BEFORE

MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION, SHILLONG

PETITION

FOR

APPROVAL OF
BUSINESS PLAN AND ANNUAL REVENUE REQUIREMENT
FOR
FY 2015-16 TO FY 2017-18

FILED BY

MePGCL

Generating Clean And Green Energy

MEGHALAYA POWER GENERATION CORPORATION LTD.

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 ANNUAL REVENUE REQUIREMENT FOR FINANCIAL YEARS 2015-16, 2016-17 &2017-18 OF THE MEGHALAYA POWER GENERATION CORPORATION LIMITED (MePGCL) UNDER THE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION (MULTI YEAR TARIFF) REGULATIONS, 2014 AND UNDER SECTION-62 READ WITH SECTION 86 OF THE ELECTRICITY ACT 2003.

AND IN THE MATTER OF

MEGHALAYA POWER GENERATION 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 31st 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 1st April 2010 to 31st March 2012. Therefore, through notification dated 31st 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 1st April 2012 onwards.

2. MePGCL has begun segregated commercial operations as an independent entity from 1st 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) and tariffs for MePGCL for FY2013-14 and FY2014-15 in accordance with Meghalaya State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2011.

3. The petition for approval of Business Plan and ARR for the first Control Period (FY2015-16 to FY2017-18) has been prepared 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 15th September 2014.

4. Based on the provisional segregated financials and transfer scheme, estimates for the FY 2014-15 and projections for FY 2015-16 to FY2017-18 are prepared and Annual Revenue Requirement for FY 2015-16to FY2017-18 is proposed.

5. The Net ARR for FY 2015-16, FY 2016-17 and FY 2017-18 of MePGCL Old Station at Rs**. 148.57** Cr, Rs. **153.84** Cr, Rs. **168.64** Cr respectively.

6. The Net ARR for FY 2015-16, FY 2016-17 and FY 2017-18 of Sonapani is projected at Rs. **1.96** Cr, Rs. **2.30** Cr & Rs. **2.45** Cr respectively.

7. The Board of Directors of MePGCL have accorded approval for the Business Plan and ARR for the first control period of FY 2015-16 to FY 2017-18 and authorized the undersigned to file accordingly**.**

8. The applicant, therefore, humbly prays to the Hon'ble Commission to pass appropriate orders on the following:
   a. Approval of Business Plan for the Control Period of FY 2015-16 to FY 2017-18
   b. Approval of Net ARR amounting to Rs**. 148.57** Cr & Rs. **1.96** Cr for MePGCL-Old stations and Sonapani respectively for FY 2015-16 as proposed in this Petition.
   c. Approval of Net ARR amounting to Rs. **153.84** Cr & Rs. **2.30** Cr for MePGCL-Old stations and Sonapani respectively for FY 2016-17 as proposed in this Petition.
   d. Approval of Net ARR amounting to Rs. **168.64** Cr & Rs. **2.45** Cr for MePGCL-Old stations and Sonapani respectively for FY 2017-18 as proposed in this Petition.
   e. 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.
   f. To condone any inadvertent omissions, errors & shortcomings and permit the applicant to add/change/modify/alter this filing and make further submissions as required.

(A Lyngdoh)
Superintending Engineer (Civil),
For and on behalf of
Meghalaya Power Generation 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 21st January 1975. On 31st 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 31st 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 1st 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 23rd December 2013 thereby notifying the revised statement of Assets and Liabilities as on 1stApril 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 15th September, 2014.

1.2.2 As per Regulation 3, 4&7 of the MYT Regulations, 2014, the Hon'ble Commission will determine ARR for the Generation Company under Multi Year Tariff framework from 1st April, 2015 onwards. The relevant regulations are reproduced below for reference.

> *"**3 Scope of Regulation***
>
> *3.1 The Commission shall determine tariff within the Multi-Year Tariff framework, for all matters for which the Commission has jurisdiction under the Act, including in the following cases:*

i. Supply of electricity by a Generating Company to a Distribution Licensee:

Provided that where the Commission believes that a shortage of supply of electricity exists, it may fix the minimum and maximum ceiling of tariff for sale or purchase of electricity in pursuance of an agreement, entered into between a generating Company and a Distribution Licensee or between distribution licensees, for a period not exceeding one year to ensure reasonable prices of electricity;

ii. Intra-State transmission of electricity and SLDC charges;
iii. Intra-State Wheeling of electricity;
iv. Retail supply of electricity:

Provided that in case of distribution of electricity in the same area by two or more Distribution Licensees, the Commission may, for promoting competition among Distribution Licensees, fix only maximum ceiling of tariff for retail sale of electricity:

Provided further that where the Commission has allowed open access to certain consumers under sub-section (2) of Section 42 of the Act, the Commission shall determine the wheeling charges, cross subsidy surcharge, additional surcharges and other open access related charges in accordance with these regulations and MSERC (Terms and Conditions of Open Access) Regulations 2012 as applicable and as amended through Orders issued by the Commission from time to time

The Commission may also determine the rate at which the Distribution Licensee can supply power to other Distribution Licensees in the State.

3.3 Notwithstanding anything contained in these Regulations, the Commission shall adopt the tariff if such tariff has been determined through a transparent process of bidding in accordance with the guidelines issued by the Central Government pursuant to Section 63 of the Act.

3.4 These regulations shall not apply to renewable sources of energy which shall be governed by separate regulations of the Commission.

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4 ***Multi-Year Tariff framework***

4.1 The Commission shall determine the tariff for matters covered under clauses (i), (ii), (iii) and (iv) of regulation 3 above under Multi- Year Tariff framework with effect from April 01, 2015.

Provided that the Commission may, either on suo-moto basis or upon application made to it by an applicant, exempt the determination of tariff of a Generating Company or Transmission Licensee or Distribution Licensee under the Multi-Year Tariff framework for such period as may be contained in the Order granting such an exemption.

4.2 The Multi-Year Tariff framework shall be based on the following elements, for determination of Aggregate Revenue Requirement and expected revenue from tariff and charges for Generating Company, Transmission Licensee, and Distribution Business:

a) A detailed Business Plan based on the principles specified in these Regulations, for each year of the Control Period, shall be submitted by the applicant for the Commission's approval:

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7 Applicability

7.1 The Multi-Year Tariff framework shall apply to applications made for determination of tariff for a Generating Company, Transmission Licensee, and Distribution Licensee for Distribution Business."

1.2.3 The Regulation 6 & 41 of the MYT Regulations, 2014, provides the guidelines for filing of Multi Year Tariff. The relevant sections are reproduced below:

*"**6 Accounting statement and filing under MYT***

6.1 The filing under MYT by the Generating Company, Transmission Licensee, and Distribution Licensee, shall be done on or before 30thNovember each year to the Commission and in compliance with the principles for determination of ARR as specified in these Regulations, in such formats and at such time as may be prescribed by the Commission from time to time. The filing of truing up of petitions prior to MYT period shall be done in the manner and at such time as may be decided by the Commission.

6.2 The filing of MYT Petition for the Control Period under these Regulations shall be as under:

a) MYT Petition shall comprise of:

i. Multi-year Aggregate Revenue Requirement for the entire Control Period with year-wise details;

ii. Revenue from the sale of power at existing tariffs and charges and projected revenue gap, for the first year of the Control Period under these Regulations.

iii. Application for determination of tariff for first year of the Control Period.

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41 Petition for determination of generation tariff

41.1 A Generating Company is required to file a Petition for determination of tariff for supply of electricity to Distribution Licensees in accordance with the provisions of Chapter 2 of these Regulations.."

1.2.4 As per Regulation 8 of the MYT Regulations, 2014, MePGCL 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 March2018, 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 Submissions to the Hon'ble Commission

1.3.1 MePGCL hereby submits the petition under section 61, 62(c) & 62(d) of the Electricity Act, 2003 and MYT Regulations, 2014 as amended from time to time for approval of Business Plan & ARR for the period of FY 2015-16 to FY 2017-18.

BUSINESS PLAN

FY 2015-16 TO FY 2017-18

2 Business Plan

2.1 Preamble

2.1.1 The Hon'ble Commission has issued the MYT Regulations, 2014 for on 15th September 2014 which came into force on the said date. The tariff from 01st April 2015 onwards is to be determined under Multi Year Tariff framework. Based on the Business Plan, MePGCL is required to prepare Business Plan and forecast the ARR for the first Control Period (FY2015-16 to FY2017-18). As per the MYT Regulations, 2014, Business Plan should comprise of capital investment plan, financing plan, physical targets etc.

2.1.2 The aforementioned 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. MePGCL 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, deviations are expected and shall be brought to the notice of the Hon'ble Commission in accordance with the provisions of MYT Regulations, 2014. The approach undertaken for preparation of various plans and forecasts is explained in detail in the relevant sections of Business Plan. This Business Plan, as submitted under MYT Regulations, 2014, will be considered as a base for approval of Capital Expenditure and determination of ARR for future period.

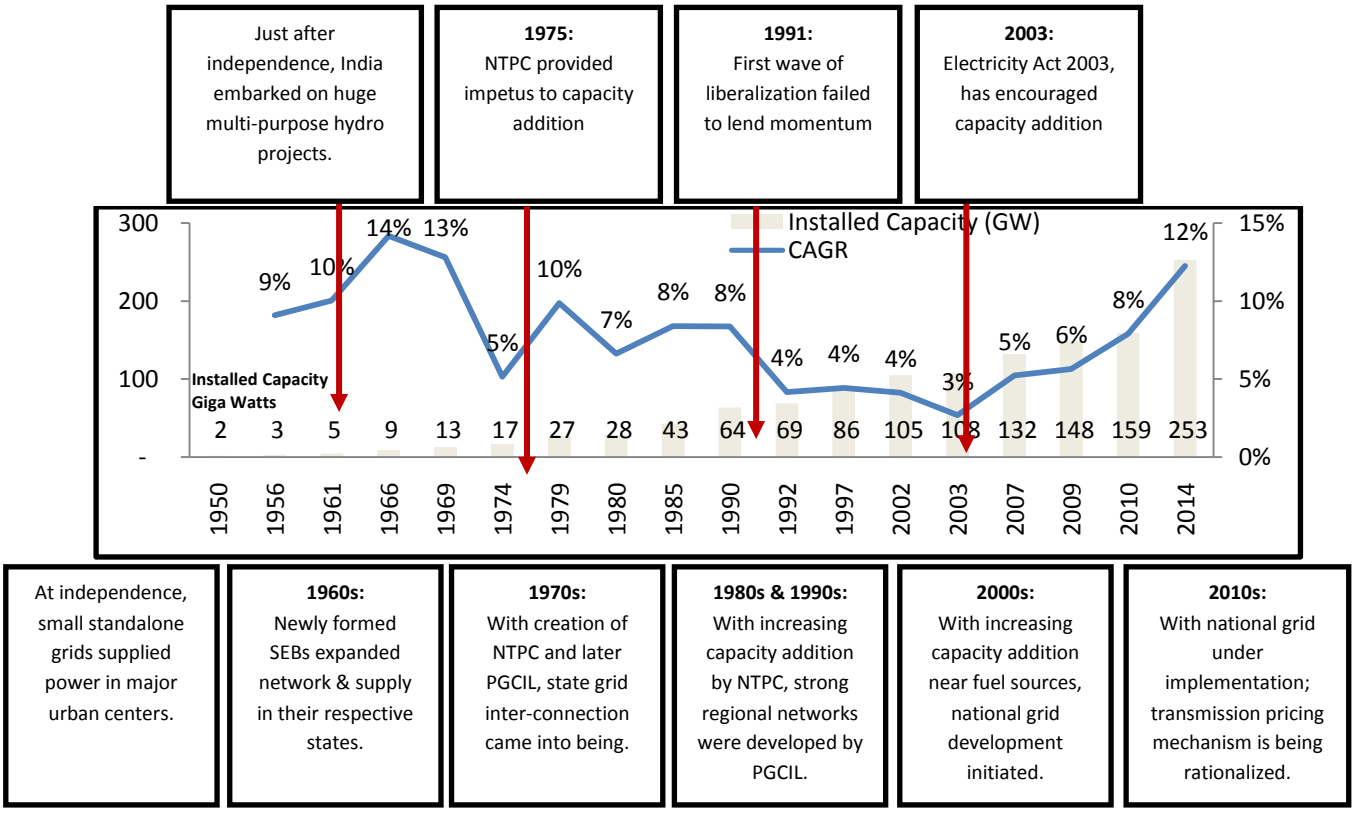
2.2 Indian Power Sector Scenario

2.2.1 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.

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.

2.2.2 Sector Evolution

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 centers. Evolution of the electricity sector from 1947 to its current state has been detailed below:



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.

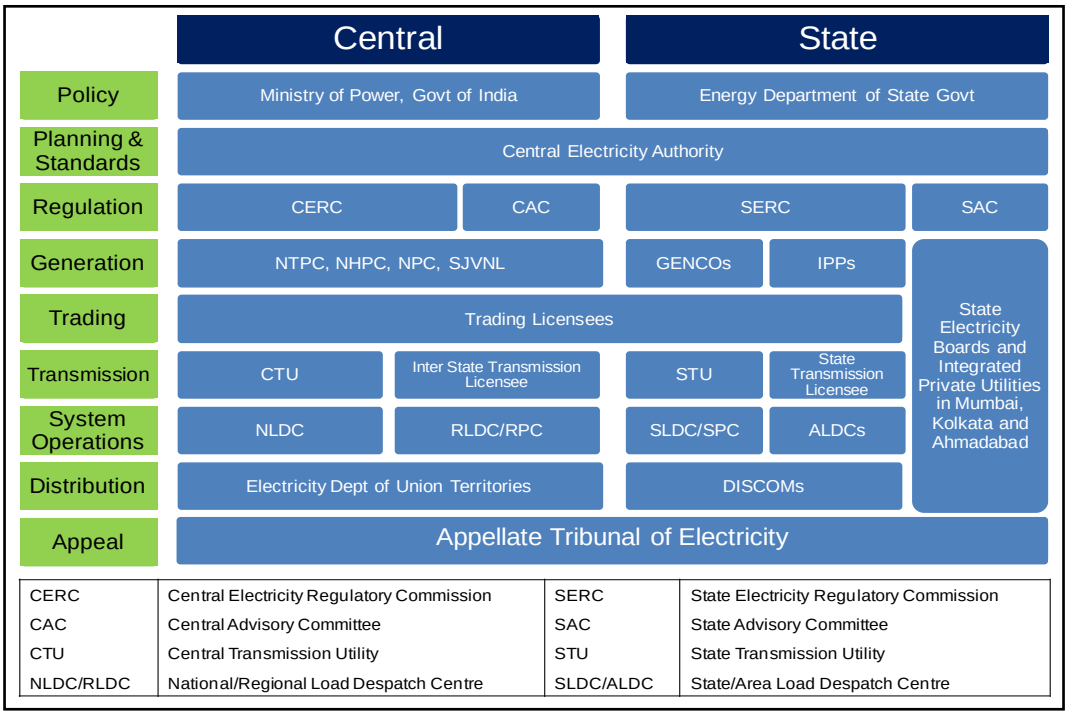
The most critical change brought about by Electricity Act, 2003 is competition – at wholesale as well as retail level – across the functions of generation, transmission, trading and distribution. While each sub-segment is at a different stage of

implementation, competition is most pronounced in generation and trading.

Other than competition, the most critical element of EA 2003 is open access. Open access which provides for non-discriminatory access to networks of all transmission & distribution licensees actually facilitates competitions amongst power generators, traders and suppliers.

2.2.3 Key features of Indian Power Sector

- Sector governed by Ministry of Power and Ministry of Renewable Energy with technical support by CEA and Regulatory support by CERC;
- Generation has been delicensed and is owned 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:

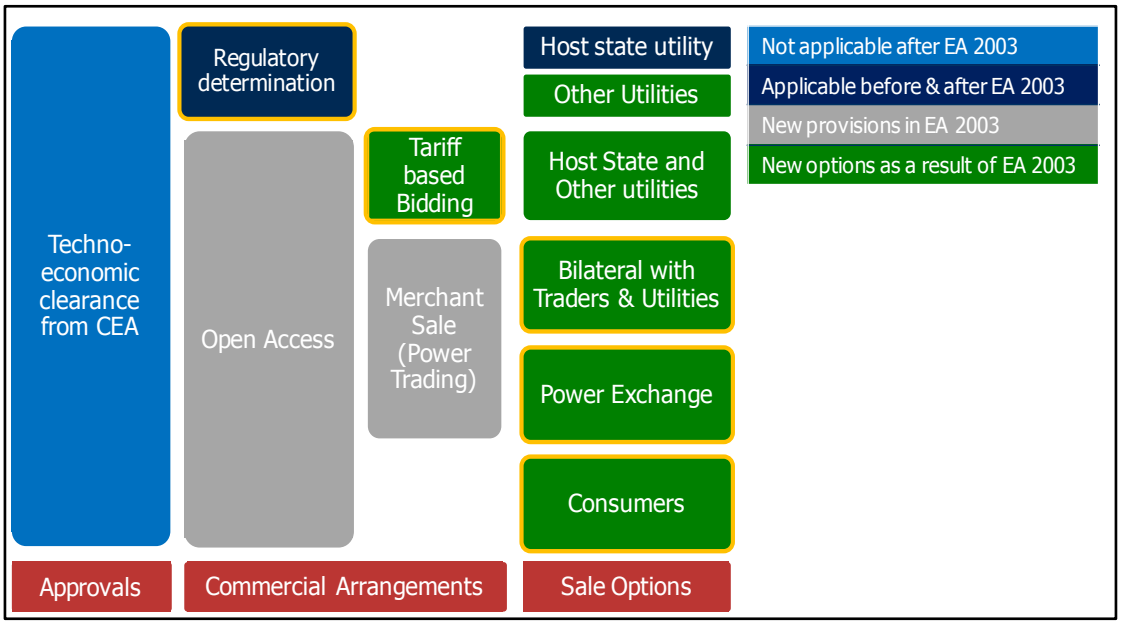


CERC	Central Electricity Regulatory Commission	SERC	State Electricity Regulatory Commission
CAC	Central Advisory Committee	SAC	State Advisory Committee
CTU	Central Transmission Utility	STU	State Transmission Utility
NLDC/RLDC	National/Regional Load Despatch Centre	SLDC/ALDC	State/Area Load Despatch Centre

2.2.4 Sale Options after EA 2003

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.

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.



2.2.5 Renewable Energy

The supply from renewable is expected to increase rapidly from 24503 MW by the end of the Eleventh Plan to 54503 MW by the end of the Twelfth and 99617 MW by the end of the Thirteenth. This fourfold increase in the next 10 years is expected to continue in subsequent years as policies provide a strong incentive for the renewable. Nevertheless the base is small and the share of renewable in total commercial energy used will remain small. It is expected to rise from about 1 per cent in 2011–12 to 1.43 per cent in 2016–17 and just under 2 per cent in 2021–22. Though small, the share of renewable energy in India is comparable with that in many other countries: USA (1.7 per cent), Indonesia (1.4 per cent), Thailand (1.0 per cent) and China (0.5 per cent). Brazil at 3.1 per cent is significantly higher.

The Eleventh Plan was the period in which the Electricity Act of 2003, which was enacted during the Tenth Plan period was to be fully operationalized. The objectives of the Act are "to consolidate the laws related to generation, transmission,

distribution, trading and use of electricity, and taking measures conducive for the development of electrical industry, protecting interests of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of regulatory commission and establishment of Appellate Tribunals". While substantial progress was made in setting up the institutional structure, there are several important areas where reforms have yet to pick up the pace.

