

MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION

1st Floor (Front Block Left Wing), New Administrative Building,
Lower Lachumiere, Shillong – 793 001
East Khasi Hills District, Meghalaya

CASE No 15/2020

In the matter of:

Approval of Business Plan for the 3rd MYT Control Period from FY 2021-22 to FY 2023-24.

And

Meghalaya Power Transmission Corporation Limited (MePTCL) Petitioner

Coram

Shri P.W.Ingty, IAS (Retd), Chairman

Chairman

Shri Roland Keishing, Retd. District & Session Judge,

Member

ORDER

Date: 28.09.2020

1. The Meghalaya Power Transmission Corporation Limited (herein after referred to as MePTCL) is a deemed licensee in terms of section 14 of the Electricity Act, 2003 (herein after referred to as Act), engaged in the business of transmission of electricity in the State of Meghalaya.
2. In exercise of powers conferred by clause (Zc), (Zd) and (Ze) of sub-section 2 of section 18, read with sections 61, 62, 64, 65 and 86 of the Act and all other powers enabling on that behalf and after previous publication, the Meghalaya State Electricity Regulatory Commission (herein after referred to as MSERC or the Commission) issued MSERC (Multi-Year Tariff) Regulations, 2014 (herein after referred to as MYT Regulations, 2014).
3. The Commission, vide proceedings No. MSERC/REG/2014/01 dated 18.06.2020 has amended the sub-Regulation 1.4 of MYT Regulations, 2014 and extended the MSERC (Terms and Conditions of Multi Year Tariff) Regulations 2014 for third control period beginning 01.04.2021 to 31.03.2024.
4. As per provisions of sub-Regulations 1.4 (amended) and Regulation 8 and 66 of the MYT Regulations, 2014, MePTCL has filed the Petition for approval of its Business Plan for the third MYT Control Period of FY 2021-22 to FY 2023-24 with capital out lay for each year of the Control Period.

5. As per provisions of sub-Regulations 8.1, 8.2 and 8.3, the Business Plan shall comprise of but not limited to details of capital investment plan, financing plan and physical targets.
6. The Commission, in exercise of powers vested in Clause 8.4 under Regulation 8 of MYT Regulations, 2014, provisionally passed this order approving the Business Plan (attached herewith) for the third MYT control period of FY 2021-22 to FY2023-24.
7. MePTCL shall submit the petition for determination of ARR and transmission charges for MYT Control Period from FY 2021-22 to FY 2023-24 on or before 30th November, 2020 in accordance with Regulation 18.1 of MYT Regulations, 2014.
8. This Order shall be placed on the website of the Commission and a copy shall be sent to MePTCL and MeECL.

Sd/-
Member
Shri Roland Keishing

Sd/-
Chairman
Shri P.W. Ingty, IAS(Retd)

Business Plan for 3rd MYT Control Period FY 2021-22 to FY2023-24

1 Introduction

The Meghalaya Power Transmission Corporation Limited (MePTCL) shall file its Business Plan for the control period of FY 2021-22 to FY 2023-24 in accordance with Regulation 8 of the MSERC (Multi Year Tariff) Regulations 2014. The relevant excerpt of the regulations is reproduced below:

“8 Business Plan

8.1 *The, Transmission licensee,, shall file a Business Plan for the Control Period of three (3) financial years, which shall comprise but not be limited to, capital investment plan, financing plan and physical targets, in accordance with guidelines and formats, as may be prescribed by the Commission from time to time:*

Provided that a mid-term review of the Business Plan/Petition may be sought by the, Transmission Licenseethrough an application filed three (3) months prior to the specified date of filing of Petition for truing up for the second year of the Control Period and tariff determination for the third year of the Control Period.

8.2 *The capital investment plan shall show separately, on-going projects that will spill over into the Control Period, and new projects (along with justification) that will commence in the Control Period but may be completed within or beyond the Control Period. The Commission shall consider and approve the capital investment plan for which the Transmission Licensee....., may be required to provide relevant technical and commercial details.*

8.3

8.4 *The, Transmission Licensee shall get the Business Plan approved by the Commission.*

1.2 Preamble

The Business Plan for the Control Period (FY 2021-22 to FY 2023-24) was filed in accordance with regulation 1.4 read with regulation 8 of the Meghalaya State Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2014 for the MYT control period of FY 2021-22 to FY 2023-24.

Meghalaya Power Transmission Corporation Limited (MePTCL) is required to forecast the Aggregate Revenue Requirement (ARR), based on the Business Plan, for the third Control Period (FY 2021-22 to FY 2023-24). As per the MYT Regulations, Business Plan should comprise of capital investment plan, financing

plan, physical targets, etc.

The MePTCL had submitted that the components of Business Plan depends upon various factors such as historical data, current and future financial estimates, growth estimates, economic, financial and business related assumptions, current operational requirements, other foreseeable changes/requirements in future etc. MePTCL has taken a rational and scientific approach while forecasting various components of Business Plan in order to arrive at realistic forecast with minimal expected deviations. However, due to a number of uncontrollable externalities and the impact of COVID-19 pandemic, deviations are expected and shall be brought to the notice of the Commission in accordance with the provisions of MYT Regulations. The approach undertaken for preparation of various plans and forecasts is explained in detail in the relevant sections of Business Plan and the same will be considered as base for determination of ARR and transmission tariff for the MYT control period.

1.3 Business Plan

MePTCL has submitted that “Business Plan is a formal statement of a set of business goals believed attainable and the plan for reaching those goals by the organization or team attempting to reach those goals.” It is submitted that the Business plan for the third control period of FY 2021-22 to FY 2023-24 is submitted in accordance with the regulations bearing in mind the growth plan for the control period after evaluating its business environment. MePTCL has taken a rational and scientific approach while forecasting the Business Plan in order to arrive at realistic forecast with minimal expected deviations. It is submitted that there are a number of internal and external factors which affect the planning of the company and due to changing business environment and uncertainty over the regulations governing the Transmission business, it is submitted that the Commission may take cognizance of the fact that the business plan is a dynamic document which may need to be updated at various intervals to align the growth path of the company with the external business environment and internal factors affecting the business/operations of the company. Objectives of developing the business plan are as follows:

- **Providing a tool for Strategic Planning:** The Business Plan is intended to chart out the Company’s way forward. The key objective for developing the business plan is to analyze and anticipate the major requirements of transmission infrastructure commensurate with the expected demand growth of electricity. Business Plan may prove to be a tool to strategically plan for capital investments and it’s financing. Further, it may help in timely execution and monitoring of the work.
- **Aid in Decision Making and better operational efficiency:** The Business Plan may aid in decision making while planning and in the execution of the project.

Further, proactive actions may be taken during the execution of the project in order to achieve the company's goal of supplying quality power to all. Improving the operational efficiency by running the transmission network in accordance with the set performance target.

1.4 Transmission system availability and transmission

Loss: Petitioner's submission:

Meghalaya's transmission network is highly interconnected with the neighboring Assam network, it is connected at 400 kV (Killing – Bongaigaon, Killing - Silchar), at 220 kV (Killing – Misa), and at 132 kV (Khliehriat(PG) – Badarpur (PG), Khliehriat (Meghalaya) –Panchgram (Assam), Mendipathar Substation to Agia (Assam) at 132 kV Khliehriat (Powergrid) –Khandong D/c (NEEPCO) and Umtru HEP - Kahelipara).The existing transformation capacity available at 400 kV and 220 kV for import from the north-eastern grid is 1150 MVA. This transformation capacity serves both Assam and Meghalaya.

