

BEFORE  
MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION, SHILLONG

PETITION  
FOR APPROVAL OF  
BUSINESS PLAN  
FOR  
FY 2015-16 TO FY 2017-18

**FILED BY**



**MEGHALAYA POWER TRANSMISSION CORPORATION  
LIMITED**

Lum JingShai, Short Round Road, Shillong - 793 001

**BEFORE THE HON'BLE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION**

FILE / PETITION NO.....

IN THE MATTER OF

APPROVAL OF BUSINESS PLAN FOR THE CONTROL PERIOD FOR FINANCIAL YEARS 2015-16, 2016-17 & 2017-18 OF THE MEGHALAYA POWER TRANSMISSION CORPORATION LIMITED (MePTCL) UNDER REGULATION 8 OF THE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION (MULTI YEAR TARIFF) REGULATIONS, 2014.

AND IN THE MATTER OF

MEGHALAYA POWER TRANSMISSION CORPORATION LIMITED; LUMJINGSHAI, SHILLONG – 793001, MEGHALAYA

**PETITIONER**

IT IS RESPECTFULLY SUBMITTED BY THE PETITIONER THAT:

1. In exercising its powers conferred under the section 131 and 133 of the Electricity Act 2003, the State Government of Meghalaya notified "The Meghalaya Power Sector Reforms Transfer Scheme 2010" on 31<sup>st</sup> March 2010 leading to restructuring and unbundling of erstwhile Meghalaya State Electricity Board (MeSEB) into four entities namely (i) Meghalaya Energy Corporation Limited (MeECL), the Holding Company; (ii) Meghalaya Power Distribution Corporation Limited (MePDCL), the Distribution Utility; (iii) Meghalaya Power Generation Corporation Limited (MePGCL), the Generation Utility; & (iv) Meghalaya Power Transmission Corporation Limited (MePTCL), the Transmission Utility. However, the holding company - MeECL carried out the functions of distribution, generation and transmission utilities from 1<sup>st</sup> April 2010 to 31<sup>st</sup> March 2012. Therefore, through notification dated 31<sup>st</sup> March 2012, State Government notified an amendment to The Power Sector Reforms Transfer Scheme leading to effective unbundling of MeECL into MeECL (Holding Company), MePDCL (Distribution Utility), MePGCL (Generation utility) and MePTCL (Transmission Utility) from 1<sup>st</sup> April 2012 onwards.
2. MePTCL has begun segregated commercial operations as an independent entity from 1<sup>st</sup> April 2013 onwards. The Meghalaya State Electricity Regulatory Commission (MSERC, hereinafter referred to as "The Hon'ble Commission") has determined the segregated Aggregate Revenue Requirement (ARR) for MePTCL for FY 2013-14 and FY 2014-15 in accordance with Meghalaya State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2011.
3. The petition for determination of ARR and Business Plan for the Control Period (FY 2015-16 to FY 2017-18) was filed in accordance with The Meghalaya State Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2014 (hereinafter referred to as

“MYT Regulations, 2014”) which have been notified by the Hon’ble Commission on 15<sup>th</sup> September 2014.

4. The Hon’ble Commission after scrutiny, detailed examination and on completion of procedures passed the Order dated 30.03.2015 on ARR for Multi Year Tariff of FY 2015-16 to FY 2017-18.
5. The Hon’ble Commission in its Tariff Order directed MePTCL to submit Investment Plan for the control period by 30.08.2015. The plan should be accompanied with agreement of financing, approval from appropriate authority and details of the project with cost benefit analysis, etc.
6. The Board of Directors of MePTCL have accorded approval for the Business Plan for the control period FY2015-16 to FY2017-18 and authorized the undersigned to file accordingly.
7. The applicant, therefore, humbly prays to the Hon’ble Commission to pass appropriate orders on the following:
  - a. To admit Business Plan of MePTCL for the control period FY 2015-16 to FY 2017-18 in accordance with the MSERC (MYT) Regulations 2014.
  - b. Approval of Business Plan for the Control Period of FY 2015-16 to FY 2017-18
  - c. To approve the principles and methodology proposed by MePTCL.
  - d. To pass such orders, as Hon’ble Commission may deem fit and proper and necessary in view of the facts and circumstances of the case.
  - e. To condone any inadvertent omissions, errors & shortcomings and permit the applicant to add/change/modify/alter this filing and make further submissions as required.

J. Hynniewta,  
Superintending Engineer (Elect-II)  
Transmission & Transformation,  
For and on behalf of  
Meghalaya Power Transmission Corporation Ltd

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## 1 Background

### 1.1 Introduction

1.1.1 The Power Supply Industry in Meghalaya had been under the control of the erstwhile Meghalaya State Electricity Board (MeSEB) with effect from 21<sup>st</sup> January 1975. On 31<sup>st</sup> March 2010, the State Government issued a Notification “The Meghalaya Power Sector Reforms Transfer Scheme 2010” thereby giving effect to the transfer of assets, properties, rights, liabilities, obligations, proceedings and personnel of the erstwhile MeSEB to four successor companies. On 31<sup>st</sup> March 2012, Government of Meghalaya issued further amendment to the above mentioned transfer scheme, to transfer Assets and Liabilities including all rights, obligations and contingencies with effect from 1<sup>st</sup> April, 2012 to namely:

- Generation: Meghalaya Power Generation Corporation Ltd. (MePGCL)
- Transmission: Meghalaya Power Transmission Corporation Ltd. (MePTCL)
- Distribution: Meghalaya Power Distribution Corporation Ltd. (MePDCL)
- Meghalaya Energy Corporation Limited (MeECL), a holding company.

1.1.2 The Government of Meghalaya issued further notification on 23<sup>rd</sup> December 2013 thereby notifying the revised statement of Assets and Liabilities as on 1<sup>st</sup> April 2010 to be vested in Meghalaya Energy Corporation Limited.

1.1.3 The MSERC is an independent statutory body constituted under the provisions of the Electricity Regulatory Commissions (ERC) Act, 1998, which was superseded by Electricity Act (EA), 2003. The Hon’ble Commission is vested with the authority of regulating the power sector in the State inter alia including determination of tariff for electricity consumers.

### 1.2 Provision of Law

1.2.1 The Hon’ble Commission has notified the MYT Regulations, 2014 on 15<sup>th</sup> September, 2014.

1.2.2 As per Regulation 8 of the MYT Regulations, 2014, MePTCL has to file a Business Plan for the control period of FY 2015-16 to FY 2017-18. The relevant regulation is reproduced below:

***“8 Business Plan***

*8.1 The Generating Company, Transmission licensee, and Distribution Licensee for Distribution Business, shall file a Business Plan for the Control Period of three (3) financial years from 1st April 2015 to 31st March 2018,*

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*which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, 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 Generating Company, Transmission Licensee and Distribution Licensee through 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 Generating Company, Transmission Licensee, and Distribution Licensee for the Distribution Business, may be required to provide relevant technical and commercial details.*

*8.3 The Distribution Licensee shall project the power purchase requirement based on the Merit Order Dispatch principles of all Generating Stations considered for power purchase, the Quantum of Renewable Purchase Obligation (RPO) under Meghalaya State Electricity Regulatory Commission (Renewal Energy Purchase Obligation and Compliance) Regulations, 2010 and the target set, if any, for Energy Efficiency (EE) and Demand Side Management (DSM) schemes.*

*8.4 The Generating Company, Transmission Licensee, and Distribution Licensee for the Distribution Business, shall get the Business Plan approved by the Commission.*

### **1.3 Preamble**

1.3.1 The petition for determination of ARR and Business Plan for the Control Period (FY 2015-16 to FY 2017-18) was filed in accordance with the Meghalaya State Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2014 (hereinafter referred to as "MYT Regulations, 2014") which have been notified by the Hon'ble Commission on 15<sup>th</sup> September 2014.

1.3.2 The Hon'ble Commission after scrutiny, detailed examination and on completion of procedures passed the Order dated 30.03.2015 on ARR for Multi Year Tariff of FY 2015-16 to FY 2017-18.

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- 1.3.3 The statement of the Hon'ble Commission in its analysis for the Capital Investment plan in its Tariff Order is reproduced below:

*“The MYT framework shall be based on the aggregate revenue requirement relating to a detailed business plan submitted by the applicant for the control period. The regulation requires that the exercise of approval of business plan for the entire control period shall be based on the petition filed by licensees three months prior to filing of petition for ARR and tariff.*

...

*In the absence of audited accounts, detailed projects reports, agreements for financial tie ups, sanctioned of appropriate authority, it would not be reasonable to approve investments for the control period. Therefore, the Commission has considered the investment plan formats submitted by the licensee along with the Affidavit vide its letter dated 10.02.2015 and allows those projects which have been started up to March 2015. On the basis of this information the Commission has worked out the opening and closing values of assets including the assets added during each financial year starting from FY 2012-13. However, adjustments after detailed scrutiny shall be considered by the Commission as and when audited records shall be filed. It is to clarify that during these proceedings the approval of business plan cannot be undertaken within such short period and with limited information available to the Commission. Therefore, Commission requires the licensee MePTCL to file a petition for approval of business plan for the financial year FY 2015-16 (review), 2016-17 and 2017-18 in accordance with the regulations by 30.08.2015.”*

- 1.3.4 The statement of the Hon'ble Commission in its analysis for the depreciation for the Control period in its Tariff Order is reproduced below:

“...

*However, Commission directs the licensee to get the approval of investment for that investment which is to be started in 2015-16 and onwards. MePTCL shall submit separate petition for investment approvals along with their DPRs, approval of appropriate authority, financing, etc by 30.08.2015. The Commission shall take a final view in the matter of investment decisions in the control period thereafter and allow the same at the time of approving tariff for FY 2016-17.”*

- 1.3.5 The directive of the Hon'ble Commission in its tariff order is also reproduced below:

*“New Directives*

- 1. As discussed in the order, MePTCL shall submit its investment plan proposed to be in the control period to the Commission for its approval by 30.08.2015. The plan*



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*should be accompanied with agreement of financing, approval from appropriate authority and details of the project with cost benefit analysis, etc.*

.....