An important gain in the Eleventh Plan was the ramping up of the pace of addition to generation capacity.

2.2.6 Capacity addition in the 11th Plan

The Planning Commission had set a capacity addition target of 78,700 MW for 11th Plan. This comprised of 15,627 MW Hydro, 59,693 MW Thermal and 3,380 MW Nuclear. Subsequently, as per the Mid Term Appraisal of Planning Commission, a revised target of 62,374 MW was set for 11th Plan. The main physical milestones achieved in the power sector during the Eleventh Plan are summarized in the table below:

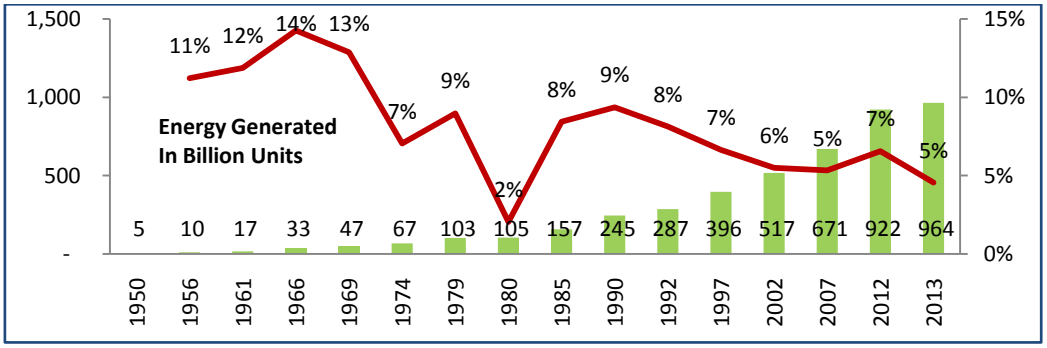
Table 1: Achievements of 11th Plan

Sector	Hydro	Thermal		Nuclear	Total	Renewable
		Coal	Gas			
State	1,594	10,337	1,106	-	13,035	2,538
Private	1,219	19,209	2,531	-	22,958	14,205
Central	1,523	11,355	803	880	14,562	-
Total	**4,337**	**40,901**	**4,439**	**880**	**50,555**	**16,743**

Source: CEA

2.2.7 Energy Generation

The plan wise energy generation and CAGR during the period from 1950 to 2013* are presented below:



* At the end of 1st year of 12th Plan. Source: CEA

2.2.8 12th Plan Target

Generation expansion planning studies for 12th Plan end (2012-17) have been carried out using EGEAS (Electric Generation Expansion Analysis System) software to assess the requirement of additional generating capacity during the 12th Plan period (2012-17), considering capacity addition of 67,298 MW during the 11th Plan. While carrying out studies, the requirement of 5% Spinning reserve as stipulated in the National Electricity Policy, effect of up rating of hydro power plants and expected retirement of thermal units by 2012-17 have also been considered. A capacity of about 4,000 MW each from old and inefficient thermal units has been considered for retirement during 12th and 13th Plan.

Based on the above studies, the capacity addition requirement during 12th Plan works out to 79,690 MW. In accordance with the Low Carbon Growth Strategy, priority has been accorded to renewable energy sources based, hydro and nuclear generation capacity. Accordingly, a feasible hydro capacity addition of 9,204 MW and nuclear capacity addition of 2,800 MW has been taken as must run during 12th Plan while assessing generation capacity addition requirement. Gas based capacity of 1,086 MW only has been considered while carrying out studies, as gas for these projects is assured since it is tied up from local sources. Besides this, 1200 MW import from Bhutan has also been considered. The balance capacity addition to meet the demand would be from coal based capacity which is 66,600 MW.

2.3 Company Profile-MePGCL

2.3.1 The Company is a Generation Company within the meaning of Section 2 (28) of the Electricity Act 2003. Further, Section 7 and 10 of the Electricity Act 2003 prescribes the following major duties of the Generating Company:

- To establish, operate and maintain generating stations, tie-lines, sub-stations and dedicated transmission lines connected therewith in accordance with the provisions of this Act or the rules or regulations made there under
- To supply electricity to any licensee in accordance with this Act and the rules and regulations made there under
- To submit technical details regarding its generating stations to the Appropriate Commission and the Authority
- To co-ordinate with the Central Transmission Utility or the State Transmission Utility, as the case may be, for transmission of the electricity generated by it

2.3.2 As per Meghalaya Power Sector Transfer Scheme MePGCL has been vested with the function of generation of 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:

- To supply electricity to any licensee in accordance with this Act and the rules and regulations made there under
- To initiate accelerated power development by planning and implementing new power projects
- To operate the existing generate stations efficiently & effectively
- To implement Renovation and Modernisation for existing plants to improve performance through constant R & M activities, regular maintenance etc
- Achieve high reliability and safety levels in all operational areas
- Taking appropriate steps towards ensuring safety and adhering to environmental norms
- Adopt best industry practices to become the best and efficient generating company
- Other associated business like providing Training, Research and Development activities, Technical consultancy services and O&M related services

2.3.3 MePGCL started functioning as an independent commercial entity from 1st April 2013. The power generated by the MePGCL stations is sold to MePDCL as per the signed power purchase agreements and transmitted to MePDCL at MePTCL interface points. At present MePGCL is having 7 Hydro Generating stations, 4 of these are storage type and 3 are run of the river stations. The details about existing stations are mentioned below:

Table 2: Details of existing stations

Sl. No	Station	Type	No of Units/ Capacity	COD	Capacity (MW)
1	Umiam Stage-I	Storage/ Pondage	4*9 MW	FY 1966	36
2	Umiam Stage-II		2*10 MW	FY 1971	20
3	Umiam Stage-III		2*30 MW	Unit 1: FY 1979 Unit 2: FY 1979	60
4	Umiam Stage-IV		2*30 MW	FY 1993	60
5	Umtru Power Station	ROR	4*2.8 MW	Unit 1-3: FY 1958 Unit 4: FY 1969	11.2
6	Sonapani HEP		1.5 MW	FY 2010	1.5
7	Leshka HEP		3*42 MW	Unit 1& 2:FY 2013 Unit 3: FY 2014	126
	Total				**314.7**

2.3.4 Operational Performance of the Generating Stations- MePGCL

All the Generating stations being hydro, the annual generation depends on the rainfall for the year. The yearly generation for last 5 years for the generating stations is shown in the table below:

Table 3: Historical Energy Generation (MU)

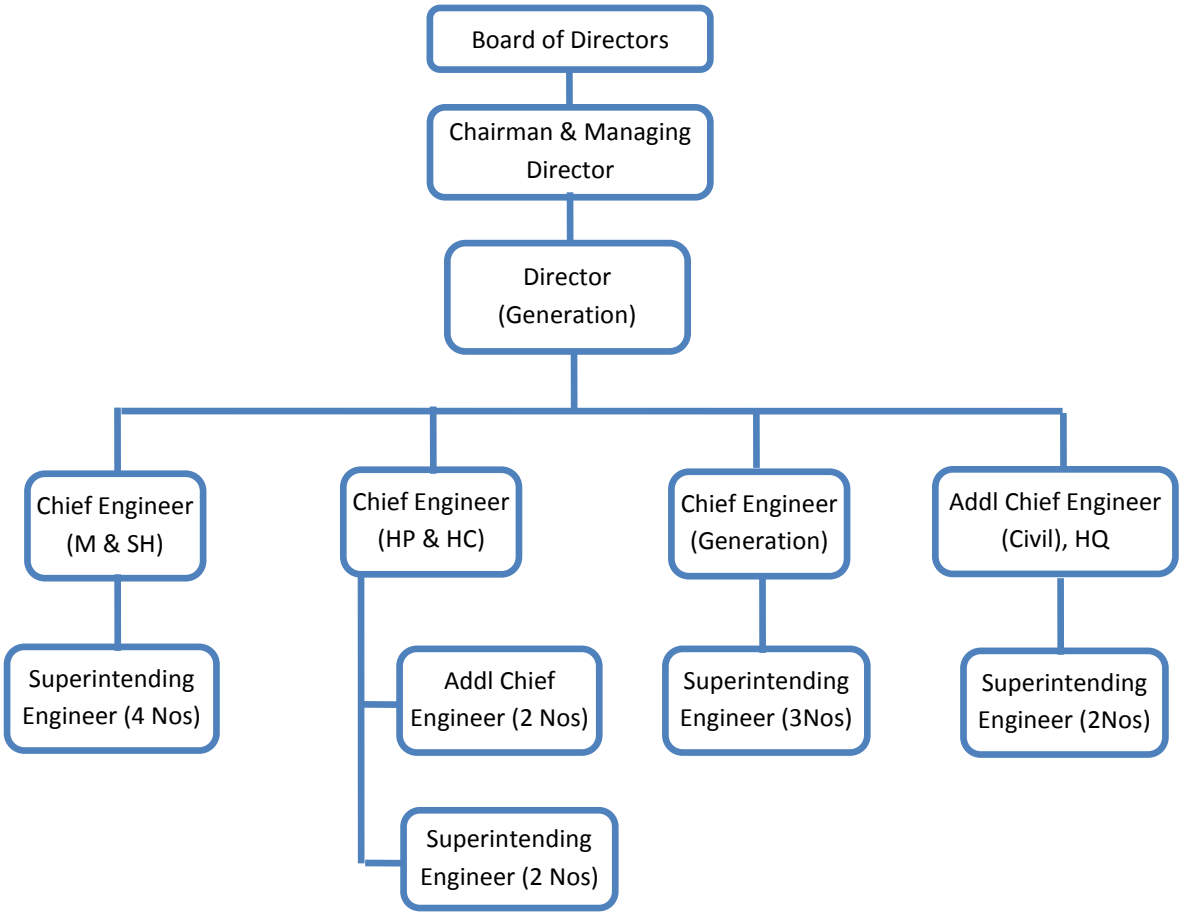
Sl. No	Station	FY 10	FY 11	FY 12	FY 13	FY 14
1	Umiam Stage-I	110.32	103.80	108.89	102.68	78.12
2	Umiam Stage-II	51.18	47.52	12.89	50.32	41.03
3	Umiam Stage-III	137.26	132.24	127.44	129.62	132.55
4	Umiam Stage-IV	187.03	204.93	203.82	187.23	173.64
5	Umtru Power Station	48.22	15.51	38.04	30.27	20.83
6	Sonapani HEP	2.15	4.81	6.03	7.19	5.37
7	Leshka HEP	NA	NA	NA	197.42	410.22
	Total	**536.15**	**508.81**	**497.11**	**704.74**	**861.76**

2.4 Human Resource

2.4.1 Organisation Structure

The broad organisation chart is shown below:

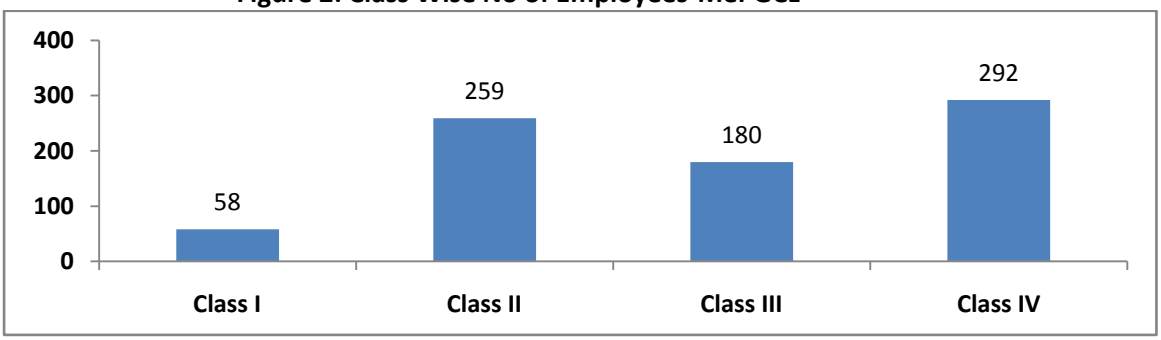
Figure 1: Organisation Chart-MePGCL



2.4.2 Existing Human Resource

MePGCL has a ~1270 strong workforce (as of November 2014). MePGCL boasts of a strong technical knowhow in form of experienced engineers and operational staff. The technical prowess of MePGCL has helped in establishing, operating and maintaining generating stations. The class wise number of Permanent Employees MePGCL is depicted in the chart below:

Figure 2: Class Wise No of Employees-MePGCL



2.4.3 Capacity Building

2.4.3.1 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:

- 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.

2.4.3.2 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.

- 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**.**

2.4.3.3 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 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.

2.4.3.4 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.

2.5 Operational norms and Design Energy

2.5.1 Norms of Operation

2.5.1.1 The Regulation 58 of the MYT Regulations, 2014 provides the norms for operation for Hydro Generating stations. The regulation is reproduced below for ready reference:

*"**58 Norms of operation***

The norms of operation shall be as under:

*58.1 **Normative annual plant availability factor (NAPAF)***

(a) Storage and pondage type plants where plant availability is not affected by silt and

(i) with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of upto 8 % ……. 90 %

(ii) with head variation between FRL and MDDL of more than 8%= (Head at MDDL/Rated Head) x 0.5+0.2

(b) Pondage type plant where plant availability is significantly affected by silt.. ..85%

(c) Run ‑of- River type plants: NAPAF to be determined plant-wise, based on 10-day design energy data, moderated by past experience where available /relevant.

Note:

(i) A further allowance may be made by the Commission under special circumstances, eg. Abnormal silt problem or other operating conditions, and known plant limitations.

(ii) A further allowance of 5 % may be allowed for difficulties in the North East Region.

(iii) In case of new hydro electric project the developer shall have the option of approaching the Commission in advance for further above norms.

*58.2 **Auxiliary energy consumption:***

(a) Surface hydro electric power generating stations with rotating exciters mounted on the generator shaft ……0.7% of energy generated.

(b) Surface hydro electric power generating stations with static excitation system ……1.0% of energy generated.

(c) Underground hydro electric power generating stations with rotating exciters mounted on the generator shaft ….0.9% of energy generated.

(d) Underground hydro electric power generating stations with static excitation system ……1.2% of energy generated.

*58.3 **Transformation losses***

From generation voltage to transmission voltage ……0.5% of energy generated."

2.5.1.2 The features of the hydro power plants of MePGCL in terms of type of plant, type of excitation etc are provided in the table below:

Table 4: Features of Hydro Power Plants

Sl. No.	Particulars	Umtru	Umiam-I	Umiam-II	Umiam-III	Umiam-IV	Sonapani
1	**Type of Station**						
a	*Surface/ Undergroun*	SURFACE	SURFACE	SURFACE	SURFACE	SURFACE	SURFACE
b	*Purely ROR/ Pondage/ Storage*	PONDAGE	STORAGE	POWER CHANNEL (Pondage)	PONDAGE	PONDAGE	ROR
c	*Peaking/Non Peaking*	NON PEAKING	NON PEAKING	NON PEAKING	NON PEAKING	NON PEAKING	NON PEAKING
d	*No. of hours Peaking*	NA	NA	NA	NA	NA	NA
e	*Overload Capacity (MW) & Period*	NIL	NIL	NIL	NIL	NIL	NA
2	**Type of Excitation**						
a	*Rotating exciters on Generator*	Rotating exciters	Rotating exciters	Rotating exciters	Rotating exciters	NA	Rotating exciters
b	*Static excitation*	NA	NA	NA	NA	Static Excitation	NA

2.5.1.3 Computation of NAPAF for Storage and Pondage type plants:

Based on the above details and the norms specified by Regulation 58 (1) (a) of the MYT Regulations, 2014, the computation of NAPAF for Storage and Pondage type hydro generating stations is carried out as under:

Table 5: Computation of Head Variation for Storage & Pondage plants

Name of Power Station	FRL (mtrs)	MDDL (mtrs)	Maximum Head	Minimum Head	% Head Variation
Umiam Stage I	981.46	960.12	169.0	130.0	23.08%
Umiam Stage II	804.06	800.85	78.5	75.0	4.46%
Umiam Stage III	679.70	672.05	162.0	146.0	9.88%
Umiam Stage IV	503.00	496.00	162.0	131.0	19.14%

As submitted in the above table other than Umiam Stage-II, for all power stations, the head variation between FRL and MDDL is more than 8%. Hence, an allowance is to be provided in NAPAF as indicated in the table below:

Table 6: Computation of NAPAF for Storage & Pondage plants

Name of Power Station	% Head Variation	Rated Head	Head at MDDL (Min Head)	NAPAF (Head at MDDL / Rated head) x 0.5+0.2
Umiam Stage I	23.08%	145.0	130.0	64.83%
Umiam Stage II	4.46%	77.7	75.0	90.00%
Umiam Stage III	9.88%	150.0	146.0	68.67%
Umiam Stage IV	19.14%	140.0	131.0	66.79%

2.5.1.4 Computation of NAPAF for Pondage type plants: As per Regulation 58 (1) (b) of the MYT Regulations, 2014 for pondage type plants where plant availability is significantly affected by silt is NAPAF is 85%. Umtru being the only plant under this category and accordingly, NAPAF for Umtru is **85.00%** as per regulations. Further as per Regulation 58 of the MYT Regulations, 2014, after considering further allowance of 5% for difficulties in north east region, the NAPAF for Umtru is **80.00%.**

2.5.1.5 Computation of NAPAF for Run of River type plants: As per Regulation 58 (1) (c) of the MYT Regulations, 2014, the NAPAF for Run of River type plants is to be determined based on 10-day design energy data, moderated by past experience wherever relevant. Therefore, based on the past records and as per norm given in regulation, the NAPAF for Sonapani works out to be **50%.** Further as per Regulation 58 of the MYT Regulations, 2014, after considering further allowance of 5% for difficulties in north east region, the NAPAF for Sonapani is **45%**.

2.5.1.6 As per Regulation 58 of the MYT Regulations, 2014, the computed NAPAF is shown below:

Table 7: NAPAF as per Operation norms for MePGCL Power Stations

Name of Power Station	NAPAF (%) as per workings	NAPAF (%) with 5% allowance
Umiam Stage I	64.83%	59.83%
Umiam Stage II	90.00%	85.00%
Umiam Stage III	68.67%	63.67%
Umiam Stage IV	66.79%	61.79%
Umtru Power Station	85.00%	80.00%
Sonapani	50.00%	45.00%

It is submitted before the Hon'ble Commission to kindly approve the NAPAF for existing stations as submitted in the above table.

2.5.2 Design Energy – Existing Generating Stations

The design energy for MePGCL power stations as approved in the earlier Tariff Orders is proposed for the Control Period as well. The station wise design energy is shown in the table below:

Table 8: Design Energy

Name of Power Station	Design Energy (MU)
Umiam Stage I	116.29
Umiam Stage II	45.51
Umiam Stage III	139.40
Umiam Stage IV	207.50
Umtru Power Station	39.01
Sonapani	5.50

The month wise and station wise design energy is provided in the Formats HG3 & HG4

2.6 Investment Plan

2.6.1 Need for Capital Expenditure:

The present generating stations of MePGCL except MLHEP are very old. Therefore, for efficient generation by these stations there is need to undertake various system improvement & augmentation activities. Moreover, to utilize the natural resources of Meghalaya already few hydro electric projects are undertaken and some more will be undertaken in upcoming years. The Capital Expenditure can be broadly segregated into New Projects and additional investment in existing stations for augmentation, improvement, metering etc.