Transmission System Availability:

MePTCL is making all out efforts to supply the power required by the State through its transmission system comprising 20 sub-stations and more than 1433.576 Ckt.km (as on March 2020) of transmission lines of different voltage classes spread across Meghalaya. It is stated that it is important to provide uninterrupted quality power supply, optimization of transmission loss, network construction have greater impact on the transmission business and with the growth in transmission network, it will be more challenging to improve the system availability and to reduce the transmission losses over the period. MePTCL is undertaking repair and maintenance work for optimizing system performance which facilitated the licensee to maintain close to 98% TSAF. Below Table presents the Transmission System Availability figures of MePTCL from FY 2016-17 to FY 2019-20onwards.

Table 1: Transmission System Availability from FY 2016-17 to FY 2019-20

Transmission System Availability	2016-17	2017-18	2018-19	2019-20
Intra-State (%)	97.93	98.83	99.71	99.60
Inter-State (%)	93.30	94.88	95.69	95.68
Overall (%)	95.62	96.85	97.70	97.64

Table 2: Projected Transmission System Availability from FY 2017-18 to FY 2020-21

Transmission System Availability	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Intra-State (%)	99.80	99.80	99.80	99.80
Inter-State (%)	95.80	96.00	96.10	96.20
Overall (%)	97.80	97.90	97.95	98.00

Transmission Loss: MePTCL has submitted that continuous efforts are being made to reduce transmission losses by replacing meters and metering system at interface/ boundary with the Generators and Distributors and also established a Central Data Centre at NEHU sub-station. MePTCL, with these initiatives, has been able to reduce the transmission losses from 5.18% in FY 2016-17 to 4.0% in FY 2020-21, which comes well within the target set by the Commission as detailed in the table below.

Table 3: Transmission Loss from FY 2016-17 to FY 2020-21

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21 (up to August 2020)
Transmission Loss (%)	5.18	5.13	4.08	3.78	4.00

MePTCL has submitted that following steps are initiated for further reduction in transmission losses:-

- a. **Metering Up gradation:** Replacing the existing meters & the metering system at interface boundary with the GENCO & the DISCOM by ABT compliant class 0.2S accuracy meters as per the latest CEA metering regulations. Detailed project report has been prepared at an estimated cost of Rs.22.24 crore, for which funding is yet to be finalized.
MePTCL, for more accuracy and as per the latest CEA regulations, has taken up the work for replacing current transformers, potential transformers (of 132kV and above) etc of accuracy class 0.5S with accuracy class of 0.2S under the project, 'Renovation and Up gradation of Protection & Control System of MePTCL', funded under the Power System Development Fund (PSDF) at an estimated cost of Rs.69.19 crore. The work is completed in December 2019.
- b. **Transmission line up-gradation:** MePTCL has taken up the Re-engineering work of the 132Kv line from Mawlai sub-station to Nangalbibra sub-station by way of replacing of conductor; insulators etc and the works are completed in September, 2018. Further, two DPRs for Re-conductoring of the 132 Kv single circuit line from Khliehriat to Ratacherra with High Temperature and Low Sag (HTLS) conductor (Meghalaya portion) and Re-engineering and strengthening by HTLS for 132 kV double circuit transmission line from Stage-I – Stage-III Power Station have been prepared for funding under PSDF. DPR has been prepared for funding under ADB and other Central sponsored schemes for 400kV LILO of 400kV Silchar-Killing at Mynkre, LILO of 400kV Silchar-Killing at Saisiej (new Shillong), 400kV Mynkre-Ichamati and 400kV Nangal-Nongstoin-Mawkyrwat-Cherra-Ichamati(to be initially charged at 220kV) for Indo-Bangla cross border trade.

Table 4: Projected Transmission loss from FY 2020-21 to FY 2023-24

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Transmission loss (%)	3.80%	3.80%	3.80%	3.70%

Capacity addition (Physical targets): The rollout plan prepared as per the business plan considering the ongoing and up-coming schemes/projects/works for the control period is as given below:

Table 5: Rollout Plan for FY 2020-21 to FY 2023-24

Plan	Existing Capacity (31.03.2020)	Rollout Plan				Total	Total expected Capacity FY 22
		FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21		
Transmission (Inter-State)							
New Line (Ckt Km)	411.885	0	0	0	0	0	411.885
Transformation Capacity(MVA)	200	0	0	0	0	0	200
Transmission (Intra-State)							
New Line (Ckt Km)	1202.308	675	85	806	120	1686	2888.308
Transformation Capacity (MVA)	1505	720	455	752	560	2487	3992

An additional transmission lines totaling 1686Ckt-km and transformation capacity of 2487 MVA at an estimated cost of Rs.2364.77 crore have been planned by MePTCL to enhance the transmission capacity. The target date of commissioning of these transmission lines is spread between FY 2020-21 and FY 2023-24. Additional transmission capacity so created will be adequate to meet the increased demand on Inter and Intra state transmission lines till the year FY 2023-24.

The existing intra-state transmission network for evacuation and transfer of power within the state is mainly at 132 kV level. Presently the state has 1202.308Ckt. Km at 132 kV, 226.84 Ckt. Km at 220 kV and 4.428Ckt. Km at 400 kV of inter & intra level which are more or less adequate to meet the present peak requirements of the state. The aggregate capacity at 132/33 kV is 595 MVA. The above capacity is generally adequate to meet the present peak requirements of the state.

Commission's analysis:

The Commission has approved intra state transmission loss at 4% for each year of the control period of FY 2018-19 to FY 2020-21 in Tariff order dated 31.03.2018

(Case no.8/2017).

It is observed from the submission made by the MePTCL, the actual transmission loss is at 3.78% in FY 2019-20. MePTCL has estimated transmission loss of 3.8% for FY 2020-21. MePTCL has further projected the transmission loss level of 3.8% for FY 2021-22 and FY 2022-23 and at 3.7% for FY 2023-24.

The Commission, however, considering the accelerated renovation and up gradation of the Network and system improvements contemplated during the third control period FY 2021-22 to FY 2023-24, proposes a moderate improvement of 0.05% year on year over the estimated transmission of 3.8% for FY 2020-21 and accordingly approves the transmission loss for the third control period of FY 2021-22 to FY 2023-24 as under:

Table 6: Transmission loss approved for FY 2021-22 to FY 2023-24

Particulars	FY 2021-22	FY 2022-23	FY 2023-24
Transmission loss (%)	3.75%	3.70%	3.65%

1.5 Capital investment Plan

Petitioner's Submission:

MePTCL had submitted that the Capital Investment Plan is to provide a road map for planning and implementation of proposed capital investment for the control period FY 2021-22 to FY 2023-24 and is prepared keeping in view various long term needs as highlighted below:

- Strengthening of Aging Network
- Evacuation of Power from upcoming generating stations
- Transmission Corridor development for new load centres.
- Increasing Transmission capacity for increased load
- Increased Quality and Reliability of Power Transmitted
- Appropriate Loading of Transmission Network
- Increased Control and Protection for Grid Stability
- Metering and Loss Assessment
- Loss Reduction
- Outage Reduction