*4. While allowing ARR, the capital investment plans considered for depreciation and loan repayments are indicative figures and shall be approved only after submission of business plan by the licensee latest by 30.08.2015.*

*5. The Commission is concerned about the incompleteness of accounts for FY 2012-13 & 2013-14. It is therefore decided that the Commission shall accept the investment plans if submitted with the audited results by 30.08.2015."*

#### **1.4 Business Plan**

1.4.1 As per the direction of the Hon'ble Commission, MePTCL submits the Business plan for the control period FY 2015-16 to FY 2017-18.

1.4.2 A business plan is conventionally defined as:

*"Business Plan is a formal statement of a set of business goals, the reasons why they are believed attainable, and the plan for reaching those goals. It may also contain background information about the organization or team attempting to reach those goals."*

1.4.3 Accordingly, this business plan is developed for the Control period bearing in mind the growth plan for the control period after considering the strength and weakness of the company and evaluating its business environment. 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. The approach undertaken for preparation of various plans and forecasts is explained in detail in the relevant sections of Business Plan. The business environment has evolved considerably in a number of ways that affects MePTCL's strategic planning. The Business Plan is intended to give a comprehensive and up-to-date representation of the company, its market, the impact of new regulations, and the strategies that has been developed by MePTCL to achieve the company goals. However, as mentioned above, there are number of internal and external factors which affect the planning of the company and thus it makes this document a very dynamic document and which calls for regular reviews of the plan with a view to introduce any mid-term corrections.

1.4.4 Due to changing business environment and uncertainty over the regulations governing the Transmission business, it is submitted that Hon'ble Commission should 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

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with the external business environment and internal factors affecting the business / operations of the company.

- 1.4.5 It is submitted that MePTCL shall file the Mid-Term review through an application filed three (3) months prior to the filing of Petition for truing-up for the first year of the Control Period and the tariff determination for the third year of the control period.

## **2 Indian Power Sector Scenario**

### **2.1 Introduction**

- 2.1.1 India is the fourth largest consumer of energy in the world after USA, China and Russia, the second most populous country and one of the fastest growing economies of the world. It must, therefore, meet its development needs by using all available domestic resources of coal, uranium, oil, hydro and other renewable resources, and supplementing domestic production by imports. High reliance on imported energy is costly especially keeping in view the rising energy prices; it also impinges adversely on energy security. Meeting the energy requirement of country, with a targeted economic growth rate of 8%-9% every year and a fast growing population, at affordable prices therefore presents a major challenge. Therefore a sustained effort at increasing energy efficiency is required while increasing domestic production as much as possible to keep import dependence at a reasonable level.
- 2.1.2 With the growing demand in energy requirement, the annual per capita energy consumption has grown significantly. The low per capita consumption of electric power in India compared to the world average presents a significant potential for sustainable growth in the demand for electric power in India. According to the 18th Electric Power Survey (EPS), India's peak demand is expected to grow at to 207 GW in 2016-17 and 294 GW in 2021-22. India's plans to rapidly deploy more than 150 GW of Renewable energy is slated to change India's dependence on imported coal and may make India self reliant in terms of energy.
- 2.1.3 The Ministry of Power has launched various schemes to promote development of the sector, some of the schemes of the Ministry are as below:
- Strengthening of distribution sector infrastructure under Integrated Power Development Scheme (IPDS),
  - Development of rural infrastructure under Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY),
  - Revival of stranded gas based generating station under Power Sector

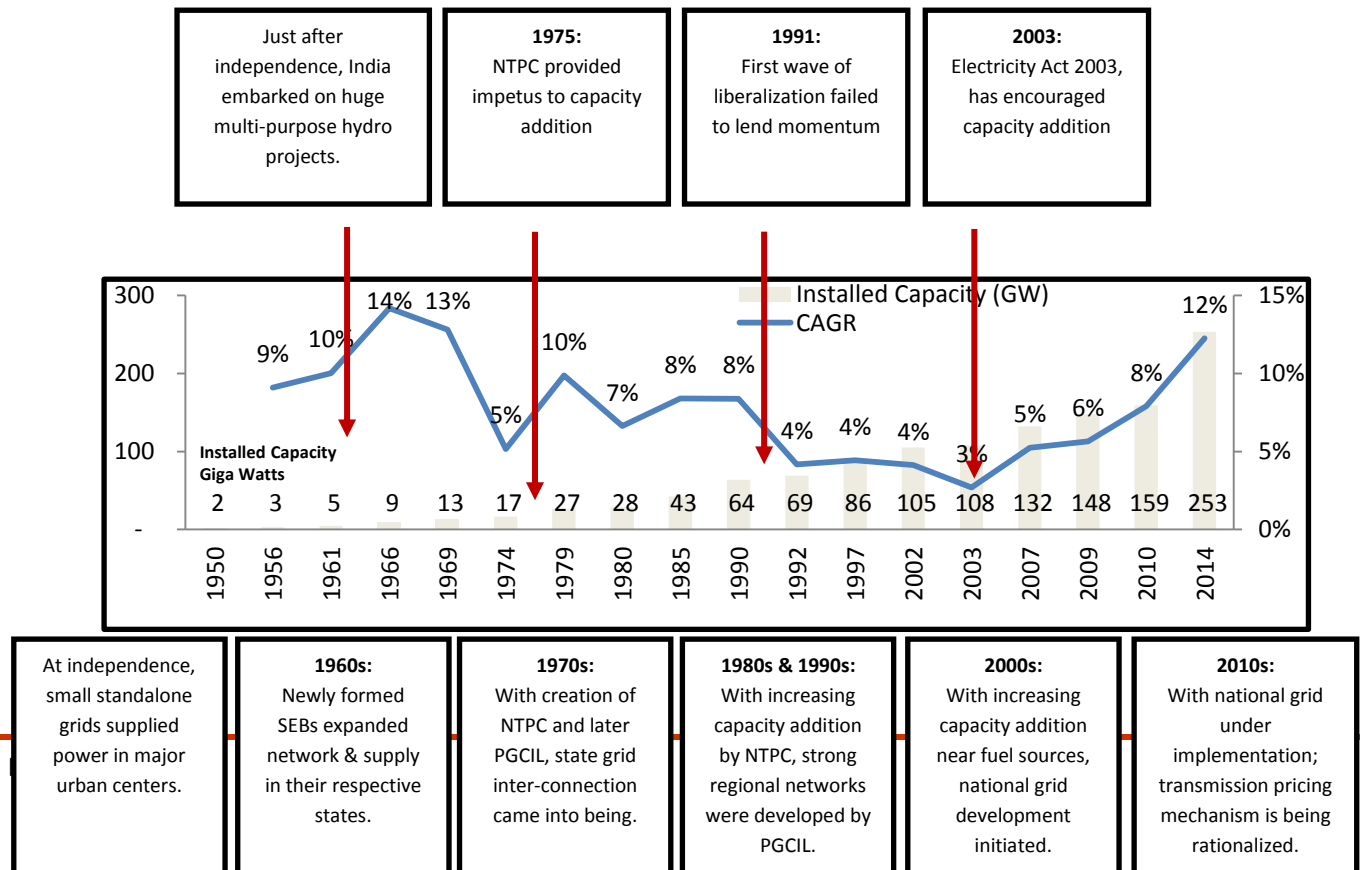
Development Fund (PSDF),

- Promotion of Energy Efficiency under Perform Achieve Trade (PAT),
- Financial Restructuring Scheme (FRS) for Discoms to achieve their financial turnaround etc.
- National Smart Grid Mission (NSGM) to plan and monitor implementation of policies and programs related to Smart Grid activities in India.

2.1.4 The Ministry of Power has also initiated the target of supplying 24x7 power under its 'Power for All' program. The supply of 24x7 power would enhance the satisfaction levels of the consumers and improve the quality of life, leading to rapid economic development of the state in primary, secondary & tertiary sectors resulting in inclusive development. The Government of India and the Government of Meghalaya have jointly launched a report outlining the roadmap to achieve 24x7 power supply in Meghalaya.

## 2.2 Sector Evolution

2.2.1 Electricity sector in India has evolved over the years. After independence, in order to fuel India's growth, the government embarked on multi-purpose hydro projects. During this time, the sector was underdeveloped and consisted of small standalone grids which supplied power in major urban centres. Evolution of the electricity sector from 1947 to its current state has been detailed below:



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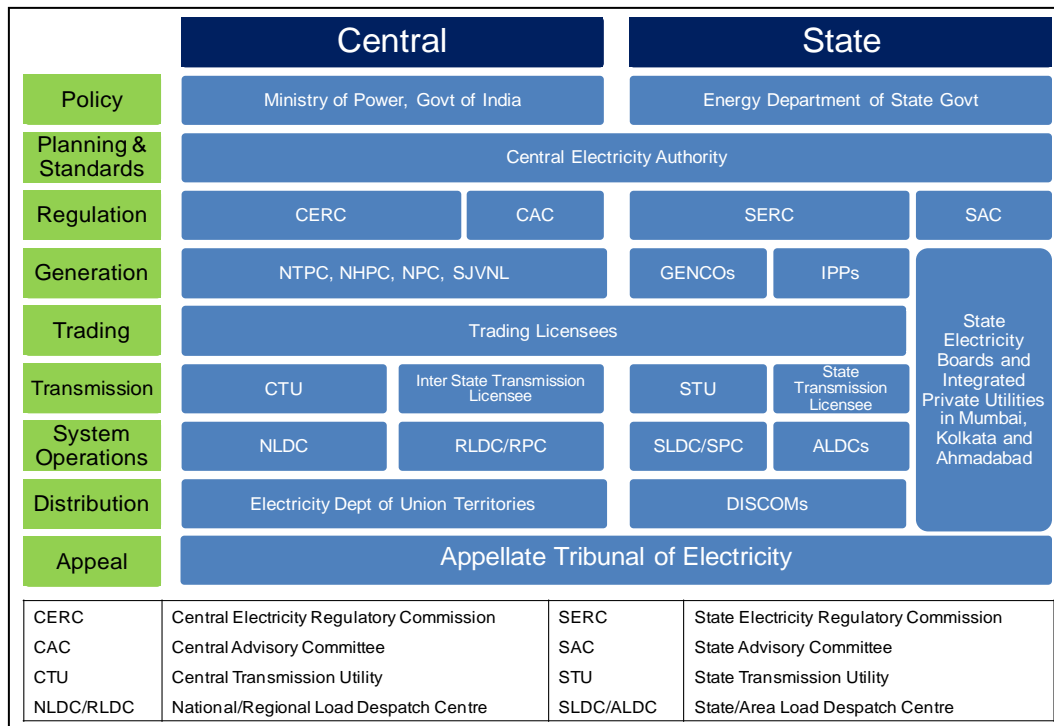
2.2.2 Electricity Act 2003 has overhauled the sector framework and has catalysed capacity addition. Fundamental changes brought about by the Electricity Act, 2003 are detailed below.