2.6.2 Umiam Stage-I

2.6.2.1 System Augmentation Projects

The Umiam Stage-I station and DAM site being very old some of the components need to be augmented. For the control period of FY 2015-16 to FY 2017-18, two system augmentation projects are proposed to be undertaken. The details of the projects are mentioned below:

Table 9: System Augmentation Projects-Umiam Stage-I

No.	Project Name	Description
1	Stand-by power supply	Radial gate of the reservoir of Umiam Stage-I HEP is electrically operated for which adequate motors are in place. However it is observed that during monsoon due to heavy rain, thunder and storm electric supply fails. In such a case the radial gates are being operated manually. The manual operation of the gates is cumbersome, unreliable and risky for the hydraulic structures. In few occasions the water level

No.	Project Name	Description
		has overtopped the dam for delay in opening of radial gates, which is entirely undesirable for the safety of the structure. Therefore, it is proposed that Diesel Generator sets be procured for the dam site to operate the radial gates during power failure.
2	Replacement of Intake gate and Trash Rack of Intake structure	The Intake gate of the Umiam Stage-I was hunged in the gate groove of the shaft with hoist at shaft top. The entire gate and its accessories need to be totally overhauled/refurbished. On inspection it was observed that the gate is heavily rusted with deep pitting. The stiffeners were found to be almost worn out due to rusting. The accessible wheel assemblies were found to be jammed and rubber seals dry and completely damaged. The Intake gate needs to be made operational/functional to enable replacement of the bypass valves that are leaking. Therefore the following is proposed: • *Provision of inflatable tube/dam to isolate the intake shaft by plugging the tunnel.* • *Structural design of a new intake gate its embedded parts and hoisting arrangement and Trash rack.* • *Installation of new Intake gate, trash rack and hoisting arrangement.*

The estimated total expenditure for the System Augmentation projects is Rs. 2.15 Cr. The funding pattern shown in the table below:

Table 10: Funding for Umiam Stage-I System Augmentation project

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Augmentation-Stage-I	2.15	0.35	1.8	0

2.6.2.2 System Improvement Projects

Various system improvement projects such as replacement of main inlet valve, re-engineering of fire fighting system, replacement and reconditioning of transformer etc. are proposed for the control period of FY 2015-16 to FY 2017-18. The details of projects are mentioned below:

Table 11: System Improvement Projects- Umiam Stage-I

No.	Project Name	Description
1	Providing facilities for security of	In the DAM site of Umiam Stage-I security fencing, toilet and water supply for the security personnel on duty are not present. As it is a restricted area, 24 X 7 monitoring of the dam etc., needs

No.	Project Name	Description
	Hydraulic structures	to take into account to safe guard the structure and its components. Therefore the following are proposed: • *Construction of security fencing on the downstream and upstream side of the DAM* • *Construction of toilet including water supply in the dam and Intake gate*
2	Replacement of Main Inlet Valve (MIV) of Unit-3 & Unit-4	Since 1965 MIVs of Unit-3 & Unit-4 were not replaced. At present considerable water leakages happen through the MIVs leading to requirement of frequent maintenance. Therefore to avoid frequent maintenance and smooth functioning of the units the MIVs of Unit 3 & Unit 4 need to be replaced.
3	Refurbishing of two Bypass valves along with the control system	Over the year there is a heavy water leakage from the flange of the pipe of Penstock Butterfly Valve causing undue damage to the valve and adjacent pipes. This valve is necessary for the regular maintenance of penstock and turbine parts of the station. If these components of the station are not maintained regularly there may be catastrophes in future. It is to be noted that since installation of this valve in 1960, no major maintenance work has been carried out on this valve. Therefore to avoid any catastrophes in the future and for smooth functioning of the station it is necessary to replace the two bypass valves with new ones. Further there is no control system for the valves and therefore new control system also needs to be procured.
4	Re-engineering of Fire Fighting system of - *Generator* - *Transformer*	*Generator:* The existing flooding system of fire protection for generator used the old cylinder, since 1965 have not been replaced. So it is required to replace existing cylinder along with the control circuit so that the same firefighting of generator housing can be made active. *Transformer:* At present the piping, valves and nozzles of the emulsifier system are not functioning due to broken pipes (because of aging), non-functioning valves and it is extremely dangerous to open the same as it may lead to flooding of power house. It is to be noted that the components of the emulsifier system have not been replaced since 1965. Therefore to make the fire fighting system functional it is necessary to renovate the piping and valves along with nozzles.
5	Replacement of transformer for unit-2 and reconditioning of	The Transformer of Unit-2 of Umiam Stage-I has completed its useful life and at present the same is being run by conducting frequent maintenance leading to high Repair & Maintenance (R & M) cost. Therefore to reduce the R & M cost the same need to be

No.	Project Name	Description
	other transformer	replaced by new one. Further, none of the spare transformers are on working condition. Therefore, one of the transformers has to be reconditioned to keep as spare in event of any major shutdown.
6	Construction of Transformer Yard to accommodate station service transformers, Unit-1 & Unit-3 and procurement of the same.	The Station Service Transformers of Unit-1 & Unit-3 have completed the useful life. Besides these transformers are oil based and are located inside the generator floor of the power house building. Therefore it is proposed that these transformers be replaced with new ones of 500 KVA and placed outside the power house building.
7	Procurement and installation of 250KVA DG Set	As part of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulation, 2010, Clause 37 (14) of Part III - Section 4, Page 62, a Diesel Generator (DG) set is required for all power stations. A 250KVA DG set will suffice as a backup power source. The set will be placed outside the power house building and a new shed needs to be constructed.
8	Construction of Beams and By-pass Isolators for KPS-1, KPS-2 & Umiam feeders.	KPS-1, KPS-2 & Umiam 132KV Feeders Circuit Breakers do not have Bypass Isolators. In case of any problem of the Circuit Breakers, the feeders cannot be charged without the bypass isolators. As such it is required to construct switchyard structural beams to accommodate bypass isolators as well as installation of Master Isolators for smooth change over from Main to Auxiliary Bus.

The estimated total expenditure for the above System Improvement projects is Rs. 7.77 Cr. The funding pattern shown in the table below:

Table 12: Funding for Umiam Stage-I System Improvement Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Improvement-Stage-I	7.77	0.91	6.86	-

2.6.2.3 Miscellaneous Capex

At present the Umiam Stage-I station is being run on semiautomatic mode. The speed and voltage is being controlled automatically. The start and stop of the machine needs to be done on manual basis. With increase of speed in operation, it is necessary to have a system for centralized automatic monitoring and control of the machine parameters. Therefore, it is proposed that SCADA system is

implemented to enable centralized automatic monitoring and control of various station parameters such as temperature, pressure, flow of water, load condition of machine etc. This will reduce the dependent on manpower and also increase reliability.

The project cost is estimated to be Rs. 2.5 Cr and it will be financed by Rs. 2.25 Cr of Equity and Rs. 0.25 Cr of Loan.

2.6.3 Umiam Stage-II

2.6.3.1 System Augmentation Projects

The Umiam Stage-II station being very old some of the components need to be augmented. For the control period of FY 2015-16 to FY 2017-18, two system augmentation projects are proposed to be undertaken. The details of the projects are mentioned below:

Table 13: System Augmentation Projects- Umiam Stage-II

No.	Project Name	Description
1	Station Battery bank along with Charger.	As per CEA Standards of operation requirement Station Battery bank along with charger
2	Emulsifier system for Generator Transformer in both Units.	Presently there is no fire fighting system for the Power transformer.

The estimated total expenditure for the above System Augmentation projects is Rs. 0.20 Cr. The funding pattern shown in the table below:

Table 14: Funding for Umiam Stage-II System Augmentation Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Augmentation-Stage-II	0.20	0	0.20	0

2.6.3.2 System Improvement Projects

The following two system improvement projects are proposed to be undertaken for Umiam Stage-II for the control period of FY 2015-16 to FY 2017-18:

Table 15: System Improvement Projects- Umiam Stage-II

No.	Project Name	Description
1	Providing facilities for security of Hydraulic structures	In the Forebay and other sites of the station security fencing, toilet and water supply for the security personnel on duty are not present. As it is a restricted area, 24 X 7 monitoring needs to take into account to safe guard the structure and its components. Therefore the following are proposed: • *Construction of security fencing* • *Construction of toilet including water supply in the dam*

		and Intake gate
2	Installation of 250 KVA, 11kV substation dedicated to the station supply of Umiam Stage-II Power Station	At present Auxiliary equipment like dewatering pump, compressor battery charger etc. is run by taking power supply from a rural sub-station located outside the station. However the sub-station is unstable. Therefore, in order to have a stable and adequate supply to Auxiliary equipments it is necessary to install a dedicated substation for the station.

The estimated total expenditure for the above System Improvement projects is Rs. 0.26 Cr. The funding pattern shown in the table below:

Table 16: Funding for Umiam Stage-I System Improvement Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Improvement-Stage-II	0.26	0.15	0.11	-

2.6.3.3 Miscellaneous Capex

At present all the machine parameters of the Umiam Stage-II stations is being controlled automatically. However there is no centralized system for monitoring and controlling of the machine parameters. Therefore it is proposed that SCADA system is implemented to enable centralized automatic monitoring and control of various station parameters such as temperature, pressure, flow of water, load condition of machine etc. This will reduce the dependent on manpower and also increase reliability.

The project cost is estimated to be Rs. 1 Cr and it will be financed by Rs. 0.90 Cr of Equity and Rs. 0.10 Cr of Loan.

2.6.4 Umiam Stage-III

2.6.4.1 System Augmentation Projects

The Umiam Stage-III station and DAM site being very old some of the components need to be augmented. For the control period of FY 2015-16 to FY 2017-18, the following system augmentation projects are proposed:

Table 17: System Augmentation Projects- Umiam Stage-III

No.	Project Name	Description
1	Stand-by power supply at Umiam Stage-III DAM	Radial gate of the reservoir of Umiam Stage-III HEP is electrically operated for which adequate motors are in place. However it is observed that during monsoon due to heavy rain, thunder and storm electric supply fails. In such a case the radial gates are being operated manually.

No.	Project Name	Description
		The manual operation of the gates is cumbersome, unreliable and risky for the hydraulic structures. In few occasions the water level has overtopped the dam for delay in opening of radial gates, which is entirely undesirable for the safety of the structure. Therefore, it is proposed that Diesel Generator sets be procured for the dam site to operate the radial gates during power failure.
2	Installation of new Sub Station	At present Auxiliary equipment like dewatering pump, compressor battery charger etc. is run by taking power supply from a rural sub-station located outside the station. However the sub-station is unstable. Therefore, in order to have a stable and adequate supply to Auxiliary equipments it is necessary to install a dedicated substation for the station.
3	Re-Engineering of 132 KV BUS.	The present 132 KV bus of stage III switchyard is of ACSR Panther since its inception i.e. 1979. But the bus loading has been increasing due to more power flow to the system, which has touched the tune of 114 MW and the bus loading equivalent to the tune of 500 Amps as against the maximum current carrying capacity of 371 Amps. Therefore, current carrying capacity of Bus needs to be enhanced. It is proposed that the present ACSR Panther Bus be replaced by ACSR ZEBRA.

The estimated total expenditure for the above System Augmentation projects is Rs. 1.85 Cr. The funding pattern shown in the table below:

Table 18: Funding for Umiam Stage-III System Augmentation Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Augmentation-Stage-III	1.85	0.3	1.55	0

2.6.4.2 System Improvement Projects

The following system improvement projects are proposed for the control period of FY 2015-16 to FY 2017-18:

Table 19: System Improvement Projects- Umiam Stage-III

No.	Project Name	Description
1	Improvement of road from Zeropoint office to Kyrdemkulai	The road connecting Zeropoint office and Kyrdemkulai Stage-III Dam was constructed in the 1970's and the length of the road is 2.5Km and about 3.0m width. At the present the road is in a dilapidated condition as no repair

No.	Project Name	Description
	Stage-III Dam	work was taken up for over 30 years. Major parts of the road are in a bad condition that even the base course is eroded which requires filling and consolidation, in some parts large potholes are formed due to incessant rain in the area and plying of heavy public vehicles over the road, carpeting or blacktopping is not present throughout the whole stretch of the road and portions of the culverts are also broken. Therefore, consolidation, metal ling and blacktopping of the whole stretch of road, replacement or repairing of culverts, side drains, guard walls etc is proposed.
2	Improvement of road from Zeropoint to Stage-III Power Station	The road connecting Zeropoint and Stage-III Power Station was constructed during inception of Kyrdemkulai Hydro Electricity Project, Stage-III during the seventies and is the life line connecting the Stage-III Power Station to rest of the state. The length of the road from Zero point to Stage – III Power Station is 6.75 Km, average width is 3.25 m and the surface is black topped. Presently this road is in a dilapidated state. The portions between ch: 2.80.00 km to 4.50 km & ch: 4.90 km to 6.75 km is the most badly affected section of this road, which requires full consolidation including blacktopping for restoration. For remaining portion of the road, from ch: 0.00 – 2.80 Km & 4.50 – 4.90 Km, blacktopping with isolated patch /pot hole repairing is proposed.
3	Improvement of road from Stage-III Power Station to Stage-IV Power Station	The road connecting Umiam Stage-III station and Umiam Stage-IV station was constructed during inception of Kyrdemkulai Hydro Electricity Project, Stage-III, during the seventies and is the life line connecting the Stage-IV Power Station to rest of the state. The length of the road from Stage – III to Stage – IV Power Station is 12.50 Km, average width is 3.25 m and the surface is black topped. Presently this road is in a dilapidated state. The portion starting from the Tail Race of Stage –III Power Station up to bend point at Umtassor, between ch: 7.75 km to 12.60 km is the worst affected section and requires complete renovation with full consolidation including blacktopping for restoration. For remaining portion of the road, from ch: 12.60 Km to 19.25 Km, blacktopping with isolated patch /pothole repairing is proposed
4	Improvement of approach road to Stage-III Switch Yard	The road was constructed during inception of Stage-III Project in the seventies and is the lone road connecting the Switch Yard to Stage-III Power Station & the rest of the state. The length of the Road is 3.86 Km, average width is 3.25 m and is a partially Black

No.	Project Name	Description
		Topped. Due to space constraint the Stage-III Switch Yard is located on a distant hill top. Though connected to the Power Station by steep steps, material for maintenance work is being transferred through the road only. About 1.10 Km of the road is black topped, 1.00 Km surfaced and the remaining is just stone pitched. Other then the black topped portion, the road is presently in a dilapidated state. The portion starting from the Intake Face-III, up to the Switch Yard, from ch: 1.10 Km to 3.864 Km is the worst affected section and requires complete renovation with full consolidation including blacktopping for restoration. Remaining portion of the road, from ch: 0.00 – 1.10 require black topping with partial metalling /pothole repairing.
5	Improvement of approach road to Stage-III Tunnel Intake Phase-I	The road was constructed during inception of Stage-III Project during seventies and is the lone road connecting the Intake to the outside world. The length of the road is 1.10 Km, average width is 3.25m and the surface is a Black topped one. Presently this road is in a shattered shape and requires complete renovation with consolidation, black topping and seal coat.
6	Providing facilities for security of Hydraulic structures at Umiam Stage-III HEP.	In the Umiam Stage-III project sentry post or security shed was not set up for vigilance of the vital installations. Further, the locals often use this DAM as it connects to the adjacent villages. As it is a restricted area, 24 X 7 monitoring of the vehicles especially the heavy-laden trucks needs to take into account to safe guard the structure and its components. Therefore the following are proposed: • *Construction of security barrack at Link tunnel Intake site, Kyrdemkulai including water supply, sanitation and security fencing.* • *Constructions of security barrack at Stage III HRT Intake site, Nongmahir including water supply, sanitation and security fencing.* • *Construction of two security sheds at Stage III Dam site, Nongmahir including water supply, sanitation and security fencing*
7	Refurbishing of Stator and Rotor of Unit-1	Due to fire on stator winding of Unit-1 on 02.06.2013, the stator coils got partly damaged, thereby overheating the rotor also. This Unit tripped while running at 30MW. Almost 50% of lower portion of the stator coils (Class-B) got

No.	Project Name	Description
		burnt, which needs complete replacement/rewinding by class F insulated coil bars, further staggering and restacking of core is also found to be necessary. The Rotor poles, due to overheating, lost its insulation, which too needs to be reinsulated by Class F insulation. It is to be noted that present Class B of both stator and rotor cannot be retained due to outdated class, as mentioned by the OEM and other vendors of such kind After due repair/ testing /reassembly of the new class F insulated stator bars with the required staggering and stacking of core etc the dismantled generator complete and turbine are also to be fitted / installed and commissioned back for its smooth operation.
8	Procurement of new panel.	On 13th September,2014, while Unit-2 was running with load, it tripped and the following observations were made in the station: • *Fire at LT main distribution panel, damaging the incoming LT ACB from UAT-2 and associated bus bars, other metering equipments, MCB, MCCB.* • *Blasting of the R phase Lightning arrester for Generator transformer-2.* At that point of time temporary power supply was restored from the outside source especially for water pump, lighting and battery charger. Subsequently, total power supply was restored for the whole station by makeshift arrangement using a old LT panel from work centre, Sumer, resulting in ability in synchronizing the Unit-2 on 20.09.2014. This LT panel has also completed its useful life. Therefore complete replacement of the damaged LT panel is urgently needed by a new one at the earliest to avoid any emergency and smooth operation of the power station.

The estimated total expenditure for the above System Improvement projects is Rs. 9.68 Cr. The funding pattern shown in the table below:

Table 20: Funding for Umiam Stage-III System Improvement Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Improvement-Stage-III	9.68	9.43	0.25	-

2.6.4.3 Metering Projects

The present temperature monitoring and water pressure monitoring meter of the Unit-I of the Umiam Stage-III is not under working condition. Therefore it is proposed that temperature monitoring and water pressure monitoring meter is procured.

The estimated expenditure for the same is Rs. 0.25 Cr and the same will be funded by 90% equity and 10% loan.

2.6.4.4 Miscellaneous Capex

In the recent time Umiam Stage-III is facing with security issues at Switch Yard and Penstock. Therefore it is proposed that CCTV surveillance be installed at Switch Yard, Penstock and Power House.

The project is expected to cost Rs. 0.15 Cr and the same will be funded 90% equity and 10% loan.

2.6.5 Umiam Stage-IV

2.6.5.1 System Augmentation Projects

At present there is no standby power supply at Stage-IV DAM site. Therefore it is proposed that stand by power supply be installed at Umiam Stage-IV.
The project is expected to cost Rs. 0.15 Cr and the same will be funded by infusion of equity.

2.6.5.2 System Improvement Projects

The following system improvement projects are proposed for the control period of FY 2015-16 to FY 2017-18:

Table 21: System Improvement Projects- Umiam Stage-IV

No.	Project Name	Description
1	Replacement of static excitation equipments	The Excitation system of Stage-IV Power Station is of static type and the AVR (Auto Voltage Regulator) is of solid state type. This type of AVR cannot meet the present demand of Power System as specified in either the state Grid Code or ISOC. Moreover, this has become obsolete and most of the important spares are not easily available. M/s BHEL, the original equipment manufacturer, has also recommended the replacement of excitation control system. Therefore, replacement of existing static excitation equipments is proposed.
2	Restoration of water Bodies of	Due to massive erosion near the intake of the Stage –IV reservoir, earth has got deposited in the reservoir.

