 3900 kW. Therefore, the proposal is to install roof top solar plants further to partly meet the RPO. It is expected that the new 35 kW solar panel would generate approximately 61,000 kWh in a year at a CUF of 21%. It is assumed that the output will be reduced by 0.5% every year. The licensee has also stated that the solar energy generated would reduce the power purchase requirement from KSEBL.

Benefits of Investment

- Fulfill mandatory Renewable Purchase Obligation (RPO).
- The solar panels are installed over the substation saves the cost of land.
- The solar energy generated saves the power purchase cost.

Comment of KSEB Ltd

Submitted that the total expenditure can be met from the grant amount from the Government and the same need not be considered as expenditure of the licensee. But the petitioner has decided to meet the total expenditure from equity, stating that State's grant has not been received, even though it was approved by the Govt. It is humbly requesting that the Hon'ble Commission may verify this anomaly.

It was also submitted that installing a solar plant near a EHT substation needs special attention so as to avoid unwanted effects of induction. Further the earthing of the solar plant shall be done with due care while constructing such plants in or very near to substations and considering the faults in similar plants of KSEB, it is requested to consult the earthing arrangements with the power system Engineering wing of the KSEB.

Decision of the Commission

It is seen that as per the GO (Rt) No.91/2022/ITD dated 23.05.22 an amount of Rs 100 Lakh has been allotted for solar power plants as part of Government funding program. The Commission views that the expenditure can be met from the grant allotted by the Government. Accordingly, the Commission provisionally approves the proposed cost of Rs.13.63 lakh for SITC of 35kWp rooftop grid connected solar PV plant at 110kV substation at Technocity campus, considering that the project is intended to meet the statutory requirement that the distribution licensees to meet the Renewable Energy Purchase Obligation (RPO). However, the licensee shall ensure that the costs are aligned to the benchmark rate approved by MNRE during execution. The Commission shall verify the rates at the time of truing up and higher costs, if any, noticed will be disallowed.

c. Supply Installation Testing and Commissioning of Solar Plant of 15.5 kWp above Hybrid Electric Vehicle charging station, Technopark Phase 1 - Rs.6.45 lakh

The licensee has proposed for the Supply, Installation, Testing and Commissioning of Solar Plant of 15.5 kWp above Hybrid Electric Vehicle charging station, Technopark Phase 1 at an amount of Rs.6.45 lakh. The expense is proposed to be incurred from the own funds of Technopark. The licensee has stated that the investment is to meet the Renewable Purchase Obligation (RPO) specified by the State ERC.

The licensee has also stated that the project has been contemplated to provide Electric Vehicle Charging Stations in the Campus as a new business avenue and as a general business promotional measure. The Government of India has been promoting Faster Adoption and Manufacturing of Hybrid and EV (FAME) scheme and announced the second phase of the scheme, FAME-II until March 2024. The primary aim of the scheme is the faster adoption of electric mobility and the development of charging infrastructure. The Government of Kerala has also promoted quick adoption of Electric Vehicles.

Technopark is the largest Information Technology Industrial Park in India in terms of developed area and number of employees, more than 63000 employees working in companies spread across its 5 phases. There has been enthusiastic

approach from our stakeholders in introducing Electric Vehicles into their business ecosystems and there was also a considerable increase in the number of Electric Vehicles in Technopark Campuses for the past years. However, there is no electric charging stations in the near vicinity of the Campus. Accordingly the licensee has proposed to install a hybrid EV charging station along with a 15.5 kWp Grid Connected Rooftop Solar Power Plant in the Technopark Phase-I Campus. i.e., the roofing of the EV charging station is equipped with Solar panels of a total capacity of 15.5 kW. Technopark has chosen the latest technology of high-efficient, high-wattage Half Cut Mono Perc Solar modules for implementation.

The licensee has also stated that the project cost includes cost of materials used in the project, the cost of statutory approvals, the cost of installation, testing, commissioning and statutory approvals. For the Solar Plant, MNRE approved rate of Rs.41640/kW (dated 27-10-2021) has been used. The licensee has further clarified that the cost of Electric Vehicle Chargers, civil works and other costs are not included. Only the cost of solar plant installation is considered.

Benefits of Investment

- Fulfill mandatory Renewable Purchase Obligation (RPO).
- The solar energy generated saves the power purchase cost.
- Encourage EV usage in campus and to attract IT business customers.
- Embark into the market of business of EV charging.

The solar panels installed over the charging station saves building roof tops. The solar energy generated saves the power purchase cost. The charging business is profitable with pessimistic returns computed above. The charging station would become a necessity, if not mandatory, in the near future for such IT business campuses. The hybrid concept is technically viable and economically profitable.

Comment of KSEB Ltd

This plant is also included in the Rs. 100 Lakhs Government funding program as per the GO (Rt) No.91/2022/ITD dated 23.05.22 Thus the entire project cost can be met from the grant itself and does not come under the licensee's expense. But the licensee in the executive summary has mentioned that the grant is nil. It is also stated that state grant has not been approved. KSEB Ltd requested that approval shall be given after prudential check.