2.2.3 The most critical change brought about by Electricity Act, 2003 is competition – at wholesale as well as retail level – across the functions of Generation, Transmission, Trading and Distribution. While each sub-segment is at a different stage of implementation, competition is most pronounced in generation and trading.

2.2.4 Open Access is the paradigm shift brought about by the landmark Electricity Act 2003 to introduce competition in the power sector. It is the back bone of competition and the corner stone of the Act. Open access provides for non-discriminatory access to networks of all transmission & distribution licensees actually facilitates competitions amongst power generators, traders and suppliers.

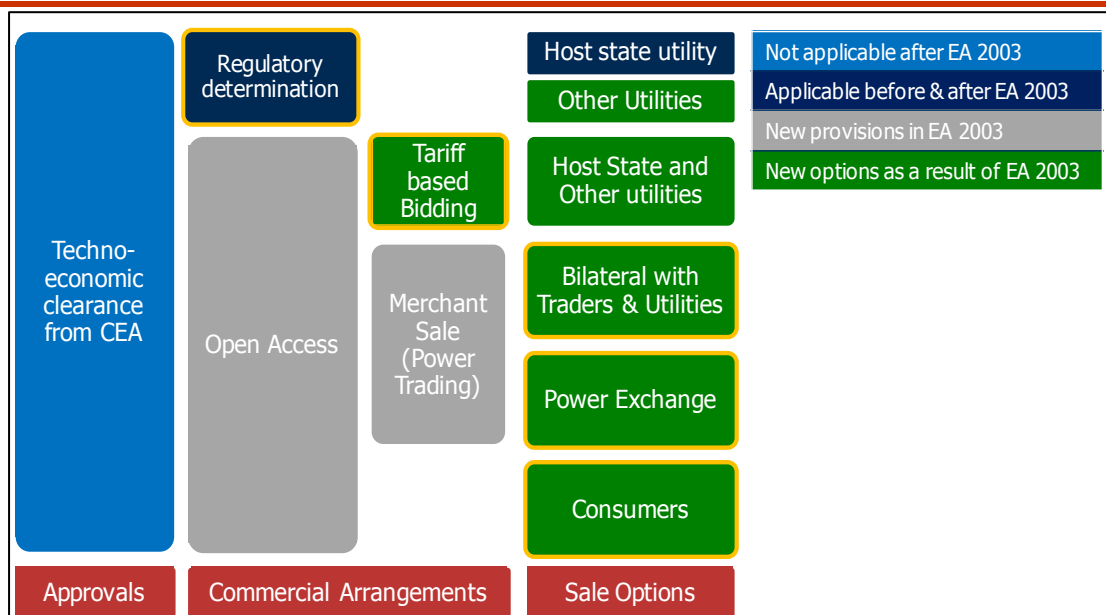
### **2.3 Key features of Indian Power Sector**

- The Sector is governed by Ministry of Power and Ministry of Renewable Energy with technical support by CEA and Regulatory support by CERC and various SERCs;
- Generation has been delicensed and is owned and operated by a mix of Central, State and Private entities;
  - Private Sector contributes to ~ 36% of the total capacity with Adani Power being the largest with an installed capacity of 9240 MW;
- Transmission is largely owned by State and Central utilities with a few private sector participants;
  - India's national grid comprises of five regions connected to each other through inter-regional links;
  - Operation owned by state and central entities only;
- Distribution is largely state owned;
  - Few exceptions in Mumbai, Delhi, Kolkata;
  - Franchisee model is gaining ground - Uttar Pradesh, Maharashtra, Bihar , Madhya Pradesh and few others
- Following chart highlights the structure and entities of Indian power sector:



## 2.4 Sale Options after EA 2003

- 2.4.1 Prior to Electricity Act, 2003 (EA 2003), IPPs sold power only to the host state utility through a cost plus tariff mechanism. EA 2003 opened up new avenues of power sale like sale to other utilities (other than host state), tariff based bidding, trading and direct sale to consumers.
- 2.4.2 While options for sale of other state utilities, power traders and power exchange have taken off, sale to consumers is still not as prevalent, largely due to limited development of open access at intra-state level governing such sale.



## 2.5 Renewable Energy

2.5.1 The supply from Renewable sources of energy is expected to increase rapidly from 24503 MW by the end of the Eleventh Plan to more than 175000 MW by the end of the Thirteenth plan. This manifold increase in the next 10 years is expected to continue in subsequent years as policies provide a strong incentive for the renewables. Nevertheless the base is small and the share of renewables in total commercial energy used will increase significantly. It is expected to rise from about 1 per cent in 2011–12 to more than 30 per cent in 2021–22.

2.5.2 The Renewable energy market is supported by strong government policies like Renewable Purchase Obligations (RPOs) under the National Action Plan for Climate change (NAPCC) 2008, target installation of 100 GW of solar power under the Jawaharlal Nehru National Solar Mission (JNNSM) 2010 by 2022, CERC Renewable Energy Certificate (REC) Mechanism 2010 (Solar and Non-solar RECs), levy of Clean Energy Cess on coal, target installation of 65 GW of wind power by 2022, Draft National Renewable Energy Act 2015 etc.

2.5.3 Introduction of International Competitive Bidding and Reverse bidding has not only helped the Indian Renewable energy market to attract international players but also helped tariffs nose dive bringing down the tariff of Renewable energy to Grid parity. India is slated to be the top player in the Renewable energy market.

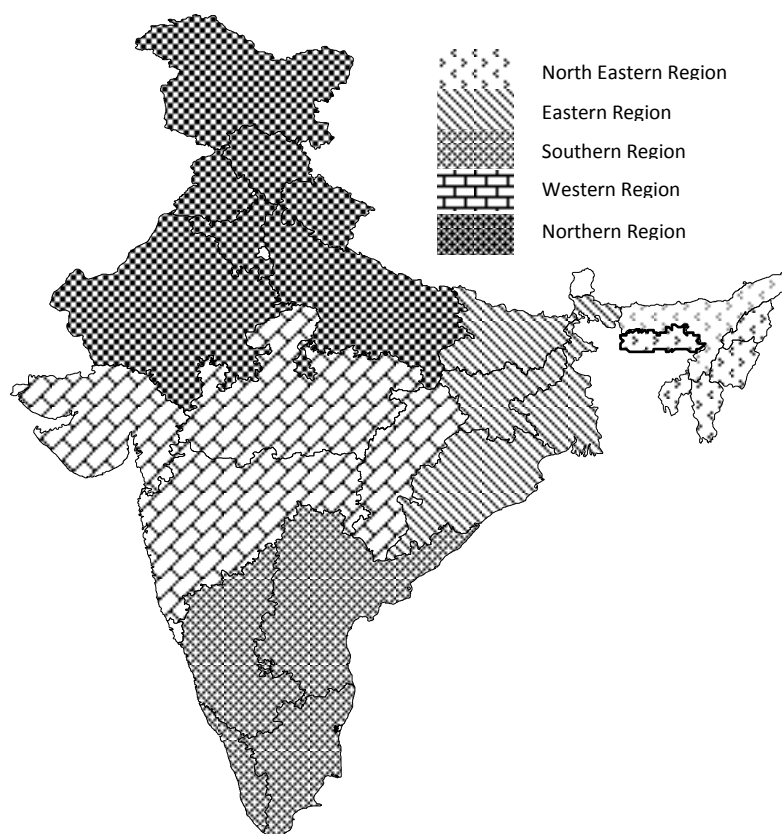
2.5.4 The Ministry of Power has also planned several Transmission lines for evacuation of Renewable energy, these lines are envisaged to be constructed under the scheme of

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‘Green Energy Corridors’ of the Ministry.

## 2.6 Transmission Sector

2.6.1 Transmission forms a critical link in the power sector value chain. India's power generation capacities are unevenly dispersed across the country creating an imbalance between the distribution of power demand and supply centers. The country has been demarcated into five transmission regions viz. Northern, Eastern, Western, Southern and North Eastern. All the regions have been synchronously interconnected and operate as a single grid – National Grid. Following figure outlines the GRID structure of India:



2.6.2 The main physical milestones achieved in the power sector during the Eleventh Plan are summarized in the table below:

**Table 1: Achievements during 11th Plan**

Type	Target Outlay (Rs. Crs)	Actual Expense (Rs. Crs)	Achievement (%)
Transmission	140,000	122,991*	87.85%
Central	75000	56,370	75.16%

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Type	Target Outlay (Rs. Crs)	Actual Expense (Rs. Crs)	Achievement (%)
State	65000	66,379	102.12%

\* Includes Rs. 242 Cr in Private Sector which was not envisaged earlier.

Source: CEA & Working Group Report 11<sup>th</sup> Plan

## 2.7 12<sup>th</sup> Plan Target

- 2.7.1 The expected transmission capacity addition during 12th Plan is 1,09,440 ckm which is expected to result in the total transmission capacity of 3,79,011 ckm by the end of 12th Plan. Significant capacity expansion is expected in 765kV AC transmission system. The total Inter Regional transmission capacity addition for 12th Plan has been planned at about 38,000 MW. The Ministry of Power has also planned several Transmission lines for evacuation of Renewable energy, these lines are envisaged to be constructed under the scheme of 'Green energy corridors'.
- 2.7.2 Also, Central Transmission Utility in consultation with CEA has designed Transmission and Distribution schemes in NER and Sikkim to evacuate the power generated from projects in this region. Fund requirement for Transmission and Distribution schemes in NER and Sikkim, with likely benefits during 12th Plan, has been estimated at around Rs. 26,392 Crore. To achieve these targets, total outlay of Rs. 1, 80,000 Crores has been allocated to the transmission sector development.