No.	Project Name	Description
	Stage-IV Reservoir	This massive erosion on the Bank of the reservoir is threatening the stability of the existing main road connecting the Stage-IV Dam and Stage-IV & Stage-III Power Station. It may also cause damage to the Head work of the Power Intake of the Stage-IV HEP. Therefore to control the erosion it is proposed to construct retaining walls on this stretch of the Reservoir near the intake and in other places where erosion has been noticed. The Restoration of water bodies of Umiam Stage IV Reservoir will improve the storage capacity of the Stage-IV Reservoir.
3	Flood Control works of Stage-IV & Umtru Power House	At present the protection wall downstream of the Umiam Stage-IV Power Station has damaged. In regard to the Umtru HEP, it is seen that due to flood and sedimentations, the protection wall of the Tail Race has been damaged and sediments are now directly entering the Tail Pool, thereby reducing the generating capacity of the Project. Therefore, it is proposed to construct different types of walls depending on the site requirement and at different locations along the river where the power stations is located.
4	Installation of Stop log gate, embedded parts of the guide grooves, gantry crane etc. at Umiam-Umtru Stage-IV concrete Dam	At present in the Umiam-Umtru Stage-IV concrete DAM there is no Stop log gate, guide grooves, gantry grooves etc. In absence of stop log gate, periodic inspection and repairing of radial gates its parts, replacement of any broken hoisting ropes placed on the U/S, and replacement of rubber seals of radial gates, etc. need to be done underwater. This leads to high maintenance cost. Therefore it is proposed that of Stop log gate, embedded parts of the guide grooves, gantry crane etc be installed. The work includes the following:- • *Structural design of the stop log gate and the gantry crane for the hoisting arrangement has to be carried out by the Central Water Commission.* • *Installation of 1(one) mobile stop log gate and the gantry crane for lifting and hoisting the gate.* • *Provision of the second stage concreting along with embedded parts such as guide rails or plates, seal plates in all the grooves provided on the piers of the gates.*
5	Improvement of water supply in MeECL Colony-Umiam	At present the requirement of water for MeECL Colony at Umiam is fed from the Umshing Stream, by a gravity flow through a long 4 inch pipe line laid from Mawiong to Umiam. The Scheme was implemented way back in 1960. Due to

No.	Project Name	Description
		concentrated human settlements on the catchment and along the stream from Mawlai Mawroh upto Mawiong, the water source has become contaminated and no more useful for human use. The second source at Mawiong which is a small spring usually contribute during monsoon period is now becoming almost dry due to settlement and earth filling in the upstream of the source. Its contribution during winter season is almost zero. Further due to large human settlement and development of land along the pipe line, has also contributed to disruption and irregularity of water supply to the Colony at Umiam. In the recent past additional sources of water has been exploited by boring deep tube wells. However, this source is giving very less quantity of water. Therefore it is proposed that Umiam lake be used for the water system. The work includes construction of pumping station, procurement of pumps, construction of sedimentation tank, lying of 21/2/3 inch pipe of about 3 km in length and others.
6	Automation and monitoring of MIV of the Generating units	Presently Stage IV Power Station is running in the Manual Operation mode in respect of all the systems of generation. Therefore automation in respect of the following is proposed: • *Operation of MIVs, GV Servomotors.* • *Operation of Station Auxiliaries viz. Cooling Water system both for Turbine & Generator.* • *Operation of other Station Auxiliaries viz. Motorized Valves, Compressors and Lubricating Plants etc.* • *Excitation Control System.* • *Synchronization facilities through Auto-mode System.* • *Miscellaneous works which may have to be interfaced through certain microprocessor with CCBs/UCBs/UABs etc.* In view of all the above, certain components with modifications shall be required to in-built in the system viz. Proximity Switches, Sensors, Motorized Values, Pressure Transducers, Transmitter, OFC, and Cabling works etc. Further certain piping shall be needed to rectify both for Water Cooling System, Lubricating System etc. RTUs may as well be involved for direct Data Communication with SLDC. As such UPS, Monitors, CPUs, bay Controllers etc. shall be required to be incorporated.

No.	Project Name	Description
	Overhauling and replacement of damaged parts of Unit-II	Since Commissioning of the stations, no overhauling works have been carried out except for annual maintenance and the condition of underwater parts viz guide vane, PRV, MIV seal/seat, bearing pads both for LCB, UGB, Pressure Tensioning Bolts/ Nuts in all the fronts associated with both Axial and Tangential forces etc is found to be deteriorating rapidly with each yearly inspection which necessitates immediate overhauling of the machine and replacement of underwater parts.
7	Cooling water system	Since last few years, due to ageing and corrosion the pipe lines have got defective leading to clogging/leakage etc. As a result, this affects the Cooling System of both Generator & Turbine which ultimately leads to decrement in efficiency of the Plant. Therefore in order to improve the Cooling Water System, reconditioning shall be required which will involve the following: • *Changing of new Pipes, Sockets and Strainers etc.* • *Provision of proper outlet in pipe lines for removal of debris/silt etc.* • *Proper laying, anchoring, reinforcement of the pipe lines as desired with the proper level.* • *Changing of Heat Exchanger System* • *Provision of new Pumps or renovation of Pumps of desired capacity for delivering required output.* • *Provision of storage tanks in case of emergency*.
	Procurement of excitation transformer	Due to ageing and loading of the Excitation Transformers 375 KVA, 11/0.240 KV at many occasions the units got tripped. Moreover, due to spiking the Transformer may have had an extra burden. Therefore, the old Excitation Transformers at Stage IV need to be replaced by new ones. Hence, in order to maintain the generation level of Stage IV Power Station; 2 new Excitation Transformers need to be procured.
8	Online Vibration monitoring of Generating Units	The present system of measurement of vibration is use of an offline vibration meter. In case of any abnormality to avoid aggravation of the abnormality into a major outage, it is important that the operator immediately stops the Unit and initiate preventive measures. However with the present system early detection of fault is not possible. Therefore it is proposed to have an online vibration monitoring system for instant monitoring of any abnormality in the generator and turbine Bearings, under water parts such as

No.	Project Name	Description
		runner, guide vane, draft tube etc.
9	Outside Source	At present the Outside source supply for the power station as well as for the adjoining employee's colony is derived from 10 MVA 132/33 kV transformer at stage-III Power Station thorough a 33 KV Line which is prone to frequent outages as the line passes thorough a reserve forest area in difficult terrain. Therefore, it is proposed that dedicated outside source transformer is installed which taps power from the 132 KV grid for ensuring stable and reliable outside source supply for the station as well as employee's colony.
10	Repair of present runner and Procurement of Spare Runner	During inspection of the 2 runners, it is found that cavitations in the runners has increase and there is a need for repairmen of the runners to avoid complete breakdown of runner. Further spare runner is also required for ready availability in case of any problem in the fitted runner of any one of the units, to avoid generation loss.

The estimated total expenditure for the above System Improvement projects is Rs. 28.36 Cr. The funding pattern shown in the table below:

Table 22: Funding for Umiam Stage-IV System Improvement Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Improvement-Stage-IV	28.36	3.58	24.78	

2.6.5.3 Miscellaneous Capex

At present telecommunication network with Umiam Stage-IV is very weak and there is no Supervisory Control System, therefore the following projects are proposed:

No.	Project Name	Description
1	Telecommunication and Internet Facility	At present the telecommunication facility at Umiam Stage-IV is very weak. Therefore for continuous sharing and exchange of information between the Power Station, SLDC and Head office it is important to have proper Telecommunication along with an internet network.
2	Supervisory Control System	At present the Umiam Stage-IV station is being run on semiautomatic mode. The speed and voltage is being controlled automatically. Whereas, the start and stop of the machine needs to be done on manual basis. With increase of speed in

No.	Project Name	Description
		operation, it is necessary to have a system for centralized automatic monitoring and control of the machine parameters. Therefore it is proposed that SCADA system is implemented to enable centralized automatic monitoring and control of various station parameters such as temperature, pressure, flow of water, load condition of machine etc. This will reduce the dependent on manpower and also increase reliability.

The above two projects is estimated to cost Rs. 3.24 and the same will be funded by 90% Equity and 10% Loan.

2.6.6 Umtru HEP

For the Umtru HEP, the following system improvement projects are proposed to be undertaken during the control period of FY 2015-16 to FY 2017-18:

Table 23: System Improvement Projects- Umtru HEP

No.	Project Name	Description
1	Refurbishing of MIV(2 Nos) & By-Pass Valves(2 Nos)	Over the years there have been some water leakages from MIV of machines which needs to be attended, but repairing of the same is a short time solution, therefore complete Refurbishing of MIV & By-Pass valves are necessary to avoid any loss of water leakages and any untoward incident that may occur.
2	Replacement of old CT with new ones	As the existing CT are very old, therefore new CT for four nos. feeders of old switchyard needs to be replaced with new ones
3	Replacement of Old CVT, PT & Isolators for four nos. feeders of Umtru Power station.	As the existing CVT, PT & Isolators are very old and most of the parts especially contact parts are malfunctioning which needs to be replaced with new ones.

The above system improvement projects estimated to cost Rs. 1.5 Cr and the same will be funded by Rs. 1.4 Cr of Equity and Rs. 0.1 Cr of Loan.

Table 24: Funding for Umtru HEP System Improvement Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Improvement-Umtru	1.50	0.10	1.40	-

2.6.7 Sonapani Small Hydro Project

For the Sonapani Small Hydro Project, the following system improvement projects are proposed to be undertaken during the control period of FY 2015-16 to FY 2017-18:

Table 25: System Improvement Projects- Sonapani

No.	Project Name	Description
1	Procurement and Installation of 415V 3 Phase LT Panel	The existing LT Panel is out of order and the LT power control has been temporarily used. Therefore it is proposed that a new 415V 3 Phase LT Panel be procured
2	Procurement of Relays and Cards to replace some existing defective ones and as spares	Most of the relays and cards are not functioning and spares also not available. Therefore it is proposed that Relays and Cards be procured to replace some existing defective ones and as spares
3	Station Battery bank along with Charger	Station Battery Bank along with Charger is required as per CEA Standards op operation requirement. Therefore it is proposed that Station Battery bank along with Charger be procured.
4	Generator Circuit breaker to replace the existing one.	The existing Generator Circuit Breaker is giving problem and requires frequent maintenance leading to force outage of the machine. Therefore, it is proposed that a new generator circuit breaker be procured.

The funding detail is shown in the table below:

Table 26: Funding for Sonapani System Improvement Projects

Sl No	Particulars	Project Cost (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
1	System Improvement-Sonapani	0.38	0.04	0.34	-

2.6.8 Myntdu Leshka Hydro Electric Project (MLHEP)

2.6.8.1 System Augmentation Project

Radial gates of MLHEP are electrically operated for which adequate motors are in place. However, it is observed that during monsoon due to heavy rain, thunder and storm, power supply fails. In such case backup of power supply from 2 (two) DG sets of capacity 320 and 30KV each are already installed at Dam site. However, this system is also not for tool-proof, since the DG sets are susceptible to lightning strikes more frequently during the pre-monsoon season when the surrounding soil is not yet saturated and risky for the hydraulic structures. In few occasions the water level has overtopped the dam for delay in opening of radial gates due to absence of power.

This is entirely undesirable for the safety of the structure.

Therefore, it is proposed that a Battery Bank based power backup system be procured for ensuring uninterrupted power supply at the Dam control room for powering the equipment. Moreover, in the absence of A.C power from the grid, the D.G. Sets are required to be physically started and the Hydraulic Hoist System controlling the Radial Gates need to be rest at the local control panel. This procedure is time consuming and during the control of a large flood in the reservoir time is what the operational staff on duty do not have. The provision of Battery based power backup is expected to be a tool-proof arrangement.
The project is estimated to cost Rs. 50.43 Lac and will be funded by taking market loan.

2.6.8.2 System Improvement Project

Due to the clogging/blockage of the pipeline there is shortfall in the supply of the water intended for Cooling system for Generator & turbine as well the shaft seal system. To remove the clogging/blockage of the pipeline the units need to be shut down. During FY 2013-14, due to the shutdown of the Units for the purpose of maintenance of Shaft Seal and Cooling water, there is a loss of around 4 MUs. Financially this attributes to the loss of about Rs. 1.13 Cr.

Therefore, 1 additional pipeline should be provided to facilitate quick interchange of lines in case of clogging of the pipeline in operation. Moreover Duplex filter should be provided for easy removal of debris and easy facilitation of cleaning process.
The following are proposed for cooling system modification and improvement:

- *Drawal of 2 new pipe lines of 200 Nominal Bore (NB) and having length of 1750 ms each from Chingy river. For both the lines incoming shall be provided with Gate Valves and Duplex Filters. .*
- *Civil works of casting of RCC/PCC, Anchor blocks or Pedestals for resting the water pipe lines.*
- *The Generator/Turbine shall be made Open Looping during summer seasons.*

The system improvement project for MLHEP is expected to cost Rs. 1.16 Cr and will be funded through 90% equity and 10% loan.

2.6.9 New Projects

2.6.9.1 Lakroh Mini Hydel Project (1X 1500 kW)

The Lakroh Mini Hydel project is a run-of-the river project developed on the Lakroh River near Muktapur village in West Jaintia Hills District of Meghalaya.

The project components comprise of a Diversion weir (composite structure, i.e. masonry covered with RCC) of about 40metres in length and 4.5 metres in height. The design discharge of the project is 1.15 Cumecs fixed on 66% dependable flow. The water from the intake (developed on the body of the Weir) is led to the Forebay through an open channel of about 800 metres in length. The Overall storage capacity of the Forebay is about 450 cubic meters. The water from the Forebay is led through a penstock pipe made of mild steel with diameter 600mm and thickness varying from 6mm at the top to 10 mm at the Power House. The Power House is equipped with one number Horizontal Francis Turbine, EOT Crane and Panel Boards. The water from the Power house is discharged back to the river through a tail race of about 150 metres in length.

The project site is located about 6km by road from the Muktapur village near Bangladesh border. Muktapur is approachable from Shillong by the 65km long road on NH-44 upto Jowai, and from there by the 52 km long Jowai –Muktapur road. Muktapur is also approachable from Shillong via Dawki on NH 40 for 86km and another 16 km on the Dawki – Muktapur road.

The Project is having a Design Energy of 11 MUs. The Lakroh project is expected to be commissioned by April'2015.

The total Estimated Project Cost is Rs. 17.51 Cr. (as per 2013-14 Price Level). The total expenditure incurred till 31st March 2014 is Rs. 10.15 Cr. The year wise expenditure is shown in the table below:

Particular	Upto 01.04.12	FY 2013-14	FY 2014-15	FY 2015-16
Capital Expenditure	8.23	1.19	0.64	5.75

The funding pattern of the Lakroh project is shown below:

Table 27: Funding Details-Lakroh

Particular	Amount (Rs. Cr)	Percentage (%)
Loan	5.75	33%
Grant	11.76	67%
Total	**17.51**	**100%**

2.6.9.2 Riangdo (3X 1000 kW)

The Riangdo Small Hydel project is a run of the river project developed on the Riangdo river located near Shallang Village.

The proposed project components comprise of an RCC Diversion weir of about 58 metres in length. The design discharge of the project is 2.52 Cumecs fixed on 46% dependable flow. The water from the intake (developed on the body of the Weir) is led to the Forebay through an open channel of about 500 metres in length. The Overall storage capacity of the Forebay is about 1200 cubic meters. The water from the Forebay is led through a penstock pipe made of mild steel with diameter 1100 mm and thickness varying from 6mm at the top to 12 mm at the Power House. The Power House will be equipped with three number Horizontal Francis Turbine, EOT Crane and Panel Boards. The water from the Power house is discharge back to the river through a tail race.

The project site is accessible by road at about 90 Km from Nongstoin.
The Riangdoh project is expected to be commissioned by December 2018 and is having a Design Energy of 17.92 MU.

The estimated project cost is Rs. 32 Cr. The year wise expenditure phasing is shown below:

Year	FY 2015-16	FY 2016-17	FY 2017-18	Total
CAPEX (Rs. Cr)	8.00	16.00	8.00	32.00

The funding pattern of the Riangdo project is shown in the table below:

Table 28: Funding Details-Riangdoh

Particular	Amount (Rs. Cr)	Percentage (%)
Equity	5.14	16.1%
Loan	12.00	37.5%
Grant	14.86	46.4%
Total	**32**	100%

2.6.9.3 New Umtru HEP (2X2000 kW)

The Old Umtru H.E Project (4x2.8 MW) was the first project to be taken up in the Umtru basin with three of its units commissioned in 1957 (the last unit was commissioned in1968). Past operational experience of this plant indicates that the potential of the river is not exploited to its optimum. In 1965, when Umiam Stage-I H.E Project (4x9 MW) was commissioned, the tail water of this station discharges into the Umtru river, resulting in the enhancement of the discharge of Umtru river. Thus, there is scope for development of additional capacity from the enhanced discharge. In this context, the New Umtru H.E Project (2x20 MW) was proposed alongside the Old Umtru Project with common water storage. A New Umtru Dam is being constructed at the location of the Old Umtru Weir to create an enhanced storage for both the existing and new projects.

The New Umtru H.E Project will have a new Dam, Intake, Water Conductor System, Surge Shaft, Pressure Shaft, Power House, Switchyard and Tail Race Tunnel.

The project site is approachable by NH-40 from Guwahati to Byrnihat and thereafter on a state highway to the DAM at Dehal, passing through the existing Umtru Powerhouse.

The New Umtru Hydro Electric Project is expected to be commissioned by April 2016 and is having an Annual Design Energy of 193 MUs.

The estimated project cost is Rs. 484 Cr. The year wise expenditure phasing is shown below:

Year	CAPEX (Rs Cr)
FY 2007-08	4.15
FY 2008-09	11.92
FY 2009-10	26.44
FY 2010-11	35.31
FY 2011-12	59.82
FY 2012-13	50.73
FY 2013-14	63.63
FY 2014-15	88.46
FY 2015-16	143.54
Total	**484**

The funding pattern of the New Umtru project is shown in the table below:

Table 29:Funding Details-New Umtru

Particular	Amount (Rs Cr)	Percentage (%)
Equity	138	29%
Loan	346	71%
Total	**484**	100%

2.6.9.4 Power System Development Fund

2.6.9.4.1 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

2.6.9.4.2 Based on decision taken in the in NERPC forum, a third party audit on protection was carried out in 135 substations and generating stations of NER at 132 kV voltage level and above. The teams comprising of members from PGCIL, NEEPCO, NHPC, NERPC and NERLDC was formed. The protection audit of the substations 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.

2.6.9.4.3 In order to further its objectives of having enhanced grid connectivity, system security, real time data capture etc. MePGCL plans to utilize the funding available through PSDF for implementation of certain schemes. The cost of implementation is estimated to be Rs. 48.5 Cr which is expected to be made available in the form of 100% Grant. The Detailed Project Reports is being prepared and after that approval will be sought from National Load Despatch Centre (NLDC) and Central Electricity Authority (CEA).