MePTCL has submitted that the Capital Investment Plan (CIP) includes the ongoing projects which were under implementation and up-coming projects to be implemented during the control period of FY 2021-22 to FY 2023-24. It is submitted that several assumptions have been taken to project the various attributes such as scope of work, funding pattern, funding sources, project cost, commencement/ completion dates and construction period etc. The assumptions have been taken considering historical inputs and anticipated project attributes. MePTCL, to finance the capital expenditure, primarily depends on financial

assistance provided by the Government of Meghalaya, Government of India, World Bank, etc. Most of the funding is available/ expected to be available to MePTCL in the form of Grants & Equity. Loan component is also expected to be provided by the Government of Meghalaya. The details of various schemes in the CIP are provided hereunder:

North East Region Power System Improvement Project (NERPSIP)

NERPSIP is being implemented as a Central Sector Scheme through Power Grid Corporation of India Limited (PGCIL) and is funded by the Government of India and the World Bank. The scheme comprises of development of Transmission, Sub-Transmission/ Distribution system upto 33 KV. Objective of the scheme is to revitalize the power sector to achieve sustainable development in the long term. The addition of new substations and construction of new lines is required for relieving the existing overloaded lines and substations catering to Shillong, areas of Khasi Hills and Garo Hills districts. The added capacity is also required for catering to the growing demand throughout the state.

The total approved cost under tranche-I for Meghalaya for transmission scheme is Rs.598.73 crore. The date of approval of the project is 01.12.2014. The works are in progress and is expected to be completed by Dec 2020: The works included are as follows:

- Construction of 220 kV double circuit line from Killing (Byrnihat) sub-station to Mawngap (Mawphlang) sub-station and finally up to New Shillong Township (244 circuit km) complete with up-gradation of 132/33 kV Mawngap sub-station to 2 x 160 MVA, 220/132 kV (GIS) and a new 2 x 160 MVA, 220/132 kV & 2 x 50 MVA, 132/33 kV sub-stations (GIS) at New Shillong.
- Construction of Loop In Loop Out (LILO) of both circuits of MLHEP – Khliehriat double circuit line (38 circuit km) along with a 2 x 50 MVA, 132/33 kV sub-station at Mynkre.
- Construction of 132 kV double circuit line from Ampati to Phulbari (138 circuit km) along with 2 x 50 MVA, 132/33 kV sub-station at Phulbari.

Power System Development Fund (PSDF)

The Government of India has approved a scheme for operationalisation of Power System Development Fund (PSDF) in year 2014. PSDF is a fund constituted under Central Electricity Regulatory Commission (Power System Development Fund) Regulations, 2014 to be utilized for the following purpose:

- Transmission systems of strategic importance based on operational feedback by Load Dispatch Centers for relieving congestion in inter-State transmission system (ISTS) and intra-State Transmission Systems which are incidental to the ISTS.

- Installation of shunt capacitors, series compensators and other reactive energy generators for improvement voltage profile in the Grid.
- Installation of special protection schemes, pilot and demonstrative projects, standard protection schemes and for setting right the discrepancies identified in the protection schemes and for setting right the discrepancies identified in the protection audits on regional basis.
- Renovation and Modernization (R&M) of transmission and distribution system for relieving congestion
- Any other scheme/ project in furtherance of the above objectives such as technical studies and capacity building

MePTCL, further to its objectives of having enhanced grid stability, plans to carry out Renovation and Upgradation of Protection & Control system with funding available through PSDF. The scope of work includes the following:

- Modification in switching scheme
- Replacement of existing EM/static relays by numerical relays / Bay control and protection units and substation automation system (SAS) and providing Time Stamping of Events (TSE), Disturbance Recording (DR) & Events Logging (EL).
- Replacement of old obsolete equipment (Circuit Breakers, Surge Arresters, Isolators, Earthing switches, CTs, PTs/CVTs and materials.
- Establishment of reliable communication link and providing carrier inter-trip facility.
- Improvement in DC system and providing DG sets.
- Improving existing Earthing system.
- Providing required fire fighting system.
- Providing modern diagnostic tools.
- Any other improvement required.

Renovation and Upgradation of Protection & Control System:

Funded through 100% Grant under PSDF. The scheme includes replacement/ installation of Circuit Breakers, Current Transformers, Potential Transformers, Capacitive Voltage Transformers, Isolators, Control & Relay Panels, Power & Control Cables, Air Conditioning System, Battery Banks, Surge Arrestors, Solar LEDs, Wave Traps, Nitrogen Injection Systems, Diesel Generator Sets, Firewalls, Numerical Relays and Diagnostic Tools in all the existing extra high tension (132 KV and above) sub-station in the state. The work was completed in December 2019.

Installation of Numerical Line Differential Relays in 132 KV Lines:

Funded through 100% grant of Rs.3.27 crore from PSDF by MoP sanctioned vide Order No 10/01/2014-OM dated 24.05.2019 and to be completed within 18 months from 1st release of fund.

Automatic Demand Management System' (ADMS) which is also Sanctioned Rs.2.07 crore (grant) under PSDF by MoP vide Order No 10/1/2014-OM dated 15.04.2019 and to be completed within 6(six) months from 1st release of fund.

Implementation of Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST):

Sanctioned Rs.8.48 crore (grant) under PSDF by MoP vide Letter No. 10/1/2014-OM dated 20.03.2020 and is to be completed within 12 (twelve) months from 1st release of fund.

Replacement of the 400 KV, Bus Reactor at 400/220/132 KV Substation, Killing: Sanctioned Rs.6.86 crore (grant) under PSDF by MoP vide Letter No. 10/1/2014-OM dated 20.03.2020 and is to be completed within 12 (twelve) months from 1st release of fund.

Other Central Sponsored Schemes

Some of the other works in the investment plan have been funded by other central sponsored schemes like NEC and NESIDS.

i. North Eastern Council:

Under the schemes of North Eastern Council (NEC), the funds are available in form of grants to MePTCL.

The following ongoing projects are being implemented under the NEC Scheme:

- Augmentation of 132/33 kV sub-station from 35 MVA to 50 MVA, at Rongkhon, with a total capital expenditure of Rs.4.69 crores. The project is scheduled to be completed by 31.12.2020.
- Construction of 132 kV double circuit LILO on Mawlai-Cherra line at Mawngap sub- station, with a total capital expenditure of Rs.4.97 crores. The project is scheduled to be completed by 31.03.2021.
- Construction of the 132 KV D/C line from Nangalbibra to Baghmara, with a total capital expenditure of Rs.81.00 crores. The project is scheduled to be completed by 31.03.2025
- Construction of the 220KV D/C Nangalbibra (PG)-Mawphlang line including 220 KV LILO of Mawphlang – New Shillong line at Mawmihthied/Cherra, with a total capital expenditure of Rs.230.00 crores. The project is scheduled to be completed by 31.03.2024
- Construction of the LILO of the 132 KV D/C line from Stage-III Powerhouse to Umtru Powerhouse on Multi Circuit Towers at Nongpoh, with a total capital

expenditure of Rs.20.00 crores. The project is scheduled to be completed by 31.03.2024