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### **3 Company Profile**

#### **3.1 Background and profile of MePTCL**

3.1.1 The Company is a Transmission Licensee within the meaning of Section 2 (73) of Electricity Act 2003. Further, Section 42 and 43 of the Electricity Act 2003 prescribes the following major duties of the Transmission Licensee:

- To undertake transmission of electricity through intra- State transmission system.
- To build, maintain and operate an efficient, co-ordinated and economical intra-State transmission system.
- To comply with the directions of the Regional Load Despatch Centre and the State Load Despatch Centre.
- To comply with such technical standards, of operation and maintenance of transmission lines, in accordance with the Grid Standards, as may be specified by the Authority.
- To provide non-discriminatory open access to its transmission system for use by any licensee or generating company on payment of the transmission charges or any consumer as and when such open access is provided by the State Commission, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission.

3.1.2 As per Meghalaya Power Sector Transfer Scheme, MePTCL has been vested with the function of transmitting power by the State Government of Meghalaya, the Business Scope of the Company falls within the legal framework as specified in the Act and includes:

- Undertaking transmission of electricity through intra-State transmission system.
- Ensuring development of an efficient, co-ordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centres.
- Discharging all functions of planning and co-ordination relating to intra-state transmission system with Central Transmission Utility, State Government, Generating Companies, Regional Power Committees, Authority and Licensees.
- To provide non-discriminatory open access to its transmission system for use by any licensee or generating company or any consumer as and when such open access is provided by the State Commission.
- Engaging in any business for optimum utilisation of assets, with prior intimation to the State Commission.

3.1.3 MePTCL has inherited a very old network from MeSEB which itself had inherited the network from Assam State Electricity Board (ASEB) in 1975. However both erstwhile MeSEB and MePTCL have added significant network assets in previous few years in order to sustain the load growth and to provide reliable power transmission corridor

to the state of Meghalaya. The Key Achievements of MePTCL are highlighted below:

**Table 2: Key Achievements from 2006 to 2015**

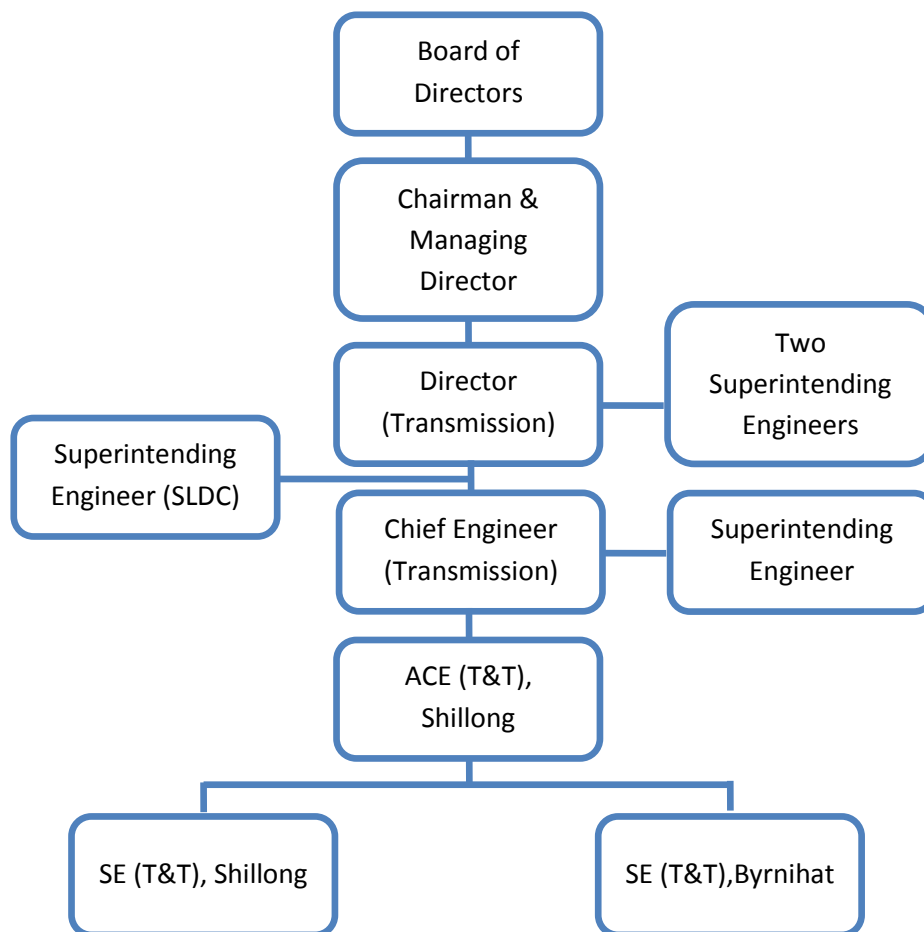
Details	2006	2015
Length of 400 KV lines	Nil	4 CKM
No. of 400KV/ 220KV Grid Substations	Nil	1
Capacity of 400KV/ 220KV Grid Substations	Nil	630 MVA
Length of 220 KV lines	Nil	226 CKM
No. of 220KV/ 132KV Grid Substations	Nil	3
Capacity of 220KV/ 132KV Grid Substations	Nil	520 MVA
Length of 132 KV lines	684 KM	998 CKM
No. of 132KV/33KV Grid Substations	12	14
Capacity of 132KV/33KV Grid Substations	357 MVA	505 MVA

### 3.2 Human Resource

#### 3.2.1 Organisation Structure

MePTCL has its Corporate Office at Shillong. Shri P.B.O. Warjri, IAS as CMD, heads the Company. The broad organisation chart is shown below:

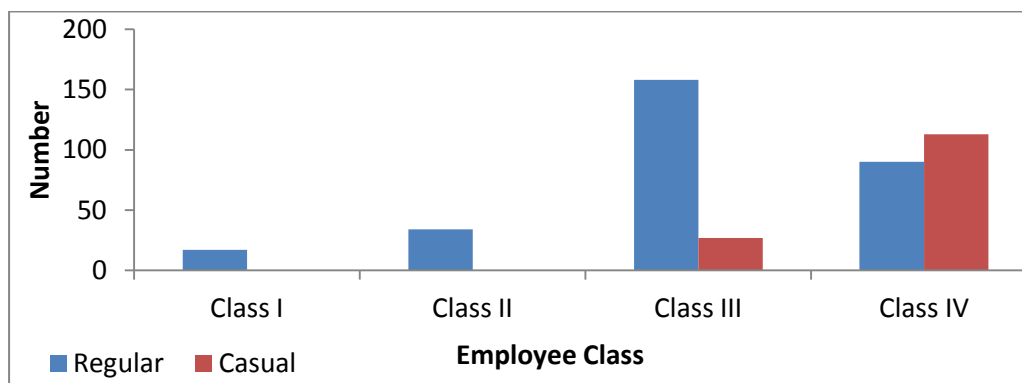
**Figure 1: Organisation Chart of MePTCL**



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### 3.2.2 Existing human Resource

3.2.2.1 Currently MePTCL has 299 Regular employees on Regular payroll and 140 Casual employees as on March 2015. The class-wise number of Regular & Casual employees is highlighted in the graph below:



### 3.2.3 Capacity Building

3.2.3.1 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 skill 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:

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- Training institutes recognized by CEA for imparting statutory induction training: There are 74 (seventy four) training institutes recognized by the CEA through the country. These institutes cater to the training needs of personnel working in thermal power stations, hydro generating stations, transmission 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 a two-year full time MBA Program in Power Management. 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 at least 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.

**3.2.3.2 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.

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- 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.
  - Training under R-APDRP etc.
  - Linemen training at linemen training centres.

### 3.2.3.3 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 Accelerated Power Development Reforms Programme (APDRP) - Capacity Building for MePDCL is being funded by the Ministry of Power (MoP) through Central Institute of Rural Electrification (CIRE), Hyderabad, under Accelerated Power Development Reforms Programme (APDRP). Under this scheme, training for Group C&D employees of MePDCL is being taken up by in-house resources persons as well as by outside agencies. This scheme is expected to continue for 3 (three) more years.
- Capacity building under World Bank Project - The World Bank has proposed funding for capacity building for MePTCL and MePDCL for the next three

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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 programme 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.

#### 3.2.3.4 **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. Accordingly, in addition to the existing work, the following tasks are proposed for the next three years.

- Create skill for the current and future requirements, both in terms of numbers as well as types of skills and investigating the underlying reasons for skill gaps.
- Identify changing technologies and collate technology specific skills which may be required in future. Besides technical skills, identification of soft skill requirement in terms of content, the depth of coverage required and practical training requirement etc.
- Build capacity for training delivery - Coordinate with all various agencies in the area of skill development specially need based.

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## **4 24x7 Power for All for Meghalaya**

### **4.1 Introduction**

4.1.1 The Government of India has declared 24x7 power supply as one of the most important objectives of its policy for reviving economic growth. 24x7 - Power for All for Meghalaya is a Joint Initiative of Government of India (GoI) and Meghalaya State Government with the objective to provide 24x7 power available to all households, industry, commercial businesses, public needs, any other electricity consuming entity and adequate power to agriculture farm holdings by FY 2019.

4.1.2 The objective of providing 24x7 power supply, as declared by the Government of India, was broadly defined by Forum of Regulators (FOR) on the following lines

- Reliable 24x7 power supply to domestic, industrial and commercial consumers within a period of five years, i.e., by 2018-19.
- Power supply for irrigation pump sets to be provided for 8 to 10 hours a day, depending on the agro-climatic factors in different states.
- All un-electrified households to be provided access to electricity in a time bound manner in the next five years.