2.6.10 Summary of Capital Expenditure (CAPEX)

The station wise investment plan detail is attached as Investment Plan Format and Format-15. The station wise summarized capital expenditure is shown in the table below:

Table 30: CAPEX-Station wise summary

Sl No	Station	CAPEX (Rs. Cr)	Funding Pattern (Rs. Cr)		
			Debt	Equity	Grant
New Stations					
1	Lakroh HEP	17.51	5.75	-	11.76
2	Riangdon HEP	32.00	12.00	5.14	14.86
3	New Umtru	484.00	346.00	138.00	-
4	Leshka	1,293.67	970.10	323.57	
5	Power System Development Fund	48.50	-	-	48.50
	Sub-Total	**1,875.68**	**1,333.85**	**466.71**	**75.12**
Existing Stations					
1	Umiam Stage-I	12.42	1.51	10.91	-
2	Umiam Stage-II	1.46	0.25	1.21	-
3	Umaim Stage-III	12.18	9.77	2.41	-
4	Umaim Stage-IV	31.75	4.06	27.70	-
5	Umtru HEP	1.50	0.10	1.40	-
6	Sonapani	0.38	0.04	0.34	-
7	Leshka	1.66	0.62	1.05	-
	Sub-Total	**61.35**	**16.34**	**45.00**	**-**
Total		**1,937.03**	**1,350.19**	**511.71**	**75.12**

MePGCL submits before the Hon'ble Commission to kindly approve the Investment Plan as proposed in the table above for the control period of FY 2015-16 to FY 2017-18.

ANNUAL REVENUE REQUIREMENT

FY 2015-16 TO FY 2017-18

3 ARR for the 1st Control Period of FY 2015-16 to FY 2017-18

3.1 Approach

3.1.1 In accordance with the provisions of the MYT Regulations, 2014, MePGCL hereby submits ARR for FY 2015-16, FY 2016-17 and FY 2017-18 based on restructured segregated provisional financials of FY 2012-13 and the transfer scheme.

3.1.2 MePGCL submits that Power Purchase Agreements (PPAs) for supply of power to MePDCL has been signed and as per the PPAs, power will be supplied on cost plus basis. Therefore, MePGCL submits that the tariff for hydro generating stations may be determined on cost plus basis.

3.1.3 The MYT Regulations, 2014 seek details of each hydro generating station and accordingly station wise tariffs are to be computed. It is submitted that post transfer scheme, the segregated closing balances available as on 31st March 2012 for generation provide for Gross Block details (Gross Fixed Assets) only i.e. individual project cost details are unavailable. In absence of the same it is submitted that the Net ARR of MePGCL will be allocated to each generating stations as per the installed capacity of the same. Further for projects commissioned after FY 2008-09 for which details are available Net ARR may be determined based on available individual project costs. The table below provides details about commissioning date and installed capacity:

Table 31: Classification of Hydro Projects as per Useful Life

No	Name of Station	No. of Units	Capacity (MW)	Total Capacity (MW)	COD	FY of R & M	Balance Useful Life (years)	Project Classification
1.	Umiam Stage I	I	9	36	21.02.1965	2004	~23 yrs	Old
		II	9		16.03.1965			Old
		III	9		06.09.1965			Old
		IV	9		09.11.1965			Old
2.	Umiam Stage II	I	10	20	22.07.1970	2013	~34 yrs	Old
		II	10		24.07.1970			Old
3.	Umiam Stage III	I	30	60	6.01.1975	NA	Nil	Old
		II	30		30.03.1979		Nil	Old
4.	Umiam Stage IV	I	30	60	16.09.1992	NA	~13 yrs	
		II	30		11.08.1992		~13 yrs	Old
5.	Umtru Power Station	I	2.8	11.2	01.04.1957	NA	Nil	Old
		II	2.8		01.04.1957		Nil	Old
		III	2.8		01.04.1957		Nil	Old
		IV	2.8		12.07.1968		Nil	Old

No	Name of Station	No. of Units	Capacity (MW)	Total Capacity (MW)	COD	FY of R & M	Balance Useful Life (years)	Project Classification
6.	Sonapani	I	1.5	1.5	27.10.2009	NA	~31 yrs	Separate tariff
7.	Myntdu Leshka HEP	I	42	126	01.04.2012	NA	~33 yrs	Separate Tariff
		II	42		01.04.2012		~33 yrs	
		III	42		08.03.2013		~34 yrs	
	Total			**314.7**				

3.1.4 Application for existing Small Hydro Projects

3.1.4.1 Among the above mentioned stations Umiam Stage-II, Umtru HEP and Sonapani are small hydro stations and falls under category of Renewable Energy. Therefore as per Regulation 3.4 of the MYT Regulations, 2014, the Tariff for these stations won't be determined vide MYT Regulations, 2014. The relevant extract of the regulation is reproduced below:

> "*3.4These regulations shall not apply to renewable sources of energy which shall be governed by separate regulations of the Commission."*

3.1.4.2 It is further submitted that as per Regulation 4(2) (a) of the Meghalaya State Electricity Regulatory Commission (Terms and Conditions for determination of Tariff for Generation from Renewable Energy Sources) Regulations, 2014 (hereinafter referred as RE Regulations, 2014), tariff for the small hydro stations will only be determined vide the RE Regulations, 2014. The relevant extract is reproduced below:

> *"**4. Eligibility Criteria***
>
> *(1) For the purposes of these regulations, generation from all types of Renewable Energy Sources, as approved by Ministry of New and Renewable Energy (MNRE), Government of India shall be considered and such generating stations shall be collectively referred to as "RE based Generating Stations".*
>
> *(2) At present, generation from the following sources and technologies shall qualify to be covered under these regulations:*
>
> *(a) Wind Power project – using new wind turbine generators*
>
> *(b) Small hydro Project – located at the sites approved by State Nodal Agency /State Government **using new plant and machinery** and installed power plant capacity to be lower than or equal to 25 MW at single location.*
>
> *……."*

3.1.4.3 It is submitted that the existing small hydro projects of MePGCL are using old plant and machinery and therefore the same do not qualify for determination of tariff

under the RE Regulations, 2014 as well. Therefore it is submitted before the Hon'ble Commission to kindly use its power of relaxation as per Regulation 108 of the MYT Regulations, 2014 and determine ARR of the existing small hydro projects as per the guidelines of MYT Regulations, 2014.

3.1.5 In summary, MePGCL has proposed for computation of tariffs for:

- Old Stations:
  - Umiam Stage-I
  - Umiam Stage- II
  - Umiam Stage- III
  - Umiam Stage- IV
  - Umtru
- Sonapani HEP

3.1.6 It is submitted that on 10th April, 2014, the Hon'ble Commission passed as interim order and mentioned that final view on MLHEP tariff will be taken after expert committee report becomes available.

After the CEA refused to vet completion cost of Myndtu Leshka Hydro Electric Project (MLHEP), MePGCL has engaged IIT Roorkee for vetting of completion cost for MLHEP. The State Level Technical Expert Committee as appointed by Government of Meghalaya has been involved in scrutiny of works not under the purview of IIT Roorkee. IIT Roorkee is expected to submit the vetting report by end of December 2014.

It is submitted that after receipt of IIT Roorkee report and State technical report MePGCL will be filing final tariff petition of MLHEP. At present the final project cost and funding pattern of MLHEP is shown in the Investment Plan format.

The Hon'ble Commission is requested to allow MePGCL to file a final tariff petition for MLHEP after receipt of IIT Roorkee report and State technical report and the existing tariff may be allowed to be applicable till final tariff petition is filed.

3.1.7 It is pertinent to submit here that the present petition do not include ARR proposal for the Generating stations which are yet to be commission.

3.2 Segregation of Annual Accounts

3.2.1 Pursuant to Meghalaya Power Sector Reforms Transfer Scheme 2012, the Generation Assets and Liabilities including rights, obligations and contingencies is transferred to and vested in MePGCL from MeECL on and from 1.4.2012.

3.2.2 The provisional segregated annual accounts post restructuring and unbundling for FY 2012-13 are being audited. The accounts for the holding company and its subsidiaries have been segregated by appropriating the Assets, Properties, Liabilities, Expenditures, and Obligations etc. as attributable to the respective companies. The Assets and liabilities of individual functions i.e. Generation, Transmission and Distribution were maintained by erstwhile MeSEB and later MeECL, and appropriation of common items to respective companies is being done by taking relevant basis/ methodology.

3.2.3 Annual Expenditure of MePGCL

The Regulation 54 of the MYT Regulations, 2014, provides the Components of tariff for MePGCL. The relevant regulation is reproduced below for ready reference:

*"**54 Components of tariff***

54.1 Tariff for supply of electricity from a hydro power generating station shall comprise of two parts, namely, annual capacity charges and energy charges to be in the manner provided hereinafter.

54.2 The fixed cost of a generating station eligible for recovery through annual capacity charges shall consist of:

(a) Return on equity as may be allowed

(b) Interest on Loan Capital;

(c) Operation and maintenance expenses;

(d) Interest on Working Capital;

(e) Depreciation as may be allowed by the Commission;

(f) Taxes on Income.

54.3 The annual capacity charges recoverable shall be worked out by deducting other income from the total expenses"

3.3 Gross Fixed Asset (GFA)

3.3.1 Gross Fixed Asset for MePGCL old stations

The opening balance of GFA of MePGCL as on 1.4.2013 is Rs**.** Cr (excluding MLHEP project cost). The closing GFA for each year of the control period is worked out considering actual capitalization during FY 2013-14, estimated capitalization during FY 2014-15 and projected capitalization during control period of FY 2015-16 to FY 2017-18.

Table 32: Gross Fixed Asset Details-MePGCL old stations (Rs. Cr)

Particulars	FY2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Opening Value of Gross Fixed Assets (Rs. Cr)	292.78	399.12	399.81	399.81	414.71	421.75
Addition during the year (Rs. Cr)	106.67	0.69	-	14.90	7.04	37.36
Retirements during the year (Rs. Cr)	0.33	-	-	-	-	-
Closing Value of Gross Fixed Assets (Rs. Cr)	**399.12**	**399.81**	**399.81**	**414.71**	**421.75**	**459.11**

MePGCL submits before the Hon'ble Commission to kindly approve the GFA for MePGCL old stations (excluding Sonapani) as submitted in the above table.

3.3.2 Gross Fixed Asset (GFA)-Sonapani

It is submitted that the Opening GFA of Sonapani as on 1st April, 2014 is Rs. 10.86 Cr. The GFA of Sonapani for the Control Period of FY 2015-16 to FY 2017-18 is projected based on the following:

- ***Additional Capitalisation pertaining to Land:***

  The land for Sonapani MHP was leased way back in 1922 through the Syiem of Mylliem for a period of 99 years i.e upto 2021. In 1982, the Power Station was closed down due to aging of plant and machineries. In 2004, the project was revived, but one of the landowners obtained a court injunction against the then MeSEB since payment of the lease rent was not made from 2001 onwards. In 2010, the court ruled that there is no bar to acquire the land, if required for public purpose. The value of the land measuring about 4.71 acres was assessed at Rs. 4.02 crore by the Deputy Commissioner, East Khasi Hills District in 2010.

However, since the process of land acquisition did not move forward, the office of the Deputy Commissioner informed that the process has lapsed since February, 2013.

At present, negotiations are going on with the representative of the landowner to settle the issue of land acquisition.

- ***Additional Capitalisation pertaining to Investment Plan:*** As per the detail submitted in clause **2.6.7** above.

Based on the above the GFA of Sonapani for FY 2014-15 and each year of control period is shown in the table below:

Table 33: Gross Fixed Assets- Sonapani

Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Opening Value of Gross Fixed Assets (Rs. Cr)	10.86	10.86	16.86	16.86
Addition during the year (Rs. Cr)	-	6.00	-	0.38
Retirements during the year (Rs. Cr)	-	-	-	-
Closing Value of Gross Fixed Assets (Rs. Cr)	**10.86**	**16.86**	**16.86**	**17.24**

MePGCL submits before the Hon'ble Commission to kindly approve the GFA of Sonapani as submitted in the table above.

3.4 Computation of Return on Equity

3.4.1 The relevant regulations for determination of debt-equity ratio are extracted for reference as below:

*"**27 Debt-Equity Ratio***

27.1 For a project declared under commercial operation on or after 1.4.2015, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan;

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff.

Provided further that equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

Provided any grant obtained for execution of the project shall not be considered as a part of capital structure for the purpose of debt-equity ratio.

Explanation:- The premium, if any, raised by the generating company or the transmission licensee or the distribution licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, provided such premium amount and internal resources are actually utilized for meeting the capital expenditure.

27.2 In case of the generating station and the transmission system declared under commercial operation prior to 1.4.2015, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2015shall be considered.

27.3 Any expenditure incurred or projected to be incurred on or after 1.4.2015as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in this regulations."

3.4.2 However, the MYT Regulations, 2014, is applicable from 1st April, 2015 onwards. Therefore, for arriving at Equity to be considered for computation of Return on Equity (RoE) till 1st April, 2015, the Meghalaya State Electricity Regulatory Commission (Terms and Conditions for determination of Tariff) Regulations, 2011 (hereinafter referred as Tariff Regulations, 2011) is applicable. Therefore for arriving at the Equity to be considered for computation of RoE from FY 2012-13 to FY 2014-15 the provisions of Tariff Regulations, 2011 is used. The relevant provision of Tariff Regulations, 2011 is reproduced below:

*"**51. Debt equity ratio***

1) For the purpose of determination of tariff, debt-equity ratio in the case of a new generating station commencing commercial operations after the notification of these regulations shall be 70:30. Where equity employed is more than 30%, the amount of equity for the purpose of tariff shall be limited to 30% and the balance shall be treated as normative loan. Where actual equity employed is less than 30%, the actual equity employed shall be considered.

2) In the case of existing generating stations the debt equity ratio as per the Balance Sheet on the date of the Transfer notification will be the debt equity ratio for the first year of operation, subject to such modification as may be

found necessary upon audit of the accounts if such Balance Sheet is not audited.

…….

…..”

Therefore for arriving at the Equity to be considered for computation of RoE the provisions of Regulation 27 of the MYT Regulations, 2014 and Regulation 51 of the Tariff Regulations, 2011 are used.

3.4.3 The Regulation 31 of the MYT Regulations, 2014, provides for computation of Return on Equity. The extract is reproduced below:

*“**31 Return on Equity***

31.1 Return on equity shall be computed on the equity base determined in accordance with regulation 27 and shall not exceed 14%.

Provided that in case of generation & transmission projects commissioned after notification of these regulations, an additional return of 0.5 % shall be allowed if such projects are completed within the time line as specified in CERC Tariff Regulations.

Provided that in case of generation & transmission projects commissioned after the notification of these regulations an additional return of 1.5 % shall be allowed if such projects are completed within the original sanctioned project cost without any time and cost overrun whatsoever.

Provided that equity invested in a foreign currency may be allowed a return up to the prescribed limit in the same currency and the payment on this account shall be made in Indian Rupees based on the exchange rate prevailing on the due date of billing.

- *The premium received while issuing share capital shall be treated as a part of equity provided the same is utilized for meeting capital expenditure.*
- *Internal resources created out of free reserves and utilized for meeting capital expenditure shall also be treated as a part of equity.*

...”

3.4.4 Return on Equity-MePGCL old stations

Based on the above submissions and the actual equity infusion till FY 2014-15 and proposed equity infusion pertaining to Investment Plan, the Return on Equity computation for MePGCL old stations is shown in the table below:

Table 34: Return on Equity Computation-MePGCL Old Stations

Particulars	FY2012-13 (Actual)	FY2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Opening Equity (Rs. Cr)	**278.74**	**338.62**	360.20	423.20	431.81	436.19
Additions during the year (Rs. Cr)	**59.89**	**21.58**	63.00	8.60	**4.38**	30.63
Closing Equity (Rs. Cr)	338.62	360.20	423.20	431.81	436.19	466.82
Equity Considered for RoE (Rs. Cr)	310.74	310.95	310.95	315.42	317.53	328.74
RoE % (Rs. Cr)	14%	14%	14%	14%	14%	14%
RoE (Rs. Crore)	**43.50**	**43.53**	**43.53**	**44.16**	**44.45**	**46.02**

MePGCL submits before the Hon'ble Commission to kindly approve Rs. **44.16** Cr, Rs. **44.45** Cr and Rs. **46.02** Cr as RoE for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for MePGCL Old Stations.

3.4.5 Return on Equity- Sonapani

The funding pattern of the Sonapani project is shown in the table below:

Table 35: Funding Pattern-Sonapani

Particulars	Rs Cr
Equity	4.11
Grant	6.75
Total	**10.86**

The Return on Equity computation for Sonapani for the control period of FY 2015-16 to FY 2017-18 is computed by considering the original Equity of Sonapani project and additional equity infusion pertaining to GFA addition as submitted in clause **3.3.2**. The Return on Equity (RoE) computation for Sonapani is shown in the table below:

Table 36: Return on Equity Computation- Sonapani

Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Opening Equity (Rs. Cr)	4.11	4.11	4.11	4.11
Additions during the year (Rs. Cr)		-	-	0.34
Closing Equity (Rs. Cr)	4.11	4.11	4.11	4.45
Equity Considered for RoE (Rs. Cr)	3.26	4.11	4.11	4.45
RoE % (Rs. Cr)	14%	14%	14%	14%
RoE (Rs. Crore)	**0.46**	**0.58**	**0.58**	**0.62**

MePGCL submits before the Hon'ble Commission to kindly approve Rs. **0.58** Cr, Rs. **0.58** Cr and Rs. **0.62** Cr as RoE for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for Sonapani.

3.5 Interest and Finance Charges on Loan Capital

3.5.1 As per Regulation 32 of the MYT Regulations, 2014, Interest and finance charges on loan capital shall be computed on the outstanding loans, duly taking into account the schedule of loan repayment, terms and conditions of loan agreements, bond or debenture and the prevailing lending rate of bank and financial institution.

3.5.2 Interest and Finance Charges on Loan Capital- MePGCL Old Stations

3.5.2.1 It is submitted that at present there is no outstanding loan for Old Projects except for R & M of Umiam Stage I & II.

The Interest on Loan for the control period has been computed by considering Interest obligation for present and upcoming project loans. The detailed statement of Interest and Finance charge is enclosed as Format-7. The summarized statement of Interest and Finance charge for the Control Period is shown below:

Table 37: Computation of Interest on Loan -MePGCL Old Stations (Rs. Cr)

Particulars	FY2015-16	FY2016-17	FY2017-18
Opening Balance (Rs. Cr)	-	6.30	8.95
Addition during the year (Rs. Cr)	6.30	2.65	6.73
Repayment during the year (Rs. Cr)	-	-	-
Closing Balance (Rs. Cr)	6.30	8.95	15.69
Average Interest Rate (%)	12.49%	12.04%	11.15%
Interest Payable (Rs. Cr)	**0.39**	**0.92**	**1.37**
Add Finance Charges (Rs. Cr)	-	-	-
Total Interest and Finance Charges (Rs. Cr)	**0.39**	**0.92**	**1.37**

MePGCL submits before the Hon'ble Commission to kindly approve Rs. **0.39** Cr, Rs. **0.92** Cr and Rs. **1.37** Cr as Interest and Finance Charges for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for MePGCL-Old stations.