- Construction of 132 KV D/C LILO of Umtru – Kahelipara Line at Killing with HTLS, with a total capital expenditure of Rs.45.00 crores. The project is scheduled to be completed by 31.03.2024
- Re-conductoring of 132 KV UPS-Sarusajailine with HTLS, with a total capital expenditure of Rs.40.00 crores. The project is scheduled to be completed by 31.03.2025
- Construction of 132 KV D/C Nangalbibra – Nangal (PG) line with HTLS, with a total capital expenditure of Rs.15.00 crores. The project is scheduled to be completed by 31.03.2025
- Construction 220/132 KV, 2x160 MVA Sub-station at Mawmihthied/ Cherra, with a total capital expenditure of Rs.70.00 crores. The project is scheduled to be completed by 31.03.2024
- Construction of 132/33 KV, 2 x 25 MVA sub-station at Nongpoh, with a total capital expenditure of Rs.45.00 crores. The project is scheduled to be completed by 31.03.2023
- Construction of the 132/33 KV, 2 x 25 MVA GIS sub-station at the 400/220/132 KV sub-station at Killing, Byrnihat, with a total capital expenditure of Rs.35.00 crores. The project is scheduled to be completed by 31.03.2024
- Augmentation of the 132/33 KV NEHU sub-station from 2 x 20 MVA to 2 x 50 MVA capacity along with reengineering of Bus-bar, with a total capital expenditure of Rs.20.00 crores. The project is scheduled to be completed by 31.03.2023
- Augmentation of the 132/33 KV Nangalbibra sub-station from 2 x 12.5 MVA to 2 x 50 MVA capacity along with reengineering of Bus-bar, with a total capital expenditure of Rs.30.00 crores. The project is scheduled to be completed by 31.03.2023
- Augmentation of the 132/33 KV Cherra sub-station from 1 x 12.5 MVA to 2 x 25 MVA capacity, with a total capital expenditure of Rs.25.00 crores. The project is scheduled to be completed by 31.03.2023

The projects under the existing Schemes of NEC will accrue socio-economic benefits to the people of North Eastern Region enhancing their capabilities and livelihood.

ii. North East Special Infrastructure Development Scheme (NESIDS):

Government of India sanctioned the scheme/works to focus on projects relating to infrastructure creation concerning water supply, power and connectivity, enhancing tourism and also the social infrastructure of the primary and secondary sectors of health and education. The scheme is to be implemented by the Ministry of Development of North Eastern Region, proposed by the State Governments in North

East in consultation with the respective line Ministries. The following projects are being carried out under NESIDS:

- Augmentation of 132/33KV, 2x20 MVA Mawlai substation to 132/33KV, 3x50 MVA substation including re-engineering of the 132 KV Busbar' with capital expenditure of Rs.49.80 crore and scheduled to be completed by March 2020.

Schemes under Implementation

The capital investment schemes under implementation and new schemes proposed to be implemented are detailed in the table below:

Table 7: Ongoing schemes submitted by the petitioner

Sl. No.	Project Details	Project Start Date	Project Completion date	Total Capital Expenditure approved by MSERC/ Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component (Rs. Cr.)	Funding Agency
	Name of scheme						Equity component	Debt Component			
								Loan amount (Rs.Cr.)	Loan source		
A	Transmission lines on-going works										
1	Stringing of second circuit of the 132 kV Agia-Nangalbibra line	26.09.2012	20-Dec	21.19	19.07					21.19	SPA
2	Augmentation of 132/33 kV sub-station from 35 MVA to 50 MVA, at Rongkhon.	08.09.2010	31.12.2020	4.69	0.7					4.69	NEC
3	Construction of 132 kV double circuit LILO on Mawlai-Cherra line at Mawngap sub- station	22.03.2011	31.03.2021	4.97	1.24					4.97	NEC
4	Construction of 132 kV double circuit LILO line of 132 kV Rongkhon-Ampati line at Praharinagar	01.04.2014	30.03.2022	14.39	4.1	4.1				14.39	SPA
B	Sub-station on-going works										
1	132 kV sub-station at Praharinagar	01.04.2014	30.03.2022	18.91	6.33	6.33				18.91	SPA
C	Others on-going works										
1	Installation of Numerical Line Differential Relays in 132 KV Lines	01.06.2019	31.03.2021	3.27	1.14					3.27	PSDF

Sl. No.	Project Details	Project Start Date	Project Completion date	Total Capital Expenditure approved by MSERC/ Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component (Rs. Cr.)	Funding Agency
	Name of scheme						Equity component	Debt Component			
								Loan amount (Rs.Cr.)	Loan source		
2	Replacement of the 400 KV, Bus Reactor at 400/220/132 KV Substation, Killing	31.08.2020	31.08.2021	6.86	4	2.86				6.86	PSDF
3	Augmentation of 132/33KV, 2X20 MVA Mawlai substation to 132/33KV, 3x50 MVA substation including re-engineering of the 33KV Busbar'	01.06.2019	31.03.2022	49.8	23.406	23.406				49.8	NESIDS
4	Survey work for Construction of 220KV D/C MawphlangIchamati Line and 220/132/33 KV Ichamati substation	26.05.2020	26.01.2021	0.17	0.17					0.17	Others
D	North Eastern Region Power System Improvement Projects (NERPSIP): Tranche-I										
1	220 kV double circuit Byrnihat (Killing) – Mawngap – New Shillong line	01.04.2016	31.03.2022	598.73	89.81	89.81			Govt. of Meghalaya	598.73	NERPSIP
2	LILO of both circuit of MLHEP-Khliehriat 132 kV double circuit line at Mynkre										

Sl. No.	Project Details	Project Start Date	Project Completion date	Total Capital Expenditure approved by MSERC/ Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component (Rs. Cr.)	Funding Agency
	Name of scheme						Equity component	Debt Component			
								Loan amount (Rs.Cr.)	Loan source		
3	132 kV double circuit line from Phulbari to Ampati										
4	220/132 kV sub-station at New Shillong										
5	220/132 kV sub-station at Mawngap										
6	132 / 33 kV, 2 x 50 MVA sub-station at New Shillong										
7	132/ 33 kV, 2 x 50 MVA sub-station at Mynkre										
8	132/ 33 kV, 2 x 50 MVA sub-station at Phulbari										
E.	SLDC										
1	Automatic Demand Management System' (ADMS)	01.06.2019	Aug/Sept 2020	2.07	0.04					2.07	PSDF

Table 8: Up-coming schemes submitted by the petitioner

Sl. No	Name of scheme	Project Start Date (DD-MM-YY)	Project Completion Date (DD-MM-YY)	Total Capital Expenditure Projected by Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Project outlay in FY 2022-23 (Projected) in Rs. Cr.	Project outlay in FY 2023-24 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component	Funding Agency
									Equity	Debt Component			
									Component	Loan amount	Loan source		
A.	Transmission Line New works												
1	Construction of the 220 KV D/C line from Mawphlang to Ichamati including LILO at Mawmihthied/ Cherra	01.04.2021	31.03.2024	110		44	33	33				110	State Govt
2	Construction of the 132 KV D/C line from Nangalbibra to Baghmara	01.04.2022	31.03.2025	81				32.4	24.3			81	NEC
3	Construction of the 220KV D/C Nangalbibra (PG)-Mawphlang line including 220 KV LILO of Mawphlang – New Shillong line at Mawmihthied/Cherra	01.04.2021	31.03.2024	230		92	69	69				230	NEC
4	Construction of the LILO of the 132 KV D/C line from Stage-III Powerhouse to Umtru Powerhouse on Multi Circuit Towers at Nongpoh.	01.04.2021	31.03.2024	20		8	6	6				20	NEC
5	Construction of 132 KV D/C LILO of Umtru – Kahelipara Line at Killing with HTLS.	01.04.2021	31.03.2024	45		18	13.5	13.5				45	NEC
6	Re-conductoring of 132 KV UPS-Sarusajailine with HTLS.	01.04.2022	31.03.2025	40				16	12			40	NEC
7	Construction of 132 KV line from New Shillong – IIM Shillong	01.04.2021	31.03.2024	13		5.2	3.9	3.9				13	State Govt
8	Construction of 132 KV D/C Nangalbibra – Nangal (PG) line with HTLS	01.04.2022	31.03.2025	15				6	4.5			15	NEC
9	Construction of the 132 KV S/C line on D/C towers from Mawphlang to Balat	01.04.2023	31.03.2026	85					34			85	State Govt