4.1.3 The broad contours of the strategy for achieving the above objectives shall include the following:

- Ensuring adequate capacity additions and power procurement from conventional and renewable sources to meet the projected demand for power
- Optimizing energy mix to reduce power procurement costs and improving operational efficiency of state generation plant(s)
- Strengthening the Transmission and Distribution (T&D) network to cater to the expected growth in demand
- Substantial reduction of AT&C losses as per a specified loss reduction trajectory
- Introducing energy conservation and energy efficiency measures to reduce specific end-use energy consumption
- Assisting distribution utilities to become efficient service providers and improve their financial viability.

4.1.4 To achieve the above initiative a roadmap document has been launched by Government of India, the extracts from the same for the Transmission sector of Meghalaya is outlined below.

### **4.2 Transmission**

4.2.1 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), Khliehriat (Powergrid) –Khandong D/c (NEEPCO) and Umtru HEP - Kahelipara).

4.2.2 The existing transformation capacity available at 400 and 220 kV for import from the north-eastern grid is 1150 MVA. This transformation capacity serves both Assam and Meghalaya. However as the maximum import, in the unlikely scenario of nil own generation, will be 370 MW or 412 MVA, the available transmission system is just adequate to meet the power supply requirement of Meghalaya during low hydro generation.

4.2.3 The rollout plan prepared as per the roadmap document of the 24x7 Power for All for Meghalaya is as follows:

**Table 3: Rollout Plan FY 2015-16 to FY 2018-19**

Plan	Existing Capacity	Rollout Plan				Total	Total expected Capacity FY 19
		2015-16	2016-17	2017-18	2018-19		
<b>Transmission (Inter-State)</b>							
New Line (Ckt Km)	<b>557</b>	97	0	16	0	<b>113</b>	<b>669</b>
Transformation Capacity (MVA)	<b>1150</b>	0	0	0	0	<b>0</b>	<b>1150</b>
<b>Transmission (Intra-State)</b>							
New Line (Ckt Km)	<b>808</b>	67	0	7	506	<b>580</b>	<b>1388</b>
Transformation Capacity (MVA)	<b>465</b>	185	60	40	980	<b>1265</b>	<b>1730</b>

4.2.4 Four 132 kV lines have been planned by MePTCL for evacuating power from upcoming generation projects and for strengthening inter-state transmission capacity. The additional transmission lines totaling 112.72 Ckt-km at an estimated cost of Rs. 62.71 Crores have been planned by MePTCL to enhance the transmission capacity. The target date of commissioning of these transmission lines is spread between August 2015 and March 2018. Additional transmission capacity so created will be adequate to meet the increased demand on the inter-state transmission lines till the year FY 2019.

4.2.5 However as the maximum import, in the unlikely scenario of nil own generation will be 444 MW or 494 MVA, the available capacity is adequate to meet the maximum power Meghalaya needs to import when low hydro generation and peak demand



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conditions are coincident in FY 2019. Accordingly, no new interstate substation has been planned in Meghalaya.

- 4.2.6 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 807.58 Ckt. Km of intra-state lines at 132 kV level which are more or less adequate to meet the present peak requirements of the state. The aggregate capacity at 132/33 kV is 465 MVA. The above capacity is generally adequate to meet the present peak requirements of the state.
- 4.2.7 A total of twelve new 220 kV & 132 kV lines totaling 580.114 Ckt. Km are planned to be installed for strengthening of intra-state transmission network to meet the projected peak demand of 444 MW in FY 2019 at an estimated cost of Rs. 131.80 Crores. The lines are scheduled to be commissioned between October 2015 and March 2019. Transformation capacity of 640 MVA is planned to be added at Mawngap and New Shillong by March 2019. A total of 625 MVA additional transformation capacity by way of new 132/33 kV transformers scheduled to be commissioned between October 2015 and March 2019 at an estimated cost of Rs. 191.88 Crores.
- 4.2.8 The Government of India (GoI) has formulated a plan for undertaking investments in Transmission & Distribution in North East Region (NER) to facilitate increased availability of power, improvement in service delivery and reduction of system losses. Presently, six NER States (Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland) are connected to transmission network at 132 KV and below.
- 4.2.9 In order to reduce the gap between the requirement and availability of the intra-state transmission and distribution system, it was found necessary to provide 132 KV / 220KV connectivity to all these NER states for proper voltage management and loss reduction. Implementation of this project will create a reliable State power grid and improve its connectivity to the upcoming load centres, and thus extend the benefits of the MePTCL grid connected power to all the consumers. The project includes capital investments for strengthening/ augmentation of the intrastate transmission and distribution network as well as capacity building across selected six North East states of Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland.
- 4.2.10 The North East Region Power System Improvement Project (NERPSIP) is a comprehensive scheme to be funded by World Bank and Government of India. The scheme comprises of development of Transmission, Sub-Transmission/ Distribution system up to 33 KV. Within Meghalaya, the objective of scheme is to revitalize the power sector to achieve sustainable development in long term.
- 4.2.11 The NERPSIP is expected to be undertaken through funding in three tranches. 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 growing demand throughout the state.

**Table 4: Fund Requirement for State Projects**

Sl. No.	Category	Fund Requirement (in Rs Crores)				
		FY 16	FY 17	FY 18	FY 19	Total
1	Inter State - Transmission Lines	26	0	37	0	<b>63</b>
2	Intra State - Transmission Lines	61	0	15	56	<b>132</b>
3	Inter State - Substations	0	0	0	0	<b>0</b>
4	Intra State - Substations	75	69	25	23	<b>192</b>
5	NERPSIP	777				<b>777</b>
<b>Total Fund Requirement (Transmission)</b>		<b>162</b>	<b>69</b>	<b>77</b>	<b>856</b>	<b>1163</b>

4.2.12 State has to implement the above listed projects on time to ensure availability of transmission system for 24x7 supply and will monitor the loading of lines and substations on periodic basis keeping in view the actual growth in loading of the load centers along with changes in consumer mix. The state has to procure and deploy one Emergency Restoration System (ERS) to effectively restore transmission lines in case of emergency. The state will look for options for construction of new lines through tariff based competitive bidding (TBCB) route.

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## **5 Capital Investment Plan (CIP)**

### **5.1 Details of Capital Expenditure**

5.1.1 The purpose of the Capital Investment Plan (CIP) is to provide MePTCL with a roadmap for planning and implementation of proposed capital investment for the control period of FY 2015-16 to FY 2017-18. The CIP has been prepared keeping in view various long term needs and areas for capital expenditure 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

CIP prepared by MePTCL includes the projects which were under implementation or commenced/ expected to commence from FY 2012-13 to end of control period i.e. FY 2017-18. As CIP includes schemes envisaged to be implemented in future, 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. Certain project attributes such as construction period, actual project cost, completion dates etc. for ongoing projects are also expected to change in future due to uncontrollable externalities. Therefore the project particulars are expected to change in future and shall be updated during Mid-Term Review petition.

5.1.2 To Finance the capital expenditure, MePTCL primarily depends on financial assistance provided by Government of Meghalaya and Government of India through various schemes as well as external aided funding by international institutions such as World Bank. Most of the funding is available/ expected to be available to MePTCL in form of Grants & Equity. A small loan component is also expected to be provided by Government of Meghalaya. The details of funding and sources are available as Investment Plan Format.

5.1.3 The Capital Expenditure from FY2012-13 to FY2017-18 is provided as Investment Plan Format as per prescribed format of MSERC and summarized in the table below:

**Table 5: Summary of Projects from FY2012-13 to FY2017-18**

Schemes	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
		Loan	Grant	Equity
<b><i>New Schemes</i></b>				
Construction/ Upgradation of Transmission lines	224.64	35.96		188.68
Construction/ Upgradation of Substations	119.52	11.952		107.568
System Protection, Control system, metering etc.	73.63	7.363		66.267
Scheme funded by Power System Development Fund	69.19		69.19	
NER Power system Improvement Project	598.7	29.9	568.8	
<b><i>Ongoing/ Completed Schemes</i></b>				
Construction/ Upgradation of Transmission lines	162.56	17.676		144.875
Construction/ Upgradation of Substations	206.01	31.861		174.149
System Protection, Control system, metering	7.61	0.761		6.849
<b>Total</b>	<b>1461.89</b>	<b>135.514</b>	<b>637.984</b>	<b>688.384</b>

5.1.4 It is submitted that as per the 24x7 - Power for All for Meghalaya is a Joint Initiative of Government of India (GoI) and Meghalaya State Government with the objective to provide 24x7 power available to all households, industry, commercial businesses, public needs by FY 2019. It is prayed before that the Hon'ble 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 provide 24x7 power for all.

The details of various schemes are provided in following sections.

## **5.2 North East Region Power System Improvement Project (NERPSIP)**

5.2.1 The Government of India (GoI) has formulated a plan for undertaking investments in Transmission & Distribution in North East Region (NER) to facilitate increased

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availability of power, improvement in service delivery and reduction of system losses. Presently, six NER States (Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland) are connected to transmission network at 132 KV and below. In order to reduce the gap between the requirement and availability of the intra-state transmission and distribution system, it was found necessary to provide 132 KV / 220KV connectivity to all these NER states for proper voltage management and loss reduction.

5.2.2 Implementation of this project will create a reliable State power grid and improve its connectivity to the upcoming load centres, and thus extend the benefits of the grid connected power to all the consumers. The project includes capital investments for strengthening/ augmentation of the intra-state transmission and distribution network as well as capacity building across selected six North East states of Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland. The North East Region Power System Improvement Project (NERPSIP) is a comprehensive scheme to be funded by World Bank and Government of India. The scheme comprises of development of Transmission, Sub-Transmission/ Distribution system upto 33 KV.

5.2.3 Within Meghalaya, the objective of scheme is to revitalize the power sector to achieve sustainable development in long term. The NERPSIP is expected to be undertaken through funding in three tranches. The works covered under Tranche I are broadly highlighted in the following table:

**Table 6: NERPSIP Asset addition**

S. No	Work	Rating	Unit	Capacity Addition
1	Substations	132/33 KV	MVA	300
2	Substations	220/ 132 KV	MVA	760
3	Transmission lines	220 KV	CKm	244
4	Transmission lines	132 KV	CKm	172

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 growing demand throughout the state.