3.5.2.2 It is further submitted that as per Regulation 27.1 of the MYT Regulations, 2014, on equity over and above 30% of GFA should be treated as normative loan. The Normative Loan has been computed as closing balance of Equity less Equity considered for RoE for every year. The Interest on Normative loan is calculated by considering the interest rate same as average interest for the respective year. The

calculation of normative loan is shown in the table below:

Table 38: Computation of Interest on Normative Loan

Particulars	FY2015-16	FY2016-17	FY2017-18
Normative Loan (Rs. Cr)	116.39	118.66	138.08
Rate of Interest (%)	12.49%	12.04%	11.15%
Interest on Normative Loan (Rs. Cr)	**14.53**	**14.28**	**15.40**

After including the interest on normative loan as submitted in the above table the total interest on loan is shown in the table below:

Table 39: Total Interest on Loan- MePGCL Old stations

Particulars	FY2015-16	FY2016-17	FY2017-18
Total Interest including Interest on Normative Loan (Rs. Cr)	**14.93**	**15.20**	**16.78**

3.5.2.3 Therefore, it is submitted before the Hon'ble Commission to kindly approve Total Interest on Loan after including the interest on normative as shown in the **Table** 39 above.

3.5.3 Interest and Finance Charges on Loan Capital-Sonapani

At present there is no loan for the Sonapani project however for additional capitalization pertaining to Land and other investment loan is proposed to be taken. The projected interest on loan of Sonapani for the control period is shown in the table below and enclosed as Format-7:

Table 40: Interest on Loan Computation- Sonapani

Particulars	FY2015-16	FY2016-17	FY2017-18
Opening Balance	-	6.00	6.00
Addition during the year	6.00	-	0.04
Repayment during the year	-	-	-
Closing Balance	6.00	6.00	6.04
Average Interest Rate	***10%***	***10%***	***10%***
Interest Payable	0.30	0.60	0.60
Add Finance Charges	-	-	-
Total Interest and Finance Charges	**0.30**	**0.60**	**0.60**

MePGCL submits before the Hon'ble Commission to kindly approve Rs. **0.30** Cr, Rs. **0.60** Cr and Rs. **0.60** Cr as Interest and Finance Charges for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for Sonapani.

3.6 Operation and Maintenance Expenses

3.6.1 As per Regulation 56 of the MYT Regulations, 2014, the Operation and Maintenance Expenses is a sum of Employee Cost, Repairs and Maintenance (R & M) Expense and Administrative and General (A & G) Expenses. The extract of the regulations is reproduced:

*"**56 Operation and maintenance expenses***

56.1 Operation and Maintenance Expenses (O & M Expenses) shall mean the total of all expenditure under the following heads: -

(a) Employee Cost

(b) Repairs and Maintenance

(c) Administration and General Expenses

56.2 Operation and maintenance expenses (O&M Expenses) for the existing generating stations, which have been in operation for 5 years or more in the base year 2007-08 shall be derived on the basis of actual operation and maintenance expenses for the year 2003-04 to 2007-08, based on the audited accounts, excluding abnormal operation and maintenance expenses, if any, after prudent check by the Commission.

56.3 The normalized operation and maintenance expenses after prudent check, for the years 2003-04 to 2007-08, shall be escalated at the rate of 5.17% to arrive at the normalized operation and maintenance expenses at the 2007-08 price level and then averaged to arrive at normalized O&M expenses for2003-04 to 2007-08 price level. The average normal O&M expenses at2007-08 price level shall be escalated at the rate of 5.72% to arrive at theism expenses for the year 2009-10.

56.4 The O&M expenses for the year 2009-10 shall be further rationalized considering 50% increase in employee cost on account of pay revision of employees to arrive at the permissible O&M expenses for the year 2009-10.

56.5 The O&M expenses for 2009-10 shall be escalated further at the rate of5.72% per annum as arrive at the operation and maintenance expenses forth subsequent years of the tariff period.

56.6 In case of the hydro generating stations, which have not been in commercial operation for a period of five years as on 1.4.2009, operation and maintenance expenses shall be fixed at 2% of the original

project cost (excluding cost of rehabilitation & resettlement works). Further, in such case, operation and maintenance expenses in first year of commercial operation shall be escalated @5.17% per annum up to the year 2007-08and then averaged to arrive at the O&M expenses at 2007-08 price level. It shall be thereafter escalated @ 5.72% per annum to arrive at operation and maintenance expenses in respective year of the tariff period. (The impact of pay revision on employee cost for arriving at the operation and maintenance expenses for the year 2009-10 shall be considered in accordance with the procedure given in proviso to sub-clause (ii) of clause (f) of this regulation).

56.7 In case of hydro generating stations declared under commercial operation on or after 01/04/2009, O&M expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation and resettlement works) and shall be subject to annual escalation at 5.72% for the subsequent years"

3.6.2 Operation and Maintenance Expense as per MYT Regulations, 2014

3.6.2.1 The above regulations classify operation and maintenance expenses in three categories:

- Hydro Generating Stations in operation for a period of **more than 5 years as on 1.4.2009; (say Category 'A')**
- Hydro Generating Stations in operation for a period of **less than 5 years as on 1.4.2009; (say Category 'B')**
- Hydro Generating Stations declared under commercial operation on or after 1.4.2009; **(say Category 'C')**

3.6.2.2 Accordingly, MePGCL has categorized its power station for computation of O&M expenses.

Table 41: Classification of Hydro Projects for O&M Purpose

No.	Name of Station	No. of Units	Capacity (MW)	Total Capacity (MW)	COD	Project Classification
1.	Umiam Stage I	I	9	36	21.02.1965	**A**
		II	9		16.03.1965	**A**
		III	9		06.09.1965	**A**
		IV	9		09.11.1965	**A**
2.	Umiam Stage II	I	10	20	22.07.1970	**A**
		II	10		24.07.1970	**A**
3.	Umiam Stage III	I	30	60	6.01.1979	**A**
		II	30		30.03.1979	**A**

No.	Name of Station	No. of Units	Capacity (MW)	Total Capacity (MW)	COD	Project Classification
4.	Umiam Stage IV	I	30	60	16.09.1992	**A**
		II	30		11.08.1992	
5.	Umtru Power Station	I	2.8	11.2	01.04.1957	**A**
		II	2.8		01.04.1957	**A**
		III	2.8		01.04.1957	**A**
		IV	2.8		12.07.1968	**A**
6.	Sonapani	I	1.5	1.5	27.10.2009	**C**
	Total			**188.7**		

3.6.2.3 As can be seen from the above table, MePGCL projects fall under category **'A'** and **'C'**. Accordingly, MePGCL has computed O&M expenses for the control period for these projects.

3.6.2.4 The O&M expenses for Category **'A'** needs to be computed based on past data for FY 2003-04 to FY 2007-08. The O&M expenditure for Category 'A' is computed as per Regulation 56(2), 56(3), 56(4) and 56(5) of MYT Regulations, 2014.

3.6.2.5 It is submitted that as per Audited Accounts Statement-6, the data for elements of O&M is extracted and average base value figures are derived at for FY 2007-08. The Statement-6 provides function wise analysis of O&M elements into Generation, Transmission, Distribution and Others (Stores organization & Management & Administration). Hence the O&M expenses classified/ related to Others are further allocated/ apportioned to Generation, Transmission & Distribution (GTD) in the ratio of GTD expenses. The table below provides the extract of O&M expenses from FY 2003-04 to FY 2007-08 for GTD and computation of GTD Ratio.

Table 42: Computation of GTD Ratio of O&M Expenses (FY04 to FY08)

O & M Expenditure - Generation (As per Audited Accounts - Statement 6)					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Repairs & Maintenance	3.43	3.74	4.07	6.98	6.52
Employee Costs	5.58	6.08	7.29	17.00	14.55
Administration and General Expenses	0.39	1.18	0.67	1.36	1.95
Total - Rs.Crores	**9.40**	**11.00**	**12.03**	**25.34**	**23.02**

O & M Expenditure - Transmission (As per Audited Accounts - Statement 6)					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Repairs & Maintenance	2.98	2.23	0.94	0.95	1.57
Employee Costs	4.98	6.08	5.39	6.33	7.39
Administration and General Expenses	0.40	1.18	0.52	0.55	0.99
Total - Rs.Crores	**8.36**	**9.49**	**6.85**	**7.83**	**9.95**
O & M Expenditure - Distribution (As per Audited Accounts - Statement 6)					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Repairs & Maintenance	0.06	3.93	6.85	4.33	9.04
Employee Costs	26.48	26.60	29.03	32.15	39.91
Administration and General Expenses	1.45	1.48	1.82	2.44	2.54
Total - Rs.Crores	**27.99**	**32.01**	**37.70**	**38.92**	**51.49**
Total O & M Expenditure - (GTD) and Computation of GTD Ratio					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Generation	9.40	11.00	12.03	25.34	23.02
Transmission	8.36	9.49	6.85	7.83	9.95
Distribution	27.99	32.01	37.70	38.92	51.49
Total - Rs.Crores	**45.75**	**52.50**	**56.58**	**72.08**	**84.46**
Generation - Ratio	21%	21%	21%	35%	27%
Transmission - Ratio	18%	18%	12%	11%	12%
Distribution - Ratio	61%	61%	67%	54%	61%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

3.6.2.6 The table below provides details of O&M expenses for Others i.e. Stores Organisation, Management & Administration.

Table 43: O&M Expenses – Others (FY 04 to FY08)

O & M Expenditure - Others (As per Audited Accounts - Statement 6)					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Repairs & Maintenance	0.34	0.21	0.14	0.35	0.10
Employee Costs	24.13	25.63	29.97	27.11	34.07
Administration and General Expenses	1.42	1.35	1.67	2.13	1.83
Total - Rs.Crores	**25.89**	**27.19**	**31.78**	**29.59**	**36.00**

3.6.2.7 The table below provides the allocation of Others O&M expenses to Generation function in the computed Generation, Transmission & Distribution (GTD) ratio.

Table 44: Allocation of Other O&M Expenses to Generation (FY 04 to FY08)

Allocation of Others O & M Expenditure to Generation as per GTD Ratio					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Repairs & Maintenance	0.07	0.04	0.03	0.12	0.03
Employee Costs	4.96	5.37	6.37	9.53	9.29
Administration and General Expenses	0.29	0.28	0.35	0.75	0.50
Total	**5.32**	**5.70**	**6.76**	**10.40**	**9.81**

3.6.2.8 The total of O&M expenses for Generation function after allocation of others cost for FY 2003-04 to FY 2007-08 is presented in table below:

Table 45: Total of O&M Expenses for Generation after Allocation (FY 04 to FY08)

Total of O & M Expenditure for Generation after Allocation					
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**
Repairs & Maintenance	3.50	3.78	4.10	7.10	6.55
Employee Costs	10.54	11.45	13.66	26.52	23.84
Less: Employee Expenses Capitalised	*0.54*	*0.87*	*1.18*	*2.04*	*1.86*
Net Employee Cost	9.99	10.58	12.48	24.49	21.97
Administration and General Expenses	0.68	1.46	1.02	2.11	2.45
Less: A & G Expenses Capitalised	*0.22*	*0.40*	*0.29*	*0.55*	*0.99*
Net A & G Expenses	0.46	1.06	0.74	1.56	1.46
Total	**13.96**	**15.42**	**17.32**	**33.15**	**29.97**

3.6.2.9 The computation of base value after escalating O & M expense from FY 04 to FY 08 by 5.17% and taking average of escalated O & M expense from FY 04 to FY 08 to arrive at normalized price level of FY 2007-08 is presented in the table below:

Table 46: Computation of O&M Expenses for Generation at Base Level FY 2007-08

O&M Expenses at FY 2007-08 Base Level						
Particulars	**FY'04**	**FY'05**	**FY'06**	**FY'07**	**FY'08**	**Average of 5 Years**
R&M Expenses	4.28	4.40	4.54	7.47	6.55	5.45
Employee Costs	12.23	12.30	13.80	25.75	21.97	17.21
A&G Expenses	0.57	1.23	0.82	1.64	1.46	1.14
Total	**17.08**	**17.94**	**19.16**	**34.86**	**29.97**	**23.80**

3.6.2.10 Further the computation of O&M expenses for the control period of FY 2015-16 to FY 2017-18 after considering 50% increase in employee cost for FY 2009-10 and escalating by 5.72% every year is computed as per Regulation 56(4) and 56(5) of MYT Regulations, 2014. The table below provides details of O&M expenses for the control period.

Table 47: O & M Expenses for MePGCL for the Control period (Category A)

Particulars	R&M Expenses	Employee Costs	A&G Expenses	Total
Base Value of FY 08	5.45	17.21	1.14	23.80
FY 09 after 5.72% escalation	5.76	18.20	1.21	25.16
50% Increase in Employee Cost for FY 10	-	9.10	-	9.10
Revised FY 10 figures after increase	5.76	27.29	1.21	34.26
FY 10 after 5.72% escalation	6.09	28.85	1.28	36.22
FY 11 after 5.72% escalation	6.44	30.51	1.35	38.29
FY 12 after 5.72% escalation	6.80	32.25	1.43	40.48
FY 13 after 5.72% escalation	7.19	34.10	1.51	42.80
FY 14 after 5.72% escalation	7.60	36.05	1.60	45.25
FY 15 after 5.72% escalation	8.04	38.11	1.69	47.83
FY 16 after 5.72% escalation	8.50	40.29	1.78	50.57
FY 17 after 5.72% escalation	8.99	42.59	1.88	53.46
FY 18 after 5.72% escalation	9.50	45.03	1.99	56.52

3.6.2.11 The O&M expenses for **Category 'C'** of power stations i.e. Sonapani is to be computed as per Regulation 55 (7) of MYT Regulations, 2014.

"55(7) In case of hydro generating stations declared under commercial operation on or after 01/04/2009, O&M expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation and resettlement works) and shall be subject to annual escalation at 5.72% for the subsequent years.

3.6.2.12 The table below provides the computation of O&M expenses for Sonapani for the control period of FY 2015-16 to FY 2017-18.

Table 48: O & M Expense for Sonapani (Category C)

Particulars	Rs.Cr
Project Cost	10.86
O&M Expenses for FY 2009-10 (2% of Project Cost)	0.22
O&M Expenses for FY 2010-11 (5.72% escalation over prev. year)	0.23
O&M Expenses for FY 2011-12 (5.72% escalation over prev. year)	0.24
O&M Expenses for FY 2012-13 (5.72% escalation over prev. year)	0.26
O&M Expenses for FY 2013-14 (5.72% escalation over prev. year)	0.27
O&M Expenses for FY 2014-15 (5.72% escalation over prev. year)	0.29
O&M Expenses for FY 2015-16 (5.72% escalation over prev. year)	0.30
O&M Expenses for FY 2016-17 (5.72% escalation over prev. year)	0.32
O&M Expenses for FY 2017-18 (5.72% escalation over prev. year)	0.34

3.6.2.13 The table below summarises O&M expenses computed as per Regulation 56 of the MYT Regulations, 2014, for the control period of FY 2015-16 to FY 2017-18.

Table 49: Total O&M Expenses as per Regulation

Particulars	FY 14	FY 15	FY 16	FY 17	FY 18
O&M Exp - Category A (Old Assets)	45.25	47.83	50.57	53.46	56.52
O&M Exp - Category C (Sonapani)	0.27	0.29	0.30	0.32	0.34
Total O&M Expenses	**45.52**	**48.12**	**50.87**	**53.78**	**56.86**

3.6.3 Operation and Maintenance Expense based on actual

3.6.3.1 Employee Cost Projection

It is submitted that before corporatization Meghalaya State Electricity Board (MeSEB) used to revise pay scale of employees every 5 years. Further at the time corporatization in the year 2010 the Management and Employees Association has mutually decided that the earlier trend of revision of pay will continue in future i.e. Management will revise pay scale of all the employees every 5 years. The last pay revision was made effective in the year 2010.

Therefore, from January 2015 onwards Revision of Pay will be made effective. The employee cost for the FY 2015-16 is projected by considering the revised pay of Employees. The following assumptions were taken to arrive at the revised pay of Employees:

- **Basic Pay:** As per the pay revision procedure, at the time of revision of pay, the new Basic Pay is arrived by adding the existing Dearness Allowance (DA) to existing Basic Pay and then adding the percentage increase in pay scale. In the last pay revisions there was a 12% increase. As the revised pay structure is yet to be finalized, based on historical trend it is estimated that the increase will be in the range of 12%.

  Moreover, on a yearly the permanent employees of MePGCL are given a nominal increment. Therefore, for FY 2015-16 the new Basic Pay is arrived by the following methodology:

New Basic Pay= (Existing Basic Pay) X (1+ DA rate+ 12%) + Yearly Increment

- **Dearness Allowance (DA):** The Dearness Allowance is paid to Employees as depicted in **Table 50** below

- **Housing Rent Allowance (HRA):** The HRA is paid as a percentage of Basic Pay and the percentage HRA remains same throughout the effective period of revision of pay. At present HRA is as follows:
  - *15% of Basic for Shillong area*
  - *12.5% of Basic for District Head Quarters*
  - *10% of Basic for other areas*

  The above rates are further capped at a fixed amount.

  It is assumed that for that HRA will be 12% of Basic after pay revision

- **Other Allowance:** The other allowance includes Medical Allowance, Hill Allowance, Electricity Allowance, Winter Allowance etc. It is assumed that the other allowance will increase by 22% over the existing level.

- **Pension Payments:** With every pay revision the pension benefits are also increased in the same way as regular payments, i.e. The Basic Pension will be increased by taking the similar assumption as taken for Basic Pay.

Further, from FY 2016-17 onwards the employee cost is projected by the following assumptions:

- Basic Pay is expected to grow at a nominal rate of 3% every year.
- Dearness Allowance is projected by taking the following assumptions:

Table 50: DA Rates for the Control Period

Financial Year	Period	DA as % of Basic	
FY 2015-16	1st Half of FY 16	0%	2% for FY 16
	2nd Half of FY 16	4%	
FY 2016-17	1st Half of FY 17	8%	10% for FY 17
	2nd Half of FY 17	12%	
FY 2017-18	1st Half of FY 18	16%	18% for FY 18
	2nd Half of FY 18	20%	

- The other allowance is estimated to remain at the same level as FY 2015-16
- Terminal benefit provision for future years is not considered at present. The same will be claimed at the time of true-up as per the actual provisioning.
- The yearly recruitment of technical and non-technical staff is also considered for projection of cost. The yearly increase in number of Employees is shown in Format-2.

Based on above assumptions, the employee cost details are shown in the table below and attached as Format 1.

Table 51: Employee Cost of MePGCL (Excluding MLHEP) (Rs. Cr)

Sl. No.	Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
	SALARIES & ALLOWANCES				
1	Basic Pay	16.07	28.21	29.61	31.06
2	Lumpsum/Arrear	0.18	–	–	–
3	Dearness Allowance	8.61	0.56	2.96	5.59
4	House Rent Allowance	1.78	3.38	3.55	3.73
5	Other allorance	1.46	1.82	1.86	2.14
6	Medical Reimbursement charges	0.44	0.44	0.44	0.44
7	Overtime Payment	0.08	0.08	0.08	0.08
8	Generation incentives	–	–	–	–
9	Salaries-Casual	1.90	1.90	1.90	1.90
10	**Sub Total**	**30.52**	**36.39**	**40.39**	**44.93**
	Terminal Benefits				
12	Leave encashment Benefits	0.84	0.84	0.84	0.84
13	Staff welfare expenses	0.00	0.00	0.00	0.00
14	CPS	0.26	0.26	0.26	0.26
15	Workman compensation	–	–	–	–
16	Exgratia	0.01	0.01	0.01	0.01
17	**Sub Total**	**1.12**	**1.12**	**1.12**	**1.12**
	Pension Payment				
18	Basic Pension	–	–	–	–
19	Dearness Pension	–	–	–	–
20	Dearness Allowance	–	–	–	–
21	Any Other Allowances	–	–	–	–
22	**Sub Total**	–	–	–	–
22	**Total (10+17+22)**	**31.64**	**37.50**	**41.51**	**46.05**
23	*Amount Capitlised*	–	–	–	–
24	**Net Amount**	**31.64**	**37.50**	**41.51**	**46.05**
25	Add Prior Period Expences	0.01	–	–	–
26	**Grand Total**	**31.65**	**37.50**	**41.51**	**46.05**

3.6.3.2 Administrative& General (A & G) Expense Projection

The increase in A & G expenses mainly depend upon the market inflation. As the A & G Expense is being projected for the control period as a whole, therefore A & G expense for the control period is projected by considering the average inflation rate of 9% over the last 3 year period (November 2011 to October 2014).