Decision of the Commission

Considering that the project is intended to meet the statutory requirement that the distribution licensees to meet the Renewable Energy Purchase Obligation (RPO) the Commission provisionally approves the proposed cost of Rs.6.45 lakh for SITC of Solar Plant of 15.5 kWp above Hybrid Electric Vehicle charging station,

Technopark Phase 1. It is seen that as per the GO (Rt) No.91/2022/ITD dated 23.05.22 an amount of Rs. 100 Lakh has been allotted for solar power plants as part of Government funding program. The Commission views that the expenditure can be met from the grant allotted by the Government. However, the licensee shall ensure the costs are aligned to the benchmark rate approved by MNRE during execution. The Commission shall verify the rates at the time of truing up and higher costs, if any, noticed will be disallowed.

d. Supply Installation Testing and Commissioning of 25 kWp On Grid Solar PV Plant at Park Centre Building and 78 kWp On Grid Solar PV plant on the Pump House water Tank – Rs.63.63 lakh.

The licensee has proposed investment towards the Supply, Installation, Testing and Commissioning of 25 kWp On Grid Solar PV Plant at Park Centre Building and 78 kWp On Grid Solar PV plant on the Pump House water Tank at a total cost of Rs.63.63 lakh. The licensee has stated that the project is originally expected that the State government would provide grant 100% for the solar project. The complete fund will be spent during the three-month period of project execution. The licensee has also stated that the investment is to meet the Renewable Purchase Obligation (RPO) specified by the State ERC.

Table 3
Cost estimate

No	Item	(Rs.lakh)
1	SITC of 25kWp PV Solar at Park Centre	15.27
2	SITC of 78kWp PV Solar at Park Centre	47.62
3	Net-meter and solar meter installation	0.49
4	KSEI approval	0.25
	Total Cost	**63.63**

Benefits of Investment

- Fulfill mandatory Renewable Purchase Obligation (RPO).
- The solar energy generated saves the power purchase cost.

Comment of KSEB Ltd

The project is done with 100% funding by government for the total project amount of Rs. 63.63 lakh. Thus, the project cost need not be included in the expenditure of the licensee. It was submitted that if actual rates are on the higher side, the Commission shall limit the expense to MNRE approved rate after prudence check.

Decision of the Commission

The Commission observed that the rate adopted for preparation of estimates is Rs. 61060/- per kWp, which is the DSR 2019 rate. The rate adopted is about 150% higher than the MNRE approved benchmark rates adopted for estimation of the

cost of other two projects. The Commission is of the considered view that the cost is to be approved only at the MNRE approved benchmark cost. Considering that the project is intended to meet the statutory requirement that the distribution licensees to meet the Renewable Energy Purchase Obligation (RPO) the Commission provisionally approves the proposal for SITC of 25 kWp On Grid Solar PV Plant at Park Centre Building and 78 kWp On Grid Solar PV plant on the Pump House water Tank only at the MNRE approved benchmark rate. The licensee shall ensure that the costs are based on the benchmark rate approved by MNRE during execution and the project is funded with the grant approved by the Government. The Commission shall verify the rates at the time of truing up and higher costs, if any, noticed will be disallowed.

Orders of the Commission

5. The Commission after considering the petition filed by M/s. Technopark for the approval of capital investment plan, views presented by the licensee during the hearing and details provided by the licensee;

   i. Provisionally approves the proposed cost of Rs.434.24 lakh for Revamping the 11 kV distribution system at Phase 1. The licensee shall take necessary steps to avail/obtain the balance amount of the total grant already allotted by the Government for the purpose.

   ii. With regard to the proposals for Supply, Installation, Testing and Commissioning of Solar PV Plants, the Commission approves the proposals subject to the condition that the investment shall be made only within the MNRE approved benchmark rate.

   iii. As per the GO (Rt) No.91/2022/ITD dated 23.05.22 an amount of Rs. 100 Lakh has been allotted for solar power plants as part of Government funding program. The licensee shall take considered efforts to complete the solar power plants project with the grant approved by the Government.

   iv. The Commission observes that the DPRs submitted by the licensee does not include a proper cost benefit analysis due to lack of estimation of monetary value for any of the benefits listed out. Without proper assessment of monetary value of benefits, it is not possible to conclude whether the investments yield adequate returns. The Commission directs the licensee to ensure that the DPRs truly conform to the requirement of the Regulations and are submitted for approval only after incorporating all the required data and analysis, in future.

v. The licensee shall undertake the projects only through a competitive bidding process to ensure the least-cost execution of the projects. The licensee shall ensure sufficient response for the tenders floated, verify that the bids received are competitive and in the absence of such competitiveness, shall resort to re-tendering.

vi. The capital investments except from that of grants, if any, shall be met from the accumulated regulatory surplus/ the amount held by the licensee. The licensee shall not be eligible for depreciation, Return on NFA and other financing costs on the assets created by utilising such surplus as it would result in double recovery from the consumers.

vii. The assets replaced before completion of its useful life has to be removed from the GFA/NFA and the licensee shall not be allowed to recover the balance cost of the assets.

viii. The licensee while truing up the accounts of the relevant years shall submit all necessary details including tendering documents and bills to justify the actual expenses incurred. The consideration and approval of the cost will be subject to the documents submitted before the Commission while truing up the accounts for the relevant years and based on the COD (Commercial Operation Date) of each project.

ix. All the assets approved as part of CAPEX plan shall be geo- tagged and properly recorded in Fixed Asset Register of the Licensee.

8. The petition is disposed of. Ordered accordingly.

Sd/-	Sd/-	Sd/-
Sri. T.K Jose	**Adv. A. J. Wilson**	**Sri. B. Pradeep**
Chairman	**Member**	**Member**

Approved for issue
Sd/-
C.R.Satheesh Chandran
Secretary