5.2.4 Under the Tranche I funding, the proposed project expenditure is ~ Rs. 599 Crore, 50% of which is to be funded by Government of India in form of Grant to MePTCL. Balance 50% counterpart funding in form of loan shall be received by Government of

India from World Bank. 10% of this World Bank loan shall be passed on to the Government of Meghalaya as Loan which will subsequently be passed on to MePTCL as State Government loan. Remaining 90% of World Bank Loan shall be passed on the MePTCL as Grant from Government of India. Therefore, total 95% funds shall be received by MePTCL as Grant and balance 5% as Loan from State Government. The funding pattern for MePTCL is summarised as below:

**Table 7: NERPSIP funding pattern**

	State Govt. Loan	GoI Grant
Funding (%)	5%	95%
Amount (Rs. Crore)	30	569

5.2.5 The project approval has been received from Expenditure Finance Committee (EFC), Cabinet Committee on Economic Affairs (CCEA) and is expected from World Bank. Tranche I funding shall be utilized for first phase of construction which is expected to take 48 months. Construction is expected to begin by March 2016 and shall be completed by FY19.

### **5.3 Power System Development Fund (PSDF)**

5.3.1 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 Despatch 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 generates 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

5.3.2 Based on decision taken in the in NERPC forum, a third party audit on protection was carried out in 135 sub-stations and generating stations of NER at 132KV voltage level

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and above. The teams comprising of members from PGCIL, NEEPCO, NHPC, NERPC and NERLDC was formed. The protection audit of the sub-stations and generating stations in NER was completed in February 2013. The findings of the audit team were discussed in the Commercial Sub-Committee and Protection Sub-Committee meetings of NERPC. Subsequently, the Ministry of Power directed for preparation of the Detail Project Report based on the recommendations of the protection audit team for rectifying the defects. The same was sent to CEA with the request for funding through PSDF or any other sources without any financial burden to the constituents.

5.3.3 In order to further its objectives of having enhanced grid stability, MePTCL plans to carry out Renovation and Upgradation of Protection & Control system with funding available through PSDF. For Meghalaya, the protection audit was carried out in 1 No. 400KV and 19 Nos. 132KV substations/generating stations. 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 equipments (Circuit Breakers, Surge Arresters, Isolators, Earthing switches, CTs, PTs/CVTs and materials.
- Establishment of reliable communication link and providing carrier intertrip 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.

5.3.4 The 132/33KV transmission substations which are envisaged to be included for renovation and upgradation are at Mawlai, NEHU, NEIGRIHMS, Khliehriat, Lumshnong, Umiam, Cherrapunjee, Nongstoin, Mawphlang, Nangalbibra, Rongkhon, EPIP-I, EPIP-II and Killing.

5.3.5 The estimated cost of for renovation and upgradation of these 14 substations is Rs. 69.19 Crore which is expected to be made available in form of 100% Grant from PSDF. The DPR is under preparation after which approval shall be sought from National Load Dispatch Centre (NLDC) and Central Electricity Authority (CEA).

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## 5.4 Boundary Metering

5.4.1 This is a consolidated scheme for replacement of meters and metering system at interface of Transmission Network with Generating stations and Distribution network along with establishment of a Central Data Centre. Meghalaya receives power from various sources such as state owned generating stations, Central Generating Stations (CGS), Bilateral Agreements etc. The transmission network of MePTCL is utilized by distribution utility MePDCL and Open Access users for both import and export of power. Therefore MePTCL has an interface with various entities such as state generating stations of MePGCL, Central Transmission Utility, Open Access Users, Distribution utility MEPDCL and Extra High Tension consumers connected at 132 KV.

The power flowing into and outside the state is measured at various interfaces by the ABT meters. These interfaces are also known as boundary as they demarcate the network of MePTCL. In addition to this, the quantum of power flow inside the state through the intra state lines is recorded by energy meters installed at various grid substations, which are not Availability Based Tariff (ABT) compliant. Therefore, there is an urgent need to install ABT compliant meters at all boundary points at the switching stations and outgoing feeders inside the state for time block measurement of power from state owned generation to the Distribution utility.

5.4.2 The main objective of grid metering is much more than simply accounting for the energy received by a utility from the grid, and far more in an ABT regime. In ABT regime, the actual energy in time block frame is measured throughout the day and deviation from schedule is to be settled as per the Unscheduled Interchange (UI) rates, as notified by the Central Electricity Regulatory Commission from time to time. The financial impact of this deviation from schedule, if not accounted properly, might result into significant increase in cost or rate of input energy especially with the advent of Deviation Settlement Mechanism (DSM) under which the deviation charges are substantial. To manage commercial operation of the grid in a cost-effective manner, there is a need to know the real time power flow from/ to different distribution circles, open access customers and other special category consumers.

5.4.3 In addition to above, determination of accurate transmission loss in the state transmission system which is very necessary for loss compensation by the open access customers as well for the Distribution utility. Moreover, MePTCL will be able to take corrective steps if necessary to bring down the loss to the acceptable limit.



The ABT grid metering system needs to be an integrated metering system, where all meters need to act in synchronism to deliver the overall intended purpose. A comprehensive ABT grid metering system (having integrated hardware and software) together with the capability of giving adequate and sufficient information for load management on a interval-wise/daily/weekly/monthly basis is hence needed for the on-line measurement and management of any deviations from schedule (UI management) for MeECL as a whole. The overall scope covers establishment of a Central Data Centre (CDC) together with operations and maintenance support and generating the daily and monthly DSM accounting reports. The overall scope covers establishment of a Central Data Centre (CDC) together with operations and maintenance support and generating the daily and monthly DSM accounting reports.

5.4.4 The Broad Scope of Work is highlighted as below:

- Establishment of Central Data Centre
- Installation of ABT Compliant Meters
- Installation of Communication Media
- Installation of Terminal Equipments

5.4.5 The Boundary Metering scheme is envisaged to be covered in three phases depending on the priority of investment. The coverage under various phases is given below:

**Table 8: Boundary Metering Scheme Status**

Phase	Network Covered	Estimated Cost (Rs. Cr)	Status
I	Replacing the meters & the metering system at interface boundary with the Generators & Distribution along with the establishment of a Central Data Centre (CDC) at NEHU substation	3.66	Work Completed
	Replacing the meters & the metering system at interface boundary with the Generators & Distribution along with the establishment of a Central Data Centre (CDC) at NEHU substation		
II	220 Kv Lines: MISA – Killing line	22.24	DPR is prepared
	Complete Replacement of the meters & the metering system at interface boundary with the Generators & Distribution with the establishment of a Central Data Centre (CDC) at NEHU substation		

## 5.5 Schemes under Implementation

5.5.1 There are several schemes as mentioned under section 5.1.3 which are under implementation currently and have been included in the Capital Investment Plan as required under the MSERC MYT Regulations. These schemes are highlighted as below:

**Table 9: Schemes under Implementation**

Sl. No	Scheme	Project Cost (Rs. Cr)	Purpose of Scheme
1	Construction of 132KV D/C LILO on Mawlai-Cherra S/C Line at Mawngap Substation	4.97	Catering to increasing demand in adjoining areas of Shillong
2	Construction of 132KV multi circuit line from 220/132KV Killing substation to EPIP-I substation and 132KV double circuit line from 220/132KV Killing substation to EPIP-II substation	21.74	Power evacuation from 220/132 KV Killing Grid S/s
3	Construction of LILO of one circuit of the 400KV Pallatana – Bongaigaon line along with 400/220KV, 2 x 315MVA (GIS) substation at Killing, Byrnihat	113.61	Power Evacuation from OTPC Pallatana
4	Construction of 132KV single circuit line on double circuit towers from Rongkhon substation to Ampati & construction of 132/33KV, 2X25 MVA substation at Ampati	30.79	
5	Construction of 132KV D/C LILO line of 132 KV S/C Rongkhon-Ampati line at Prahari Nagar alongwith 1 X 25 MVA (with additional transformer bay) 132/33KV Praharinagar substation at Upper Damalgre	33.3	
6	Construction of 132/33 KV, 2 x 20 MVA sub-station with LILO of NEIGRIHMS – Khliehriat line at Lad Nongkrem	29.86	Catering to Load growth and improved reliability of power supply
7	Construction of 132KV D/C LILO of 132KV S/C NEHU- Khliehriat line at Jowai (Mustem) alongwith construction of 2 X 20MVA, 132/33KV substation at Mustem	26.51	
8	Construction of 132KV single circuit line from New Umtru to EPIP-II and from New Umtru HEP to old Umtru HEP	7.66	Power evacuation from New Umtru HEP
9	Stringing of second circuit of 132KV Nangalbibra-Agia line with OPGW	21.19	Transmission capacity augmentation

10	Construction of 220/132KV, 100MVA ICT at Agia	11.43	Improvement of Power supply in Garo Hills
11	Construction of 132/33KV, 40MVA Mendipathar s/s	9.56	
12	Augmentation of Rongkhon substation from 35MVA	4.69	
13	Installation of RTUs at 132 KV s/s	3.95	Improvement in communication
<b>Total</b>		<b>319.26</b>	

## 5.6 New Schemes: Proposed/ to be Proposed for Implementation

Table 10: Future Schemes

Sl. No	Scheme	Project Cost (Rs. Cr)	Purpose of Scheme
1	Construction of the 132 KV S/C line on D/C towers from Mawphlang substation to Balat along with 132/33 KV, 2 x 20 MVA substation at Balat and bay extension at Mawphlang substation.	64.6	Improved Reliability of power supply
2	Re-engineering and strengthening of 132 KV Mawlai - Nongstoin - Nangalbibra single circuit transmission line	19.23	Catering to Load growth and improved reliability of power supply
3	Construction of 132 KV double circuit line from Mustem 132KV substation to Myntdu Leshka Hydro Electric Project (MLHEP) along with bay extension at MLHEP and Mustem sub-station	61.26	Network Redundancy for power evacuation from MLHEP
4	Installation and commissioning of OPGW Communication network and RTUs	27.00	Grid Stability and Improved monitoring
5	Construction of 132KV double circuit LILO of the 132KV Umtru-Kahelipara transmission line at 400/220/132KV Killing sub- station including bay extension and installation & integration of SCADA with the state SLDC at NEHU substation, Shillong	29.52	Catering to Load growth and improved reliability of power supply
6	Augmentation of 132 KV Mawlai substation form 3 x 20 MVA to 2 x 50 MVA alongwith re-engineering of 132KV bus bar	50.78	Improved quality of Power Supply, increased transmission capacity
7	Re-conductoring of 132KV S/C Sumer-Mawlai line	6.46	
8	Construction of second circuit of 132KV Nangalbibra-Agia at Mendipathar substation.	7	Increased Transmission capacity