Furthermore, at the time of unbundling, MeECL and its subsidiaries i.e. MePGCL, MePTCL & MePDCL have mutually agreed to reimburse the expense of MeECL on the ratio of cost of respective corporations. The apportionment of MeECL expense has been added as part of A & G expense of MePGCL.

The summarized A & G expense for FY 2014-15 and the control period is shown in the table below and details from FY 2012-13 onwards is attached as Format-5.

Table 52: A & G Expense of MePGCL (Excluding MLHEP) (Rs. Cr)

Sl. No.	Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
1	Rent, Rates & Taxes	0.06	0.06	0.07	0.07
2	Insurance	1.62	1.77	1.92	2.10
3	Telephone, Postage & Telegrams	0.04	0.05	0.05	0.06
4	Consultancy fees	0.00	0.00	0.00	0.00
5	Technical fees	-	-	-	-
6	Other professional charges	0.00	0.00	0.00	0.00
7	Conveyance & travel expenses	0.94	1.03	1.12	1.22
8	Electricity & water charges	0.01	0.01	0.01	0.01
9	Others	0.12	0.13	0.15	0.16
10	Freight	-	-	-	-
11	Other material related expenses	0.03	0.03	0.04	0.04
	Total Expenses	2.83	3.08	3.36	3.66
	Less Capitalized	-	-	-	-
	Net Expenses	**2.83**	**3.08**	**3.36**	**3.66**
	Add prior period	-	-	-	-
	Add Aportionment of Holding Expense	*11.00*	*12.70*	*11.20*	*15.02*
	Total expenses	**13.83**	**15.78**	**14.56**	**18.69**

3.6.3.3 Repair and Maintenance (R & M) Expense Projection

Most of the stations of MePGCL being old, there is need to regularly take up R & M activities for the stations as well as reservoir. However due to revenue deficit faced by MeECL & its subsidiaries, MePGCL has not been able to take up R&M works in planned manner. Therefore, MePGCL has considered last 3 year's average inflation rate of 9% for projection of R&M cost for the control period of FY 2015-16 to FY 2017-18. The summarized A & G expense for FY 2014-15 and the control period is shown in the table below and details from FY 2012-13 onwards is attached as Format-4.

Table 53: R & M Expense of MePGCL (Excluding MLHEP) (Rs. Cr)

Sl. No.	Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
1	Plant & Machinery	7.36	8.02	8.75	9.54
2	Building	1.16	1.26	1.37	1.50
3	Hydraulic works	0.68	0.74	0.81	0.88
4	Lines & Cables	0.03	0.03	0.03	0.03
5	Vehicles	0.08	0.08	0.09	0.10
6	Furnitures & Fixtures	0.11	0.12	0.13	0.15
7	Office Equipments	0.03	0.03	0.03	0.04
8	Civil Works	0.47	0.52	0.56	0.61
	Total	**9.91**	**10.81**	**11.79**	**12.85**
	Add/deduct share of other	-	-	-	-
	Total expenses	**9.91**	**10.81**	**11.79**	**12.85**
	Less capitalized	-	-	-	-
	Net expenses	**9.91**	**10.81**	**11.79**	**12.85**
	Add prior period	-	-	-	-
	Total R&M expenses	**9.91**	**10.81**	**11.79**	**12.85**

3.6.4 As submitted in the above sections, the summarized O & M expenditure of MePGCL (excluding MLHEP) is shown in the table below:

Table 54: O & M Expenditure based on Actuals

Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Employee Cost	31.65	37.50	41.51	46.05
R & M Cost	9.91	10.81	11.79	12.85
A & G Cost	13.83	15.78	14.56	18.69
Total	**55.40**	**64.10**	**67.85**	**77.59**

3.6.4.1 As submitted in the **Table 54** above the O & M Expenditure projected based on actual is much higher than the O & M Expenditure projected as per regulation as shown in **Table 49.**

Therefore, it is submitted before the Hon'ble Commission to kindly approve the O & M Expenditure as submitted in the **Table 54** above.

3.6.5 Allotment of O & M Expenditure to MePGCL-old stations and Sonapani

The O & M Expenditure arrived in clause **3.6.4** above is allotted to MePGCL-Old Stations and Sonapani based on the installed capacity. The detailed calculation is shown in the table below:

Table 55: Allotment of O & M expenditure

Station	Capacity	O & M Expense (Rs. Cr)			
		FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
MePGCL (Old Stations)	187.20	54.96	63.59	67.31	76.97
Sonapani	1.50	0.44	0.51	0.54	0.62
Total	**188.70**	**55.40**	**64.10**	**67.85**	**77.59**

MePGCL submits before the Hon'ble Commission to kindly approve the O & M Expenditure as submitted in the **Table 55** above.

3.7 Depreciation for the Control Period

Depreciation is computed as per Regulation 33 of the MYT Regulations, 2014. The depreciation is projected based on the estimated completion of ongoing and upcoming projects during the control period.

3.7.1 Depreciation computation-MePGCL Old Stations

The computation of depreciation is shown in the table below and attached as Format-6.

Table 56: Depreciation-MePGCL Old stations (Rs. Cr)

Sl. No.	Particulars	FY 2015-16	FY 2016-17	FY 2017-18
1	Land	-	-	-
2	Buildings	0.39	0.40	0.41
3	Hydraulic works	6.35	6.70	7.19
4	Other Civil works	0.71	0.74	0.99
5	Plant & Machinery	12.16	12.28	12.28
6	Lines & Cables	0.14	0.14	0.14
7	Vehicles	0.14	0.14	0.14
8	Furniture	0.12	0.12	0.12
9	IT Equipment	-	-	0.45
10	Office equipment	0.08	0.08	0.08
	TOTAL:	**20.08**	**20.59**	**21.80**
	Less: Sonpanai Depreciation	*0.50*	*0.50*	*0.52*
	Total Depreciation-MePGCL (Old Assets)	**19.58**	**20.09**	**21.28**

MePGCL submits before the Hon'ble Commission to kindly approve Depreciation of Rs. **19.58** Cr, Rs. **20.09** Cr and Rs. **21.28** Cr for FY 2015-16, FY 2016-17 and FY 2017-18respectivelyfor MePGCL old stations.

3.7.2 Depreciation computation-Sonapani

The computation of depreciation is shown in the table below:

Table 57: Depreciation-Sonapani (Rs. Cr)

Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Opening Value of Gross Fixed Assets (Rs. Cr)	10.86	10.86	16.86	16.86
Addition during the year (Rs. Cr)	-	6.00	-	0.38
Retirements during the year (Rs. Cr)	-	-	-	-
Closing Value of Gross Fixed Assets (Rs. Cr)	**10.86**	**16.86**	**16.86**	**17.24**
Depreciation Rate as per MYT Regulations (%)	5.28%	5.28%	5.28%	5.28%
Depreciation for the year (Rs. Cr)	0.50	0.50	0.50	0.52

MePGCL submits before the Hon'ble Commission to kindly approve Depreciation of Rs **0.50** Cr, Rs. **0.50** Cr, Rs**. 0.52** Cr for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for Sonapani.

3.8 Interest on Working Capital

3.8.1 As per Regulation 34.1 (iii) of the MYT Regulations, 2014, the components of working capital will be:

> ***"34 Interest on Working Capital***
>
> ***34.1 Generation***
>
> *(iii) In case of hydro power generating stations, working capital shall cover:*
>
> - *Operation and maintenance expenses for one (1) month;*
> - *Maintenance spares at the rate of 15% of O & M expenses escalated at 6% from the date of commercial operation; and*
> - *Receivables equivalent to two (2) month of fixed cost:*
>
> *Provided that in case of own generating stations, no amount shall be allowed towards receivables, to the extent of supply of power by the Generation Business to the Retail Supply Business, in the computation of working capital in accordance with these Regulations."*

3.8.2 As per the Regulations 34.1 (iii) the computation of Interest on Working Capital for MePGCL Old stations is shown below:

Table 58: Interest on Working Capital- MePGCL Old stations

Particulars	FY2015-16	FY2016-17	FY2017-18
O & M Expenses for 1 month	5.30	5.61	6.41
Maintenance Spares @15% of O&M plus escalated by 6%	9.54	10.10	11.55
Receivables @ 2 months of Fixed Cost	24.76	25.64	28.11
Total Working Capital requirement (Rs. Cr)	**39.60**	**41.35**	**46.07**
SBI Advance Bank rate as on 1.4.2014 (%)*	14.75%	14.75%	14.75%
Interest on Working Capital	**5.84**	**6.10**	**6.79**

** SBI Advance Bank rate (earlier SBI PLR) has not been revised since Nov'13. Therefore the SBI PLR as on 1.11.13 considered for Interest on Working Capital*

MePGCL submits before the Hon'ble Commission to kindly approve Rs. **5.84** Cr, Rs. 6.10 **6.10** Cr and Rs. **6.79** Cr as Interest on Working for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for MePGCL-old stations.

3.8.3 As per the Regulations 34.1 (iii) the computation of Interest on Working Capital for Sonapani is shown below:

Table 59: Interest on Working Capital-Sonapani

Particulars	FY2015-16	FY2016-17	FY2017-18
O & M Expenses for 1 month	0.04	0.04	0.05
Maintenance Spares @15% of O&M plus escalated by 6%	0.08	0.08	0.09
Receivables @ 2 months of Fixed Cost	0.33	0.38	0.41
Total Working Capital requirement (Rs. Cr)	**0.45**	**0.51**	**0.55**
SBI Advance Bank rate as on 1.4.2014 (%)*	14.75%	14.75%	14.75%
Interest on Working Capital	**0.07**	**0.08**	**0.08**

** SBI Advance Bank rate (earlier SBI PLR) has not been revised since Nov'13. Therefore the SBI PLR as on 1.11.13 considered for Interest on Working Capital*

MePGCL submits before the Hon'ble Commission to kindly approve Rs. **0.07** Cr, Rs. **0.08** Cr and Rs. **0.08** Cr as Interest on Working for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for Sonapani.

3.9 Income Tax

As per Regulation 35 of the MYT Regulations, 2014, provide for claim of Income Tax as expenses. However MePGCL submits that income tax shall be claimed in subsequent filings in annual performance review/ true-up.

3.10 Connectivity and SLDC Charges

3.10.1 The Regulation 59 of MYT Regulations, 2014 provides for claim of SLDC & Connectivity charges as expenses. MePGCL submits as per information received from SLDC the station wise SLDC charge for the control period of FY 2015-16 to FY 2017-18 is as mentioned below:

Table 60: SLDC Charges applicable to MePGCL

Sl. No	Particular	Capacity (MW)	SLDC Charge (Rs Cr)		
			FY 2015-16	FY 2016-17	FY 2017-18
1	Umiam Stage I	36	0.15	0.19	0.21
2	Umiam Stage II	20	0.08	0.11	0.12
3	Umiam Stage III	60	0.25	0.32	0.36
4	Umiam Stage IV	60	0.25	0.32	0.36
5	Umtru Power Station	11.2	0.05	0.06	0.07
6	Sonapani	1.5	0.01	0.01	0.01

3.11 Summary of Annual Fixed Cost – MePGCL Old Stations

3.11.1 The summary of the Annual Fixed Cost for MePGCL old stations is provided in the table below:

Table 61: Annual Fixed Cost – MePGCL Old Stations (Rs. Cr)

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
Interest on Loan capital	14.93	15.20	16.78
Depreciation	19.58	20.09	21.28
O&M Expenses	63.59	67.31	76.97
Interest on working capital	5.84	6.10	6.79
Return on Equity	44.16	44.45	46.02
Income Tax	-	-	-
SLDC Charge	0.78	0.99	1.11
Total Annual Fixed Cost	**148.87**	**154.14**	**168.95**
Less: Non Tariff Income	*0.31*	*0.31*	*0.31*
Net Annual Fixed Cost	**148.57**	**153.84**	**168.64**

3.11.2 MePGCL submits before the Hon'ble Commission to kindly approve the Annual Fixed Cost of Rs. **148.57** Cr, Rs. **153.84** Cr and Rs. **168.64** Cr for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for MePGCL Old stations.

3.11.3 MePGCL submits that the Net Annual Fixed Cost of MePGCL old stations may be allotted to the old stations as per the capacity of each station. The station wise allotted Net Annual fixed cost is shown in the table below:

Table 62: Net AFC allotment to old stations

Sl. No.	Station		Annual Fixed Cost (Rs. Cr)		
		Capacity (MW)	FY 2015-16	FY 2016-17	FY 2017-18
1	Umiam Stage I	36.00	28.57	29.58	32.43
2	Umiam Stage II	20.00	15.87	16.44	18.02
3	Umiam Stage III	60.00	47.62	49.31	54.05
4	Umiam Stage IV	60.00	47.62	49.31	54.05
5	Umtru Power Station	11.20	8.89	9.20	10.09
	Total AFC for Old Stations	**187.20**	**148.57**	**153.84**	**168.64**

3.12 Summary of Annual Fixed Cost – Sonapani

The summary of the Annual Fixed Cost for Sonapani is provided in the table below:

Table 63: Annual Fixed Cost – Sonapani (Rs. Cr)

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
Interest on Loan capital	0.30	0.60	0.60
Depreciation	0.50	0.50	0.52
O&M Expenses	0.51	0.54	0.62
Interest on working capital	0.07	0.08	0.08
Return on Equity	0.58	0.58	0.62
Income Tax	-	-	-
SLDC Charge	0.01	0.01	0.01
Total Annual Fixed Cost	**1.96**	**2.30**	**2.45**
Less: Non Tariff Income	-	-	**-**
Net Annual Fixed Cost	**1.96**	**2.30**	**2.45**

MePGCL submits before the Hon'ble Commission to kindly approve the Annual Fixed Cost of Rs. **1.96** Cr, Rs. **2.30** Cr and Rs. **2.45** Cr for FY 2015-16, FY 2016-17 and FY 2017-18 respectively for Sonapani.

4 Computation of Capacity Charge and Energy Charge

MePGCL submits that based on the Annual fixed Cost approved by Hon'ble Commission it will calculate the capacity charge and energy charge based on following provisions:

57 Computation and payment of capacity charge and energy charge for Hydrogenerating stations.

57.1 Capacity Charges:

(1) The fixed cost of a hydro generating station shall be computed on annual basis, based on norms specified under these regulations, and recovered on monthly basis under capacity charge (inclusive of incentive) and energy charge, which shall be payable by the beneficiaries in proportion to their respective allocation in the saleable capacity of the generating station, that is to say, in the capacity excluding the free power to the home State:

Provided that during the period between the date of commercial operation of the first unit of the generating station and the date of commercial operation of the generating station, the annual fixed cost shall provisionally be worked out based on the latest estimate of the completion cost for the generating station, for the purpose of determining the capacity charge and energy charge payment during such period.

(2) The capacity charge (inclusive of incentive) payable to a hydro generating station for a calendar month shall be

= AFC x 0.5 x NDM / NDY x (PAFM / NAPAF) (in Rupees)

Where,
AFC = Annual fixed cost specified for the year, in Rupees.
NAPAF= Normative plant availability factor in percentage
NDM = Number of days in the month
NDY = Number of days in the year
PAFM = Plant availability factor achieved during the month, in percentage

(3) The PAFM shall be computed in accordance with the following formula:

$$PAFM = 10000 \times \sum_{i=1} DCi / \{ N \times IC \times (100 - AUX) \} \%$$

Where,
AUX = Normative auxiliary energy consumption in percentage

DCi = Declared capacity (in ex-bus MW) for the ith day of the Month which the station can deliver for at least three (3) hours, as certified by the nodal load dispatch centre after the day is over.
IC = Installed capacity (in MW) of the complete generating station
N = Number of days in the month

57.2 Energy Charges:

(1) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy charge payable to the generating company for a month shall be :

= (Energy charge rate in Rs. / kWh) x {Scheduled energy (ex-bus) for the month in kWh} x (100 – FEHS) / 100.

(2) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula, subject to the provisions of clause (4):

ECR = AFC x 0.5 x 10 / { DE x (100 – AUX) x (100 – FEHS)}
Where,
DE = Annual design energy specified for the hydro generating station, In MWh, subject to the provision in clause (6) below.
FEHS = Free energy for home State as fixed from time to time, by competent authority.

(3) In case actual total energy generated by a hydro generating station during a year is less than the design energy for reasons beyond the control of the generating company, the following treatment shall be applied on a rolling basis:

(i) in case the energy shortfall occurs within ten years from the date of commercial operation of a generating station, the ECR for the year following the year of energy shortfall shall be computed based on the formula specified in clause (2) with the modification that the DE for the year shall be considered as equal to the actual energy generated during the year of the shortfall, till the energy charge shortfall of the previous year has been made up, after which normal ECR shall be applicable;

(ii) in case the energy shortfall occurs after ten years from the date of commercial operation of a generating station, the following shall apply:

Suppose the specified annual design energy for the station is DE MWh, and the actual energy generated during the concerned (first) and the following (second) financial years is A1 and A2 MWh respectively, A1 being less than DE. Then, the design energy to be considered in the formula in clause (5) of this Regulation for calculating the ECR for the third financial year shall be moderated as (A1 + A2 – DE) MWh, subject to a maximum of DE MWh and a minimum of A1 MWh.

(iii) Actual energy generated (e.g. A1, A2) shall be arrived at by multiplying the net metered energy sent out from the station by 100 / (100 – AUX).

(4) In case the energy charge rate (ECR) for a hydro generating station, as computed in clause (5) above, exceeds eighty paise per kWh, and the actual saleable energy in a year exceeds { DE x (100 – AUX) x (100 – FEHS) / 10000} MWh, the Energy charge for the energy in excess of the above shall be billed at eighty paise per kWh only:

Provided that in a year following a year in which total energy generated was less than the design energy for reasons beyond the control of the generating company, the energy charge rate shall be reduced to eighty paise per kWh after the energy charge shortfall of the previous year has been made up.

(6) The concerned Load Despatch Centre shall finalise the schedules for the hydro generating stations, in consultation with the beneficiaries, for optimal utilization of all the energy declared to be available, which shall be scheduled for all beneficiaries in proportion to their respective allocations in the generating station.