Sl. No	Name of scheme	Project Start Date (DD-MM-YY)	Project Completion Date (DD-MM-YY)	Total Capital Expenditure Projected by Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Project outlay in FY 2022-23 (Projected) in Rs. Cr.	Project outlay in FY 2023-24 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component	Funding Agency
									Equity	Debt Component			
									Component	Loan amount	Loan source		
10	132 kV single circuit line from Rongkhon sub-station to Ganol HEP	01.04.2021	31.03.2022	9.6		9.6						9.6	Project of Ganol/ Others
11	Re-conductoring and strengthening of the 132 kV S/C line from Khliehriat to Ratacherra by HTLS conductor	01.04.2021	31.03.2023	51.82		31.09	20.73					51.82	PSDF (Including Assam section)
12	for Re-conductoring and strengthening of the 132 kV D/C line from Stage-I to Stage -III Power Station by HTLS conductor	01.04.2021	31.03.2023	26.86		16.12	10.74					26.86	PSDF
B.	Sub-Station New works												
1	Construction of a 220/132 KV, 2X 160MVA and 132/33KV, 2 x 50 MVA Sub-stations at Ichamati	01.04.2022	31.03.2025	60			24	18				60	State Govt
2	Construction of a 132/33 KV, 2 x 25 MVA Sub-station at Bagmara	01.04.2022	31.03.2025	45			18	13.5				45	State Govt
3	Construction 220/132 KV, 2x160 MVA Sub-station at Mawmihthied/ Cherra.	01.04.2021	31.03.2024	70		28	21	21				70	NEC
4	Construction of 132/33 KV, 2 x 25 MVA sub-station at Nongpoh.	01.04.2021	31.03.2023	45		27	18				State Govt.	45	NEC
5	Construction of the 132/33 KV, 2 x 25 MVA GIS sub-station at the 400/220/132 KV sub-station at Killing, Byrnihat	01.04.2021	31.03.2024	35		14	10.5	10.5				35	NEC
6	Replacement of 5 MVA, 132/33 KV transformer with 20 MVA transformer at Rongkhon 132/33KV substation	01.04.2021	31.03.2023	5		3	2					5	State Govt

Sl. No	Name of scheme	Project Start Date (DD-MM-YY)	Project Completion Date (DD-MM-YY)	Total Capital Expenditure Projected by Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Project outlay in FY 2022-23 (Projected) in Rs. Cr.	Project outlay in FY 2023-24 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component	Funding Agency
									Equity	Debt Component			
									Component	Loan amount	Loan source		
7	Construction of 25 MVA, 132/33 KV Transformer s at IIM Shillong	01.04.2021	31.03.2023	12		7.2	4.8					12	State Govt
8	Provision of additional 25 MVA, 132/33 KV transformer with terminal equipments at Ampati 132/33KV substation	01.04.2021	31.03.2023	7		4.2	2.8					7	State Govt
9	Augmentation of the 132/33 KV NEHU sub-station from 2 x 20 MVA to 2 x 50 MVA capacity along with reengineering of Bus-bar	01.04.2021	31.03.2023	20		12	8					20	NEC
10	Augmentation of the 132/33 KV Nangalbibra sub-station from 2 x 12.5 MVA to 2 x 50 MVA capacity along with reengineering of Bus-bar	01.04.2021	31.03.2023	30		18	12					30	NEC
11	Augmentation of the 132/33 KV Cherra sub-station from 1 x 12.5 MVA to 2 x 25 MVA capacity.	01.04.2021	31.03.2023	25		15	10					25	NEC
12	Construction of 2x25 MVA, 132/33 KV sub-station at Balat and bay extension at Mawphlang sub-station	01.04.2022	31.03.2025	15			6	4.5				15	State Govt
13	Construction of 132/33KV, 2*10 MVA Substation at Kharkhutta, North Garo Hills	2022-23	2023-24	90			54	36				90	SPA
14	Construction of 132/33KV, 2*10 MVA Substation at Chokpot, South Garo Hills	2022-23	2023-24	101			60.6	40.4				101	SPA

Sl. No	Name of scheme	Project Start Date (DD-MM-YY)	Project Completion Date (DD-MM-YY)	Total Capital Expenditure Projected by Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Project outlay in FY 2022-23 (Projected) in Rs. Cr.	Project outlay in FY 2023-24 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component	Funding Agency	
									Equity	Debt Component				
									Component	Loan amount	Loan source			
15	Construction of 132/33KV, 2*20 MVA Substation at Chokchokia, West Garo Hills	2022-23	2023-24	90			54	36				90	SPA	
16	Construction of 220/132/33KV, 2*100 MVA Substation at Rongsai, West Garo Hills	2022-23	2023-24	170			102	68				170	SPA	
C.	Others New Works													
1	Reliable Communication & Data Acquisition System Upto 132 KV	01.04.2021	31.03.2022	29			29				14.5		14.5	PSDF
2	Upgradation and Integration of RTU For Improvement of Real Time Telemetry Status of Sub Stations In Meghalaya	01.04.2021	31.03.2022	2.55			2.55				State Govt.	2.55	PSDF	
3	Additional Detailed Project Report for Renovation and Upgradation of Protection & Control System	01.04.2021	31.03.2023	45.42			27.25	18.17				45.42	PSDF	
4	Remote Monitoring & Time Synchronization of Numerical Relays	01.04.2021	31.03.2023	21.49			12.89	8.6				21.49	PSDF	
D.	SLDC													
1	MIS automation Data Analytics & Data Science for Management Information Services	21-Jun	22-Mar	1			1				1			
2	Weather Forecasting: Installation of weather stations and their telemetry to transmit real time data to SLDC	21-Jun	22-Mar	0.7			0.7				0.7			