9	Construction of LILO of 132 KV D/C transmission line from Kyrdemkulai (Stage-III HEP) to Umtru Power Station at Nongpoh including the 132/33 KV, 2 x 20MVA sub-station.	58.44	Network Redundancy, catering to load growth, improved reliability
10	Augmentation of 132/33KV EPIP-II sub-station at Norbong, Byrnihat	7	Improved operations, outage reduction
11	Upgradation and Improvement of PLCC communication for different Grid Substations and Power Stations.	10.51	Improvement of communication
12	Installation of Capacitor Bank with accessories	13.88	Improved Power Quality, Voltage Correction
	<b>Total</b>	<b>355.68</b>	

5.6.1.1 There are several schemes which are envisaged to be implemented in future keeping in view objectives mentioned earlier. For the purpose of CIP, the cost estimates, completion period, start date etc. have been projected based on MePTCL experience. These schemes are highlighted as below:

#### 5.6.2 Completed Schemes

5.6.2.1 There are few schemes which have already been completed during the period of FY2012-13 to FY2014-15. However these have been included in the CIP as per requirement of MSERC MYT Regulations. Some portion of the schemes is yet to be capitalized and hence considered during the current year FY2014-15 as well as control period. The details are provided as Investment Plan Format and a summary is given in table below:

**Table 11: Schemes implemented from FY2012-13 to FY2014-15**

SNo	Scheme	Project Cost (Rs. Cr)
1	132KV S/C line on D/C towers from Nangalbibra to Agia	43.32
2	LILO of 132KV Mawlai-Nongstoin line at Mawngap	4.94
3	LILO of 132KV Nangalbibra - Agia line at Mendipathar	5.00
4	Construction of LILO of one circuit of the 400KV Pallatana – Bongaigaon line along with 400/220KV, 2 x 315MVA (GIS) substation at Killing, Byrnihat	113.61
	<b>Total</b>	<b>166.87</b>

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## **5.7 Funding of Capital Expenditure**

- 5.7.1 MePTCL plans on funding majority of its capital expenditure through the State Government. The funding for the works proposed under Financial Institution is envisaged through Power Finance Corporation / Rural Electrification Corporation.

Table 12: Investment Plan

Name: MePTCL																			
Investment Plan																			
Note:- Information to be provided for FY13-to - FY18 for all heads either spilling into the period starting during FY 13																			
SI No	Project Details						Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	SOURCE OF FINANCING FOR SCHEME					Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	Details of Project Cost with Cost benefit analysis (write up of Scheme)/ DPR		
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)		Equity component		Debt Component								Capital Subsidies/ grants component	
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs.)		Loan source							
									Loan-1	Loan -2	Loan -1	Loan -2							
<b>Transmission Lines:</b>																			
1	132KV S/C line on D/C towers from Nangalbira to Agia	2007	c	Not Applicable	07.03.2007	Aug-13	43.32	38.99	4.33		State Govt.			NEC	completed & commissioned on 06.08.2013	NEC/POW/227/97-98/Vol-IV/994 dt.19.3.2007	Approved by the Board, MeSEB dated 19.04.2007	DPR prepared	
2	LILO of 132KV Mawlai-Nongstoin line at Mawngap	2011	c	Not Applicable	22.03.2011	Dec-12	4.94	4.45	0.49		State Govt.			NEC	completed & commissioned on 15.12.2012	NEC/POW/497/2009-10/2408 dt.19.01.2010	Approved by the Board, MeECL dated 14.08.2009	DPR prepared	
3	LILO of one circuit of 400KV Pallatana - Bonggaigon line at Killing	2011	a	Not Applicable	06.07.2011	Mar-15	12.7	10.01	1.27	1.42	State Govt.	REC		NLCPR	completed & commissioned on 22.02.2015 except for some civil works	F.No.DNER/NLP/Meg/167/2011 dt.01.07.2011	Approved by the Board, MeECL dated 14.08.2009	DPR prepared	
4	LILO of 132KV Nangalbira - Agia line at Mendipathar	2009	b	Not Applicable	09.12.2009	Jan-14	5.00	4.50	0.50		State Govt.			NEC	completed & charged and loaded on 28.01.2014	NEC/POW/447/2007-08/2396 dt.09.12.2009	Approved by the Board, MeECL dated 22.09.2009	DPR prepared	
5	132KV S/C line on D/C towers from Rongkhon substation to Ampati with bay extension at Rongkhon	2010	b	Not Applicable	25.03.2010	Mar-16	16.75	15.08	1.68		State Govt.			NLCPR	Work is presently held up due to financial constraints	F.No.DNER/NLP/Meg/108/2007 dt.25.03.2010	Approved by the Board, MeECL dated 06.12.2010	DPR prepared	
6	LILO of 132KV Mawlai - Cherra line at Mawngap (Mawphlang)	2010	c	Not Applicable	19.01.2011	Mar-16	4.97	4.47	0.50		State Govt.			NEC	Work is presently held up due to ROW problem	NEC/POW/497/2009-10/2408 dt.19.01.2010	Approved by the Board, MeECL dated 14.08.2009	DPR prepared	

Name: MePTCL																			
Investment Plan																			
Note:- Information to be provided for FY13-to - FY-18 for all heads either spilling into the period starting during FY 13																			
Sl No	Project Details						SOURCE OF FINANCING FOR SCHEME							Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	Details of Project Cost with Cost benefit analysis (write up of Scheme)/ DPR	
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)	Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	Equity component		Debt Component									Capital Subsidies / grants component
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs.)		Loan source							
									Loan-1	Loan -2	Loan -1	Loan -2							
<b>Transmission Lines:</b>																			
7	LULO of 132KV NEHU - Khliehriat line at Mustem	2012	b	Not Applicable	26.09.2012	Completed	4.34		3.91	0.43			State Govt.		SPA	Work is in the final stage of completion	F.No.44(18) PFI/2013-1265 dt.26.12.2013	Approved by Board, MeECL dated 22.09.2009	DPR prepared
8	LULO of 132KV NEIGRIHMS - Khliehriat line at Lad Nongkrem	2012	b	Not Applicable	26.09.2012	Dec-16	5.55		5.00	0.56			State Govt.		SPA	Materials procurement for the LULO is under progress	F.No.44(18) PFI/2013-1265 dt.26.12.2013	Approved by Board of Directors dated 19.07.2013.	DPR prepared
9	132KV line from New Umtru HEP to EPIP-II with bay extension at EPIP-II and Installation of RTUs etc	2012	a	Not Applicable	26.09.2012	Mar-16	5.2		4.68	0.52			State Govt.		SPA	Materials procurement is under progress	No.PE-108/2008/107 dt 04.03.2013	Approved by Board of Directors dated 19.07.2013.	DPR prepared
10	132KV line from New Umtru HEP to Old Umtru HEP with bay extension at Old Umtru	2012	a	Not Applicable	26.09.2012	Mar-16	2.46		2.21	0.25			State Govt.		SPA	Materials procurement is under progress	No.PE-108/2008/107 dt 04.03.2013	Approved by Board of Directors dated 19.07.2013.	DPR prepared
11	132KV 3 circuit line on 4 circuit towers from 220/132KV Killing substation to EPIP-I substation and 132KV D/C line from 220/132KV Killing substation to EPIP-II substation	2010	c	Not Applicable	12.02.2010	Dec-15	21.74		19.57	2.17			State Govt.		SPA	132kv D/C line from Killing S/s to EPIP-II completed and commissioned on 29.01.2011. Work 132kv 3 ckt line from Killing S/s to EPIP-I is presently held up due to ROW problem	No.M-13048/17(MG) 2009-10 SP-NE dt.12.02.2010	Approved by the Board, MeECL dated 30.04.2009	DPR prepared

Name: MePTCL																			
Investment Plan																			
Note:- Information to be provided for FY13-to - FY-18 for all heads either spilling into the period starting during FY 13																			
Sl No	Project Details							SOURCE OF FINANCING FOR SCHEME						Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	Details of Project Cost with Cost benefit analysis (write up of Scheme)/ DPR	
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)	Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	Equity component		Debt Component									Capital Subsidies / grants component
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs.)		Loan source							
									Loan-1	Loan -2	Loan -1	Loan -2							
<b>Transmission Lines:</b>																			
12	Second Circuit of 132KV Agia-Nangalbibra line	2012	c	Not Applicable	26.09.2012	Dec-15	21.19		19.07	2.12		State Govt.		SPA	Work is under progress	F.No.44(18) PFI/2013-1265 dt.26.12.2013	Approved by Board of Directors dated 19.07.2013.	DPR prepared	
13	132KV D/C line from MLHEP to Mustem	2015	c	Not Applicable	Apr-16	Mar-19	61.26		55.13	6.13		State Govt.		Proposed funding under PSDF	Funding not yet finalized	No.POWER.136 /2011/67 DT.04.02.2013	Approved by Board of Directors dated 10.12.2014.	DPR prepared	
14	LILO of 132KV Rongkhon - Ampati line at Praharnagar	2014	b	Not Applicable	31.03.2014	Mar-17	14.39		12.95	1.44		State Govt.		SPA	Finalisation of land for the substation is under progress	F.No.44 (18) Meghalaya/SPA/PF-I/2013-138 dt.22.01.2014	Approved by Board of Directors dated 11.09.2014	DPR prepared	
15	132KV S/C line on D/C towers from Mawphlang substation to Balat	2015	b	Not Applicable	Apr-16	Mar-20	41.4		37.26	4.14		State Govt.		Proposed funding under NEC	Funding not yet finalized	Financing not yet taken up	Approved by Board of Directors dated 08.01.2014.	DPR prepared	
16	Renovation of the existing 132KV S/c line from Mawlai to Nangalbibra s/s	2015	c	Not Applicable	Dec-15	Nov-16	19.23		17.31	1.92		State Govt.		SPA	Materials procurement is under process	NEC/POW/423 /2010-11/2515 dt 22.03.2011	Approved by Board of Directors dated 11.09.2014.	DPR prepared	