Sl. No	Name of scheme	Project Start Date (DD-MM-YY)	Project Completion Date (DD-MM-YY)	Total Capital Expenditure Projected by Govt/ DPR/ FI (Rs. Cr.)	Project outlay in FY 2020-21 (Projected) in Rs. Cr.	Project outlay in FY 2021-22 (Projected) in Rs. Cr.	Project outlay in FY 2022-23 (Projected) in Rs. Cr.	Project outlay in FY 2023-24 (Projected) in Rs. Cr.	Source of Financing for Scheme			Capital Subsidies/ Grants Component	Funding Agency
									Equity	Debt Component			
									Component	Loan amount	Loan source		
3	Load Forecasting: Installation of Load Forecasting tool for forecasting data for operational and planning purposes utilising SCADA and weather data	21-Oct	22-Dec	1		0.3	0.7			1			
4	Scientific Earthing of SLDC assets:Chemical Earthing of SLDC assets in line with IEEE-80 standards	1-Nov-20	21-Mar	0.06	0.06					0.06			
5	System Study of Meghalaya power system:Steady state and dynamic study of the power system using load flow study software	21-Jan	21-Mar	0.6	0.6					0.6			
6	Construction of SAMAST building: Housing of SAMAST infrastructure & office	1-Jan-21	22-Mar	2	1	1				2			
7	Synchrophasor Wide Area Dynamic Measurement System:Installation of PMUs in EHV grid and power stations	Apr 2022	23-Oct	3			1.5	1.5		3			
8	ADMS Expansion project:Installation and integration of FRTUs at grid substations	1-Oct-21	22-Oct	2		1	1			2			
9	SLDC SCADA System Expansion:Expansion of Video Projection System in Control Room	22-Jun	22-Dec	0.15			0.15			0.15			
10	Implementation of Scheduling, Accounting, Metering, and Settlement of Transaction in Electricity (SAMAST)	31.08.2021	31.08.2022	8.48		4.95	3.53					8.48	PSDF

Table 10: Summary of capital investment plan (Ongoing & Upcoming schemes)

(Rs. crore)

Sl. No.	Schemes	Project Cost	Funding Pattern		
			Equity	Loan	Grant
New Schemes					
1	State Govt				
	Construction/ Upgradation of Transmission lines	208.00	0.00	0.00	208.00
	Construction/ Upgradation of Substations	144.00	0.00	0.00	144.00
	Sub-total	352.00	0.00	0.00	352.00
2	Center Sponsored Schemes				
a	SPA				
	Construction/ Upgradation of Substations	451.00	0.00	0.00	451.00
b	NEC/ CSS				
	Construction/ Upgradation of Transmission lines	431.00	0.00	0.00	431.00
	Construction/ Upgradation of Substations	225.00	0.00	0.00	225.00
	Sub-total	656.00	0.00	0.00	656.00
3	PSDF				
	Construction/ Upgradation of Transmission lines	78.68	0.00	0.00	78.68
	Other New Works	98.46	0.00	14.50	83.96
	SLDC	8.48	0.00	0.00	8.48
	Sub-total	185.62	0.00	14.50	171.12
4	Others				
	Construction/ Upgradation of Transmission lines	9.60	0.00	0.00	9.60
	SLDC	10.51	0.00	10.51	-
	Sub-total	20.11	0.00	10.51	9.60
	Total	1664.73	0.00	25.01	1639.72
Ongoing/ Completed Schemes					
1	Center Sponsored Schemes				
a	SPA				
	Construction/ Upgradation of Transmission lines	35.58	0.00	0.00	35.58
	Construction/ Upgradation of Substations	18.91	0.00	0.00	18.91
	Sub-total	54.49	0.00	0.00	54.49
b	NEC				
	Construction/ Upgradation of Transmission lines	9.66	0.00	0.00	9.66
2	PSDF				
	Other on-going works	10.13	0.00	0.00	10.13
	SLDC	2.07	0.00	0.00	2.07
	Sub-total	12.20	0.00	0.00	12.20
3	NERPSIP				
	Construction/ Upgradation of Transmission lines	598.73	0.00	0.00	598.73
	Construction/ Upgradation of Substations				
	Sub-total				
5	Others				
	Other on-going works	49.97	0.00	0.00	49.97
	Total	725.05	0.00	0.00	725.05
	Grand total	2389.78	0.00	25.01	2364.77

MePTCL has requested the Commission to approve the above schemes and consider the requirement of the State to implement the initiative of the Government of India (GoI) and the Government of Meghalaya to ensure availability of transmission system for 24x7 power supply.

Commission's analysis:

The Commission has examined the capital investment/expenditure plan submitted by the MePTCL. The Commission provisionally approves the capital investment/expenditure plan keeping in view the requirement of strengthening of intra-state transmission system and distribution system requirement to meet the 24 x 7 Power to All and to meet the demand growth in the state. The year on year capex and capitalisation is depicted based on capex plan and date of completion of the schemes/works.

The Commission provisionally approves the scheme-wise capital investment plan for MYT control period of FY 2021-22 to FY 2023-24 as given in the table below:

Table 11: Scheme-wise/work-wise capital investment plan approved for FY 2020-21 and MYT control period from FY2021-22 to FY 2023-24

(Rs. crore)

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
A	Ongoing schemes															
	Transmission lines															
1	Stringing of second circuit of the 132 kV Agia-Nangalbibra line	21.19	21.19			21.19	19.07	21.19							19.07	21.19
2	Augmentation of 132/33 kV sub-station from 35 MVA to 50 MVA, at Rongkhon.	4.69	4.69			4.69	0.70	4.69							0.70	4.69
3	Construction of 132 kV double circuit LILO on Mawlai-Cherra line at Mawngap sub- station	4.97	4.97			4.97	1.24	4.97							1.24	4.97
4	Construction of 132 kV double circuit LILO line of 132 kV Rongkhon-Ampati line at Praharinagar	14.39	14.39			14.39	4.10		4.10	14.39					8.20	14.39
	Sub-stations															
5	132 kV sub-station at Praharinagar	18.91	18.91			18.91	6.33		6.33	18.91					12.66	18.91
	Others works														0.00	0.00
6	Installation of Numerical Line Differential Relays in 132 KV Lines	3.27	3.27			3.27	1.14	3.27							1.14	3.27
7	Replacement of the 400 KV, Bus Reactor at 400/220/132 KV Substation, Killing	6.86	6.86			6.86	4.00		2.86	6.86					6.86	6.86
8	Augmentation of 132/33KV, 2X20 MVA Mawlai substation to 132/33KV, 3x50 MVA substation including re-engineering of the 33KV Busbar'	49.80	49.80			49.80	23.41		23.41	49.80					46.81	49.80
9	Survey work for Construction of 220KV D/C Mawphlangchamati Line and 220/132/33 KV Ichamati substation	0.17	0.17			0.17	0.17	0.17							0.17	0.17

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
	NERPSIP: Tranche-I															
10	220 kV double circuit Byrnihat (Killing) – Mawngap – New Shillong line	598.73	598.73			598.73	89.81		89.81	598.73					179.62	598.73
11	LILO of both circuit of MLHEP-Khliehriat 132 kV double circuit line at Mynkre															
12	132 kV double circuit line from Phulbari to Ampati															
13	220/132 kV sub-station at New Shillong															
14	220/132 kV sub-station at Mawngap															
15	132 / 33 kV, 2 x 50 MVA sub-station at New Shillong															
16	132/ 33 kV, 2 x 50 MVA sub-station at Mynkre															
17	132/ 33 kV, 2 x 50 MVA sub-station at Phulbari															
	SLDC															
18	Automatic Demand Management System' (ADMS)	2.07	2.07			2.07	0.04								0.04	0.00
	Sub-total - Ongoing schemes	725.05	725.05	0.00	0.00	725.05	150.03	34.29	126.51	688.69	0.00	0.00	0.00	0.00	276.53	722.98
B	<u>Upcoming/new schemes</u>															
	Transmission Lines - New works															
1	Construction of the 220 KV D/C line from Mawphlang to Ichamati including LILO at Mawmihthied/Cherra	110.00	110.00			110.00			44.00		33.00		33.00	110.00	110.00	110.00
2	Construction of the 132 KV D/C line from Nangalbibra to Baghmara	81.00	81.00			81.00					32.40		24.30		56.70	0.00

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
3	Construction of the 220KV D/C Nangalbibra (PG)-Mawphlang line including 220 KV LILO of Mawphlang – New Shillong line at Mawmihthied/Cherra	230.00	230.00			230.00			92.00		69.00		69.00	230.00	230.00	230.00
4	Construction of the LILO of the 132 KV D/C line from Stage-III Powerhouse to Umtru Powerhouse on Multi Circuit Towers at Nongpoh.	20.00	20.00			20.00			8.00		6.00		6.00	20.00	20.00	20.00
5	Construction of 132 KV D/C LILO of Umtru – Kahelipara Line at Killing with HTLS.	45.00	45.00			45.00			18.00		13.50		13.50	45.00	45.00	45.00
6	Re-conductoring of 132 KV UPS-Sarusajailine with HTLS.	40.00	40.00			40.00					16.00		12.00		28.00	0.00
7	Construction of 132 KV line from New Shillong – IIM Shillong	13.00	13.00			13.00			5.20		3.90		3.90	13.00	13.00	13.00
8	132 KV D/C Nangalbibra – Nangal (PG) line with HTLS	15.00	15.00			15.00					6.00		4.50		10.50	0.00
9	Construction of the 132 KV S/C line on D/C towers from Mawphlang to Balat	85.00	85.00			85.00							34.00		34.00	0.00
10	132 kV single circuit from Rongkhon sub-station to Ganol HEP	9.60	9.60			9.60			9.60	9.60					9.60	9.60
11	Re-conductoring and strengthening of the 132 kV S/C line from Khliehriat to Ratacherra by HTLS conductor	51.82	51.82			51.82			31.09		20.73	51.82			51.82	51.82
12	for Re-conductoring and strengthening of the 132 kV D/C line from Stage-I to Stage -III Power Station by HTLS conductor	26.86	26.86			26.86			16.12		10.74	26.86			26.86	26.86
	Sub-Station New works					0.00									0.00	0.00

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
13	Construction of a 220/132 KV, 2X 160MVA and 132/33KV, 2 x 50 MVA Sub-stations at Ichamati	60.00	60.00			60.00					24.00		18.00		42.00	0.00
14	Construction of a 132/33 KV, 2 x 25 MVA Sub-station at Baghmara	45.00	45.00			45.00					18.00		13.50		31.50	0.00
15	Construction 220/132 KV, 2x160 MVA Sub-station at Mawmihthied/ Cherra.	70.00	70.00			70.00			28.00		21.00		21.00	70.00	70.00	70.00
16	Construction of 132/33 KV, 2 x 25 MVA sub-station at Nongpoh.	45.00	45.00			45.00			27.00		18.00	45.00			45.00	45.00
17	Construction of the 132/33 KV, 2 x 25 MVA GIS sub-station at the 400/220/132 KV sub-station at Killing, Byrnihat	35.00	35.00			35.00			14.00		10.50		10.50	35.00	35.00	35.00
18	Replacement of 5 MVA, 132/33 KV transformer with 20 MVA transformer at Rongkhon 132/33KV substation	5.00	5.00			5.00			3.00		2.00	5.00			5.00	5.00
19	Construction of 25 MVA, 132/33 KV Transformer s at IIM Shillong	12.00	12.00			12.00			7.20		4.80	12.00			12.00	12.00
20	Provision of additional 25 MVA, 132/33 KV transformer with terminal equipments at Ampati 132/33KV substation	7.00	7.00			7.00			4.20		2.80	7.00			7.00	7.00
21	Augmentation of the 132/33 KV NEHU sub-station from 2 x 20 MVA to 2 x 50 MVA capacity along with reengineering of Bus-bar	20.00	20.00			20.00			12.00		8.00	20.00			20.00	20.00
22	Augmentation of the 132/33 KV Nangalbibra sub-station from 2 x 12.5 MVA to 2 x 50 MVA capacity along with reengineering of Bus-bar	30.00	30.00			30.00			18.00		12.00	30.00			30.00	30.00

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
23	Augmentation of the 132/33 KV Cherra sub-station from 1 x 12.5 MVA to 2 x 25 MVA capacity.	25.00	25.00			25.00			15.00		10.00	25.00			25.00	25.00
24	Construction of 2x25 MVA, 132/33 KV sub-station at Balat and bay extension at Mawphlang sub-station	15.00	15.00			15.00					6.00		4.50		10.50	0.00
25	Construction of 132/33KV, 2*10 MVA Substation at Kharkhutta, North Garo Hills	90.00	90.00			90.00					54.00		36.00	90.00	90.00	90.00
26	Construction of 132/33KV, 2*10 MVA Substation at Chokpot, South Garo Hills	101.00	101.00			101.00					60.60		40.40	101.00	101.00	101.00
27	Construction of 132/33KV, 2*20 MVA Substation at Chokchokia, West Garo Hills	90.00	90.00			90.00					54.00		36.00	90.00	90.00	90.00
28	Construction of 220/132/33KV, 2*100 MVA Substation at Rongsai, West Garo Hills	170.00	170.00			170.00					102.00		68.00	170.00	170.00	170.00
	Others New Works															
29	Reliable Communication & Data Acquisition System Upto 132 KV	29.00	14.50			14.50	29.00		29.00	29.00					29.00	29.00
30	Upgradation and Integration of RTU For Improvement of Real Time Telemetry Status of Sub Stations In Meghalaya	2.55	2.55			2.55			2.55	2.55					2.55	2.55
31	Additional Detailed Project Report for Renovation and Upgradation of Protection & Control System	45.42	45.42			45.42			27.25		18.17	45.42			45.42	45.42
32	Remote Monitoring & Time Synchronization of Numerical Relays	21.49	21.49			21.49			12.89		8.60	21.49			21.49	21.49
	SLDC															

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
33	MIS automation Data Analytics & Data Science for Management Information Services	1.00			1.00	1.00			1.00	1.00					1.00	1.00
34	Weather Forecasting: Installation of weather stations and their telemetry to transmit real time data to SLDC	0.70			0.70	0.70			0.70	0.70					0.70	0.70
35	Load Forecasting: Installation of Load Forecasting tool for forecasting data for operational and planning purposes utilising SCADA and weather data	1.00			1.00	1.00			0.30		0.70	1.00			1.00	1.00
36	Scientific Earthing of SLDC assets: Chemical Earthing of SLDC assets in line with IEEE-80 standards	0.06			0.06	0.06	0.06	0.06							0.06	0.06
37	System Study of Meghalaya power system: Steady state and dynamic study of the power system using load flow study software	0.60			0.60	0.60	0.60	0.60							0.60	0.60
38	Construction of SAMAST building: Housing of SAMAST infrastructure & office	2.00			2.00	2.00	1.00		1.00	1.00					2.00	1.00
39	Synchrophasor Wide Area Dynamic Measurement System: Installation of PMUs in EHV grid and power stations	3.00			3.00	3.00					1.50		1.50	3.00	3.00	3.00
40	ADMS Expansion project: Installation and integration of FRTUs at grid substations	2.00			2.00	2.00			1.00		1.00	2.00			2.00	2.00
41	SLDC SCADA System Expansion: Expansion of Video Projection System in Control Room	0.15			0.15	0.15					0.15	0.15			0.15	0.15