Name: MePTCL																			
Investment Plan																			
Note:- Information to be provided for FY13-to - FY18 for all heads either spilling into the period starting during FY 13																			
SI No	Project Details							SOURCE OF FINANCING FOR SCHEME							Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	Details of Project Cost with Cost benefit analysis (write up of Scheme)/ DPR
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)	Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	Equity component		Debt Component				Capital Subsidies / grants component					
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs.)		Loan source							
										Loan-1	Loan -2	Loan -1	Loan -2						
<b>Transmission Lines:</b>																			
17	LILO of 132KV D/C line Umtru - Kahelipara line at Killing s/s	2015	c	Not Applicable	Apr-16	Mar-19	29.52		13.07	1.45	15	State Govt.	Power Finance Corp.		Funding not yet finalized	Financing not yet taken up	Approved by Board of Directors dated 10.12.2014.	DPR prepared	
18	LLO of both ckts of 132KV D/C Umtru-Kyrd	2015	b	Not Applicable	Apr-16	Mar-19	19.9		17.91	1.99		State Govt.					Approved by Board of Directors dated 03.11.2015	DPR prepared	
19	LLO of 2nd circuit 132KV Agia-Nangalbibra line at Mendipathar	2015	b	Not Applicable	Apr-16	Sep-18	7.0		6.30	0.70		State Govt.						DPR prepared	
20	Reconductoring of 132KV Mawlai- Sumer line.	2017	c	Not Applicable	Oct-17	Sep-18	6.46		5.81	0.65		State Govt.					Approved by Board of Directors dated 03.11.2015	DPR prepared	
21	Construction of 132 kV D/C line from Umiam Stage-I HEP to Stage-III HEP	2016			Apr-16	Mar-19	39.87		35.88	3.99							Approved by Board of Directors dated 03.11.2015	DPR prepared	
22	Reconductoring of 132KV Lumshnong-Rata cherra line	2016			Apr-16	Mar-19						State Govt.						DPR not yet prepared	

Name: MePTCL																			
Investment Plan																			
Note:- Information to be provided for FY13-to - FY-18 for all heads either spilling into the period starting during FY 13																			
Sl No	Project Details							SOURCE OF FINANCING FOR SCHEME						Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	Details of Project Cost with Cost benefit analysis (write up of Scheme)/ DPR	
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)	Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	Equity component		Debt Component									Capital Subsidies/ grants component
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs.)		Loan source							
										Loan-1	Loan -2	Loan -1	Loan -2						
<b>Substations:</b>																			
23	400KV Killing s/s (GIS)	2011	a	Not Applicable	06.07.2011	Jan-13	100.9	79.55	10.09	11.26	State Govt.	REC		NLCPR	completed & commissioned on 22.02.2015 except for some civil works	F.No.DNER/NLP/Meg/167/2011 dt.01.07.2011	Approved by the Board, MeECL dated 14.08.2009	DPR prepared	
24	220/132KV, 1 x 100MVA ICT at Agia	2011	c	Not Applicable	08.03.2011	Aug-13	11.43	10.29	1.14		State Govt.			NEC	Completed and commissioned on 25.07.2013	NEC/POW/465/2008-09/Vol.I/2509 dt. 08.03.2011	Approved by the Board, MeECL dated 18.02.2011	DPR prepared	
25	132/33KV, 2 x 25MVA Ampati s/s	2010	b	Not Applicable	25.03.2010	Mar-16	14.04	12.64	1.40		State Govt.			NLCPR	Work is presently held up due to financial constraints	F.No.DNER/NLP/Meg/108/2007 dt.25.03.2010	Approved by the Board, MeECL dated 06.12.2010	DPR prepared	
26	132/33KV, 2 x 20MVA Mendipathar S/S	2009	b	Not Applicable	21.10.2009	Aug-15	9.56	8.60	0.96		State Govt.			NEC	Work is in the final stage of completion	NEC/POW/446/2007-08/2363 dt. 21.10.2009	Approved by the Board, MeECL dated 22.09.2009	DPR prepared	
27	132/33KV, 2 x 20MVA Mustem s/s	2012	b	Not Applicable	26.09.2012	Completed	22.17	19.95	2.22		State Govt.			SPA	Work is in the final stage of completion	No.POWER.136/2011/67 DT.04.02.2013	Approved by Board, MeECL dated 22.09.2009	DPR prepared	

Name: MePTCL																			
Investment Plan																			
Note:- Information to be provided for FY13-to - FY18 for all heads either spilling into the period starting during FY 13																			
SI No	Project Details						Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	SOURCE OF FINANCING FOR SCHEME						Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	Details of Project Cost with Cost benefit analysis (write up of Scheme)/ DPR	
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)		Equity component		Debt Component									Capital Subsidies / grants component
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs.)		Loan source							
										Loan-1	Loan -2	Loan -1	Loan -2						
<b>Substations:</b>																			
28	132/33KV, 2 x 20MVA Lad Nongkrem S/S	2012	b	Not Applicable	26.09.2012	Dec-16	24.31	21.88	2.43		State Govt.		SPA	Work is under progress	F.No.44(18) PFI/2013-1265 dt.26.12.2013	Approved by Board of Directors dated 19.07.2013.	DPR prepared		
29	132/33KV, 1 x 20MVA Praharinagar s/s	2014	b	Not Applicable	31.03.2014	Mar-17	18.91	17.02	1.89		State Govt.		SPA	Finalisation of land for the substation is under progress	F.No.44 (18) Meghalaya/SP A/PF-I/2013-138 dt.22.01.2014	Approved by Board of Directors dated 11.09.2014	DPR prepared		
30	132/33KV, 2 x 20MVA Balat s/s	2018	b	Not Applicable	Jun-16	Mar-20	23.2	20.88	2.32		State Govt.		Proposed funding under NEC	Funding not yet finalized	Financing not yet taken up	Approved by Board of Directors dated 08.01.2014.	DPR prepared		
31	132/33KV, 2 x 20MVA Nongpoh s/s	2016	b	Not Applicable	Jun-16	Mar-18	38.54	34.69	3.85		State Govt.					Approved by Board of Directors dated 03.11.2015	DPR prepared		
32	Augmentation of Rongkhon substation from 35MVA to 50 MVA	2010	b	Not Applicable	08.09.2010	Mar-16	4.69	4.22	0.47		State Govt.				NEC/POW/506 /2010-11/2460 dt.08.09.2010	Approved by Board	DPR prepared		
33	Augmentation of EPIP-II substation, Norbong	2017	b	Not Applicable	Oct-17	Sep-18	7.0	6.30	0.70		State Govt.					Not Yet approved by Board	DPR not yet prepared		
34	Augmentation of Mawlai s/s from 3 x 20MVA to 2 x 50MVA	2015	b	Not Applicable	Apr-16	Mar-17	50.78	45.70	5.08		State Govt.					Approved by Board of Directors dated 03.11.2015	DPR prepared		

Name: MePTCL																		
Investment Plan																		
Note:- Information to be provided for FY13-to - FY-18 for all heads either spilling into the period starting during FY 13																		
SI No	Project Details						Total capital expenditure approved by MSERC/ Govt/FI (Rs. Crs.)	SOURCE OF FINANCING FOR SCHEME						Funding Agency	Remarks	Agreement of Financing	approval from appropriate authority	
	Name of scheme	Year of Start	Nature of Project (Select appropriate code from below)	Whether the scheme is part of approved Business Plan* (YES/ NO)	Project Start Date (DD-MM-YY)	Project Completion date (DD-MM-YY)		Equity component		Debt Component								Capital Subsidies / grants component
								Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)		Loan source						
Loan-1	Loan -2	Loan -1	Loan -2															
Others:								-			State Govt.							
35	Installation & Commissioning of Communication Network & Remote Terminal Unit at 132KV Sub-Station for Supervisory control and Data Acquisition of MeECL	2010	c	Not Applicable	23.12.2010	Jun-16	3.95	3.56	0.40		State Govt.		NEC	Work is almost completed	NEC/POW/515 /2010-11/2493 dt.23.12.2010	Approved by Board, MeECL dated 29.06.2010		
36	Replacing the meters & the metering syst	2013	d	Not Applicable	16-Apr-13	Oct-15	3.66	3.29	0.37		State Govt.		SCA	Work is under progress	Financing not yet taken up	Approved by Board, MeECL dated 11.02.2013		
37	Complete Replacement of the meters & t	2015	d	Not Applicable	Apr-16	Sep-17	22.24	20.02	2.22		State Govt.					Approved by Board of Directors dated 03.11.2015		
38	Upgradation and improvement of PLCC co	2016	c	Not Applicable	Oct-16	Sep-17	10.51	9.46	1.05		State Govt.					Not Yet approved by Board		
39	Installation & commissioning of OPGW communication network and RTUs at 400 kV/220 kV/132kV Sub-station and Power Station.	2015	c	Not Applicable	Apr-16	Mar-17	27.00	24.30	2.70		State Govt.				Financing not yet taken up	Approved on 1st July, 2015		
40	Renovation & upgradation of protection & control system	2016	c	Not Applicable	Dec-15	Nov-16	69.19					69.19	Proposed funding under PSDF	Approved by the Appraisal committee as a grant of Rs. 69.19 crores	NEC/POW/423 /2006-07/960 dt.24.12.2006	Approved by Board of Directors dated 28.01.2015		
41	Capacitor Bank with accessories etc at 132KV Nangalbibra, Rongkhon, Ampati & EPIP substations	2016	c	Not Applicable	Apr-16	Mar-18	6.94	6.25	0.69		State Govt.					Approved by Board of Directors dated 03.11.2015		
42	Capacitor Bank with accessories etc at 132KV Lumshnong, NEHU, Cherra & Nongstoin substations	2016	c	Not Applicable	Apr-16	Mar-18	6.94	6.25	0.69		State Govt.					Approved by Board of Directors dated 03.11.2015		