Sl. No.	Name of the scheme	Approved Outlay	Source of funding				FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		Total	
			Grant	Equity	Loan	Total	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation	Capex	Capitalisation
1	2	3	4	5	6	7=(4+5+6)	8	9	10	11	12	13	14	15	16=(8+10+12+14)	17=(9+11+13+15)
42	Implementation of Scheduling, Accounting, Metering, and Settlement of Transaction in Electricity (SAMAST)	8.48	8.48			8.48			4.95	1.00	3.53				8.48	1.00
	Sub-total Upcoming/new schemes	1664.73	1639.72	0.00	25.01	1664.73	1.66	0.66	433.05	44.85	652.62	292.74	449.60	977.00	1536.93	1315.25
	Total capital investment	2389.78	2364.77	0.00	25.01	2389.78	151.69	34.95	559.56	733.54	652.62	292.74	449.60	977.00	1813.46	2038.23

1.6 Human Resource

Petitioner's submission:

MePTCL has submitted that in order to meet the increasing demand for electricity, there is a requirement for addition of generating capacity, expansion of associated transmission and distribution networks and upgrading of technology. The challenge to provide power to all requires a corresponding increase, not only in the quantity, but also in the quality of human resources. Hence, the purpose of establishing the Human Resources Development Centre (HRDC) is to ensure that skilled manpower in adequate numbers is made available across various activities of MeECL. The HRDC therefore identify the skill gaps, frame occupational standards, facilitate development of practical as well as high quality training contents and ensure adequate availability of faculty for capacity building. Thus training and upgrading the skills of the manpower is the primary objectives of HRDC.

At the national level, a statutory body, namely, the Central Electricity Authority (CEA) was constituted under the Electricity Act to promote measures for advancing the skill of persons engaged in electricity industry. CEA has already setup the standards for mandatory training required for various skills for the generation, transmission, distribution, etc. The CEA has recognized 74 (seventy four) training institutes throughout the country under the Government and Private Sector, for providing such training at various levels.

Basically three types of training infrastructures and facilities are available for personnel in the power industry:

- Training institutes recognized by CEA for imparting statutory induction training: There are 74 (seventy four) training institutes recognized by the CEA throughout the country. These institutes cater to the training needs of personnel working in thermal power stations, hydro generating stations, transmission utilities and distribution utilities. For example, the National Power Training Institute (NPTI) has established a Centre for Advanced Management & Power Studies (CAMPS) at its Faridabad campus. In addition to a number of short-term courses on Technology- Management interface, NPTI also conducts professional courses, integrating power- training experience with academics, like PDC & PGDC in Power Plant Engineering and B.E./B.Tech in Power Engineering etc. The other institution, the Central Board of Irrigation & Power (CBIP) also conducts power industry interfaced placement oriented long term training programmes in generation, transmission and distribution, besides high end short term programmes in advance technologies in all disciplines of power sector.
- Lineman Training Institutes: Most utilities are having atleast one lineman-training Center. These institutes are set up by the respective organizations for imparting training to their own employees.

- Other training facility include training program with academic institutions outside power sector.

Statutory training requirement: The Central Electricity Authority notifies the mandatory training (measures relating to safety and electricity supply) Regulations 2010, specifically the regulations 6 & 7 of the said CEA Regulations 2010. For implementing the above regulations effectively and on rational basis, the CEA has framed guidelines and norms to prescribe the procedure to be followed by CEA/MoP for recognition and grading of the training institutes for power sector in the country. Presently, following types of training are provided to the workforce in power segment for electricity generation, transmission and distribution personnel:

- Operation & Maintenance Training to all existing employees engaged in O&M of generating projects and transmission & distribution system ranging from 4 Weeks to 30 Weeks. This includes the classroom training, Simulator training for Thermal & Hydro and On-Job training.
- Induction level training for new recruits for 1 month (Technical & Non-Technical).
- Refresher/Advanced training of 5 Days in a year to all existing personnel of varying degrees in various specializations in line with National Training Policy for Power Sector.
- Management training of 5 Days in a year to the senior Executives/Managers in India/abroad in line with National Training Policy for Power Sector.
- Distance Learning Certificate Programs on Power Distribution Management for JEs/ AEs.
- Certificate of Competency in Power Distribution (CCPD).
- Training under Distribution Reforms, Upgrades and Management (DRUM). C&D Employees Training (Non-executives in secretarial staff, accounts wing, technical staff in nonexecutives and Class-IV are categorized as C&D employees).
- Franchisee Training.

Capacity Building in Meghalaya Energy Corporation Limited (MeECL)

Human Resources Development Centre (HRDC), Umiam, MeECL is entrusted with the training for the officers and staffs of the 3 (three) subsidiary corporations of MeECL, namely, Meghalaya Power Generation Corporation Limited (MePGCL), Meghalaya Power Transmission Corporation Limited (MePTCL) and Meghalaya Power Distribution Corporation Limited (MePDCL). Various initiatives taken for capacity building are highlighted as below:

- Capacity building under World Bank Project - The World Bank has proposed funding for capacity building for MePTCL and MePDCL for the next three years. Proposal under this scheme is being prepared by the nodal officers of the two

corporations, namely, Chief Engineer (Transmission) & Chief Engineer (Distribution).

- Capacity building in various Training Institutes - Officers from the 3 (three) subsidiary corporations are being sent regularly to free training programmes organised by various training institutes like National Power Training Institute (NPTI), Indian Institute of Technology (IIT), Roorkee, National Thermal Power Corporation Limited (NTPC) and many more. For such training, the respective corporations bear the expenditure of travelling and boarding only.
- Capacity building through own resources - The capacity building measures mentioned above are required to be supplemented by training programmes specifically required for the 3 (three) corporations. These include training for field engineers in technical areas, management and human relationships, among others. For such training programmes, funding is being allocated in the budget of the respective corporations.

Way forward

In accordance with the CEA Guidelines & Apprentices Act as stated above, the HRDC, MeECL has been imparting On-the-job training, Induction training, C&D Trainings, R-APDRP Trainings, trainings on behavioral attitudes, etc as required. The HRDC is striving to develop the entire human resources of MeECL by meeting the growing and evolving demands of the technological advancement

Commission's analysis:

The Commission concur with the utility for enhancement of skills through imparting job oriented training and other skills required to the employees to perform their duties efficiently, effectively and optimally in their day to day works. The manpower study may be conducted and based on the study the man power may be optimally utilised by placing right personnel at the right job for optimum efficiency.

1.7 Manpower requirement, Impact of Revision of Pay on Employee expenses.

MePTCL has projected additional manpower requirement for the control period and also the impact of revision of pay w.e.f.01.01.2020 on the employee expenses and requested the Commission to consider the same for MYT control period.

The Commission directs the petitioner to claim the cost impact of the additional manpower requirement and pay revision effect on actual basis, as and when incurred, in the tariff petitions to be filed year on year.

1.8 Repairs and Maintenance plan and expenses thereon.

The Commission shall consider the R&M expenses for the MYT control period in accordance with the tariff regulations.