5 Compliance to Directives of MSERC vide Tariff Order dated 10th April, 2014

i. Compliance to Directive-1 – Improvement of Performance

a) Reduction of Forced Outages:

It is submitted that MePGCL has taken up measures to reduce/minimize forced outages by drawing up a plan for regular maintenance works during lean season in 2014-15, taking up repairs of Unit-III of Umtru Power Station and familiarization of shift personnel with various components of the power station. Annual Maintenance Contract with experienced firms is being contemplated to keep the machines in good running condition, in view of fund constraints if routine maintenance works are carried out departmentally.

b) R&M works for Stage-III Power Station:

The Stage-III Power Station has reached its 35th year of operation and its useful life is over. The Project Report for R&M works of this station was submitted to CEA. The cost of R&M works as per latest revision is Rs. 411.00 crore, funding for which is being sought from JICA.

c) Benchmarking Study of Power Stations:

MePGCL's Power Stations were compared with those of NHPC based on designed generation targets (Design Energy), designed PLF, actual generation, actual PLF and achievements during 2012-13/2013-14 (Please refer letter No. MePGCL/D/GEN/Misc-43/2008/Pt-V/12, dt. 30.09.2014). Except for Umiam Stage-I which could produce only 68% of the generation target for 2013-14 (because of planned outages and low water levels in the reservoir), and Umtru Power Station which could produce only 53.81% of the generation target (because two machines out of four are out of order, the station being 57 years old), other Power Stations could achieve more than 80% of the generation target, inspite of low rainfall during FY 2013-14.

d) Manpower Rationalisation:

A statement showing manpower strength against various categories of posts sanctioned was submitted to the Hon'ble Commission vide MePGCL letter dated 30th September 2014.

ii. Compliance to Directive-II - Allocation of Common Costs:

MePGCL had submitted a statement to the Hon'ble Commission vide letter No. MePGCL/D/GEN/Misc-43/2008/Pt-IV/125, dated 9th July, 2014) explaining the method for allocation of common costs to old power stations (including Sonapani).

iii. Compliance to Directive-III - Control of Expense:

MePGCL had submitted a statement to the Hon'ble Commission (vide letter No. MePGCL/D/GEN/Misc-43/2008/Pt-IV/93, dated 7th May, 2014) showing the annual budget for O&M for each station during 2014-15.

मेघालया MEGHALAYA 01AA 894809

BEFORE THE HON'BLE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION

FILE/PETITION NO. .....

IN THE MATTER OF:

APPROVAL OF BUSINESS PLAN ANNUAL REVENUE REQUIREMENT FOR FINANCIAL YEARS 2015-16, 2016-17 &2017-18 OF THE MEGHALAYA POWER GENERATION CORPORATION LIMITED (MePGCL) UNDER THE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION (MULTI YEAR TARIFF) REGULATIONS, 2014 AND UNDER SECTION-62 READ WITH SECTION 86 OF THE ELECTRICITY ACT 2003.

AND IN THE MATTER OF

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

PETITIONER

Affidavit verifying the Petition

I Shri Amberlight Lyngdoh, aged about 51 years, son of (L) H.R. Diengdoh, residing at MeECL Colony, Umiam, P.O. Umiam, Ri-Bhoi District, do solemnly affirm and say as

follows:-

I am working as Superintending Engineer, Project & Monitoring, office of the Director (Generation), at Meghalaya Power Generation Corporation Limited (MePGCL), is the petitioner in the above matter and I am duly authorized to make this petition.

That the statement made in reply to the petition herein annexed and enclosed is based on information as derived from the records and I believe them to be true.

VERIFICATION

Solemnly affirm at Shillong on this 22nd day of December 2014 that the contents of the above petition are true to my knowledge and no part of it is false and no material has been concealed there from.

In acknowledgement thereof, I swear this affidavit before the Magistrate First Class, Shillong on this 22nd day of December 2014.

Identified by:
(Ms. S. Lyngdoh)

(Amberlight Lyngdoh)
Petitioner

Magistrate First Class,
Subordinate District Council Court,
Khasi Hills, Shillong.

MePGCL Investment Plan

Project Details						Total Capital Expenditure MSERC/Govt. /FI (Rs. Crs.)*	SOURCE OF FINANCING FOR SCHEME				
							Equity component		Debt Component		
Name of scheme	Year of Start	Nature of Project	Whether the scheme is part of approved Business Plan* (YES/NO)	Project Start Date	Project Completion date		Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)	Loan source	Capital Subsidies / grants component
Umiam Stage-I Additional Capital Expenditures											
Stand-by power supply at Umiam Stage-I	FY 16	b	No	April'15	June'15	0.15	NA	-	0.15	Financial Institution	-
Replacement of Intake gate and Trash Rack of Intake structure at Umiam Stage I HEP	FY 17	b	No	Dec'16	May'17	2.00	NA	1.80	0.20	GoME	-
Providing facilities for security of Hydraulic structures at Umiam Stage-I HEP.	FY 17	c	No	Sept'16	Jan'17	0.15	NA	-	0.15	Financial Institution	-
To replace the existing Main Inlet Valve (MIV) of Unit-3 & Unit-4	FY 15	c	No	Oct'14	May'15	2.47	NA	2.23	0.25	GoME	-
Refurbishing of two Bypass valves along with the control system	FY 16	c	No	April'15	Mar'16	0.93	NA	0.83	0.09	GoME	-
Re-engineering of fire fighting system of Generator and Transformer	FY 16	c	No	April'15	Mar'16	0.09	NA	0.08	0.01	GoME	-
Replacement of transformer for unit-2 and reconditioning of other transformer	FY 16	c	No	April'15	Mar'17	3.04	NA	2.73	0.30	GoME	-
Construction of Transformer Yard to accomodate station service transformers, Unit-1 & Unit-3 and procurement of the same.	FY 17	c	No	April'16	Mar'17	0.35	NA	0.32	0.04	GoME	-
Procurement and installation of 250KVA DG Set	FY 17	c	No	April'16	Mar'17	0.25	NA	0.23	0.03	GoME	-
Installation of supervisory control to monitor the power station parameters.	FY 17	e	No	April'16	Mar'18	2.50	NA	2.25	0.25	GoME	-
Construction of Beams and By-pass Isolators for KPS-1, KPS-2 & Umiam feeders.	FY 18	c	No	April'17	Mar'18	0.49	NA	0.44	0.05	GoME	-

** Investment Plan includes some schemes which are yet to be approved*

MePGCL Investment Plan

Project Details						Total Capital Expenditure MSERC/Govt. /FI (Rs. Crs.)*	SOURCE OF FINANCING FOR SCHEME				
							Equity component		Debt Component		
Name of scheme	Year of Start	Nature of Project	Whether the scheme is part of approved Business Plan* (YES/NO)	Project Start Date	Project Completion date		Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)	Loan source	Capital Subsidies / grants component
Umiam Stage-II Additional Capital Expenditures											
Providing facilities for security of Hydraulic structures at Umiam Stage-II HEP.	FY 17	c	No	Oct'16	Mar'17	0.15	NA	-	0.15	Financial Institution	-
Installation of 250 KVA, 11kv substation dedicated to the stationsupply of Umiam Stage-II Power Station	FY 16	c	No	Jan'16	Mar'16	0.11	NA	0.11	-	-	-
Station Battery bank along with Charger.	FY 16	b	No	April'15	Mar'16	0.10	NA	0.10	-	-	-
Emulsifier system for Generator Transformer in both Units.	FY 16	b	No	April'15	Mar'16	0.10	NA	0.10	-	-	-
Installation of On Line Supervisory system (SCADA) for the entire Power Station	FY 17	e	No	April'16	Mar'18	1.00	NA	0.90	0.10	GoME	-

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MePGCL Investment Plan

Project Details						Total Capital Expenditure MSERC/Govt. /FI (Rs. Crs.)*	SOURCE OF FINANCING FOR SCHEME				
							Equity component		Debt Component		
Name of scheme	Year of Start	Nature of Project	Whether the scheme is part of approved Business Plan* (YES/NO)	Project Start Date	Project Completion date		Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)	Loan source	Capital Subsidies / grants component
Umiam Stage-III Additional Capital Expenditures											
Stand-by power supply at Umiam Stage-III DAM	FY 16	b	No	April'15	June'15	0.15	NA	-	0.15	Financial Institution	-
Improvement of road from Zeropoint office to Kyrdemkulai Stage-III Dam	FY 16	c	No	Sept'15	May'16	0.70	NA	-	0.70	Financial Institution	-
Improvement of road from Zeropoint to Stage-III Power Station	FY 17	c	No	Sept'16	June'17	1.02	NA	-	1.02	Financial Institution	-
Improvement of road from Stage-III Power Station to Stage-IV P.S	FY 17	c	No	Sept'16	Dec'17	1.56	NA	-	1.56	Financial Institution	-
Improvement of approach road to Stage-III Switch Yard	FY 18	c	No	Sept'17	Jan'18	0.50	NA	-	0.50	Financial Institution	-
Improvement of approach road to Stage-III Tunnel Intake Phase-I	FY 18	c	No	Oct'17	Jan'18	0.25	NA	-	0.25	Financial Institution	-
Providing facilities for security of Hydraulic structures at Umiam Stage-III HEP.	FY 17	c	No	June'16	Dec'16	0.40	NA	-	0.40	Financial Institution	-
Refurbishing of stator and rotor	FY 15	c	No	Jan'15	Jan'16	5.00	NA	-	5.00	PFC	-
Installation of new Sub Station	FY 16	b	No	April'15	Mar'16	0.20	NA	0.20	-	-	-
CCTV surveillance at Switch Yard , Penstock and Power House.	FY 16	e	No	April'15	Mar'16	0.40	NA	0.36	0.04	GoME	-
Procurement of new Meters for Temperature monitoring of Unit-I machine	FY 16	d	No	April'15	Mar'17	0.15	NA	0.15	-	-	-
Procurement of new Meters Water pressure monitoring of Unit-I machine	FY 16	d	No	April'15	Mar'17	0.10	NA	0.10	-	-	-
Procurement of new panel.	FY 15	c	No	Jan'15	Jan'16	0.25	NA	0.25	-	-	-
Re-Engineering of 132 KV BUS.	FY 17	b	No	April'16	Mar'18	1.50	NA	1.35	0.15	GoME	-

** Investment Plan includes some schemes which are yet to be approved*

MePGCL Investment Plan

Project Details						Total Capital Expenditure MSERC/Govt. /FI (Rs. Crs.)*	SOURCE OF FINANCING FOR SCHEME				
							Equity component		Debt Component		
Name of scheme	Year of Start	Nature of Project	Whether the scheme is part of approved Business Plan* (YES/NO)	Project Start Date	Project Completion date		Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)	Loan source	Capital Subsidies / grants component
Umiam Stage-IV Additional Capital Expenditures											
Replacement of static excitation equipments	FY 15	c	No	Oct'14	Jul'15	1.44	NA	1.30	0.14	GoME	-
Stand-by power supply at Umiam Stage-IV Dam.	FY 16	b	No	April'15	June'15	0.15	NA	-	0.15	-	-
Restoration of water Bodies of Stage-IV Reserviour	FY 17	c	No	Dec'16	Jan'18	5.85	NA	5.27	0.59	GoME	-
Flood Controll works of Stage-IV & Umtru Power House	FY 17	c	No	Oct'16	April'17	5.25	NA	4.73	0.52	GoME	-
Installation of Stop log gate, embedded parts of the guide grooves, gantry crane etc. at Umiam-Umtru Stage-IV concrete Dam	FY 17	c	No	Oct'16	Mar'18	3.50	NA	3.15	0.35	GoME	-
Improvement of water supply in Umiam	FY 17	c	No	Jul'16	Dec'16	0.85	NA	-	0.85	Financial Institution	-
Automation and monitoring of MIV of the Generating units	FY 16	c	No	April'15	Mar'16	1.06	NA	0.95	0.11	GoME	-
1.Overhauling and replacement of damaged parts of Unit-II 2. Cooling water system 3. Procurement of excitation transformer	FY 16	c	No	April'15	Mar'16	2.11	NA	1.90	0.21	GoME	-
Online Vibration monitoring of Generating Units	FY 16	c	No	April'15	Mar'16	0.20	NA	0.20	-	-	-
Outside Souce	FY 17	c	No	April'16	Mar'18	1.60	NA	1.44	0.16	GoME	-
Telecommunication and Internet Facilty	FY 17	e	No	April'16	Mar'18	0.24	NA	0.22	0.02	GoME	-
Supervisory Control System	FY 17	e	No	April'16	Mar'18	3.00	NA	2.70	0.30	GoME	-
Procurement of Spare Runner	FY 17	c	No	April'16	Mar'18	6.50	NA	5.85	0.65	GoME	-

** Investment Plan includes some schemes which are yet to be approved*

MePGCL Investment Plan

Project Details						Total Capital Expenditure MSERC/Govt. /FI (Rs. Crs.)*	SOURCE OF FINANCING FOR SCHEME				
							Equity component		Debt Component		
Name of scheme	Year of Start	Nature of Project	Whether the scheme is part of approved Business Plan* (YES/NO)	Project Start Date	Project Completion date		Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)	Loan source	Capital Subsidies / grants component
Umtru Additional Capital Expenditures											
Refurbishing of MIV(2 Nos) & By-Pass Valves(2 Nos)	FY 17	c	No	April'16	Mar'17	0.50	NA	0.50	-	-	-
Replacemet of old CT with new ones	FY 17	c	No	April'16	Mar'17	0.40	NA	0.36	0.04	GoME	-
Sonapani Additional Capital Expenditures											
1. Procurement and Installation of 415V 3 Phase LT Panel, 2. Relays and Cards to replace some existing defective ones and as spares, 3. Station Battery bank along with Charger 4. Generator Circuit breaker to replace the existing one.	FY 17	c	No	April'16	Mar'18	0.38	NA	0.34	0.04	GoME	-
Leshka Additional Capital Expenditures											
Cooling System modification & improvement	FY 17	C	No	April'16	Mar'17	1.16	-	1.05	0.12	GoME	-
Stand by Power supply in DAM	FY 16	b	No	April'15	June'16	0.50	-	-	0.50	Financial Institution	-

** Investment Plan includes some schemes which are yet to be approved*

MePGCL Investment Plan

Project Details						Total Capital Expenditure MSERC/Govt. /FI (Rs. Crs.)*	SOURCE OF FINANCING FOR SCHEME				
							Equity component		Debt Component		
Name of scheme	Year of Start	Nature of Project	Whether the scheme is part of approved Business Plan* (YES/NO)	Project Start Date	Project Completion date		Internal Accrual (from free reserves and surplus)	Additional equity infused	Loan amount (Rs. Crs.)	Loan source	Capital Subsidies / grants component
Ongoing/New Projects											
Lakroh HEP (1.5MW)	FY 10	a	No	Sept'09	Mar'14	17.51	NA	-	5.75	PFC	11.76
Riangdo SHP	FY 16	a	No	April'15	Dec'18	32.00	NA	5.14	12.00	NABARD	14.86
New Umtru HEP	FY 09	a	No	Jan'08	Dec'15	484.70	NA	138.38	346.32	PFC & HUDCO	
Myntdu Leshka HEP (126 MW)	FY 05	a	No	May'04	April'13	1,293.67	NA	323.57	970.10		-
Power System Development Fund	FY 16	a	No	Jan'16	Aug'18	48.50	NA	NA	NA	NA	48.50

** Investment Plan includes some schemes which are yet to be approved*

Format-1

Name of the Generating Company: MePGCL

EMPLOYEE COST (Excluding Cost of MLHEP)

Rs. Cr

S.N	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
	SALARIES & ALLOWANCES						
1	Basic Pay	16.04	16.74	16.07	28.21	29.61	31.06
2	Lumpsum/Arrear	2.56	0.87	0.18	-	-	-
3	Dearness Allowance	4.57	6.17	8.61	0.56	2.96	5.59
4	House Rent Allowance	3.46	3.56	1.78	3.38	3.55	3.73
5	Other allorance	-	-	1.46	1.82	1.86	2.14
6	Medical Reimbursement charges	0.56	0.72	0.44	0.44	0.44	0.44
7	Overtime Payment	0.19	0.16	0.08	0.08	0.08	0.08
8	Generation incentives	0.00	-	-	-	-	-
9	Salaries-Casual	1.73	1.33	1.90	1.90	1.90	1.90
10	**Sub Total**	**29.12**	**29.56**	**30.52**	**36.39**	**40.39**	**44.93**
	Terminal Benefits	-	-	-	-	-	-
12	Leave encashment Benefits	0.79	0.77	0.84	0.84	0.84	0.84
13	Staff welfare expenses	0.02	0.00	0.00	0.00	0.00	0.00
14	CPS	0.17	0.23	0.26	0.26	0.26	0.26
15	Workman compensation	-	-	-	-	-	-
16	Exgratia	0.01	0.01	0.01	0.01	0.01	0.01
17	**Sub Total**	**0.98**	**1.01**	**1.12**	**1.12**	**1.12**	**1.12**
	Pension Payment	-	-	-	-	-	-
18	Basic Pension	-	-	-	-	-	-
19	Dearness Pension	-	-	-	-	-	-
20	Dearness Allowance	-	-	-	-	-	-
21	Any Other Allowances	-	-	-	-	-	-
22	**Sub Total**	**-**	**-**	**-**	**-**	**-**	**-**
	Total (10+17+22)	**30.10**	**30.57**	**31.64**	**37.50**	**41.51**	**46.05**
	Amount Capitlised	*8.09*	*7.90*	-	-	-	-
	Net Amount	**22.01**	**22.66**	**31.64**	**37.50**	**41.51**	**46.05**
	Add Prior Period Expences	*0.26*	*0.35*	*0.01*	-	-	-
	Grand Total	**22.27**	**23.02**	**31.65**	**37.50**	**41.51**	**46.05**

Format- 2

Name of the Generating Company: MePGCL

TOTAL NUMBER OF EMPLOYEES*

S.N	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	Number of employees as on 1st April	821	832	803	771	765	764
2	Number of employees on deputation / foreign service as on 1st April	-	-	-	-	-	-
3	New Recruitment	48	6	-	12	14	14
4	Total Number of employees (1+2+3)	869	838	803	783	779	778
5	Number of employees retired / retiring during the year	37	35	32	18	15	24
6	Number of employees at the end of the year (4-5)	832	803	771	765	764	754

** Does not include number of casual Employees*

Format- 2

Name of the Generating Company: MeECL

TOTAL NUMBER OF EMPLOYEES*

S.N	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	Number of employees as on 1st April	410	408	400	373	366	352
2	Number of employees on deputation / foreign service as on 1st April	-	-	-	-	-	-
3	New Recruitment	24	8		8	2	2
4	Total Number of employees (1+2+3)	434	416	400	381	368	354
5	Number of employees retired / retiring during the year	26	16	27	15	16	19
6	Number of employees at the end of the year (4-5)	408	400	373	366	352	335

** Does not include number of casual Employees*

Format- 3

Name of the Generating Company: MePGCL

EMPLOYEES PRODUCTIVE PARAMETERS

S.N	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	Number of consumers in million	NA					
2	Connected load in kW						
3	Line circuit in KM (LT+HT)						
4	Energy sold in MU						
5	Employees per MU of energy sold						
6	Employees per 1000 consumers						
7	Share of employees cost in total expenses						
8	Employees cost in paise / kWh of energy sold						
9	Line circuit KM (EHT Lines)						
10	Employees per KM of EHT line (Transmission related)						
11	Power station installed capacity own generation (MW)	314.7	314.7	314.7	314.7	314.7	314.7
12	Employees per MW of capacity For generating company	2.64	2.55	2.45	2.43	2.43	2.40

Format - 4

Name of the Generating Company: MePGCL

REPAIRS AND MAINTENANCE EXPENSES (Exlcuding Cost of MLHEP)

Rs. Cr

S.No	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	Plant & Machinery	2.73	2.17	7.36	8.02	8.75	9.54
2	Building	0.91	1.40	1.16	1.26	1.37	1.50
3	Hydraulic works	0.79	1.37	0.68	0.74	0.81	0.88
4	Lines & Cables	0.18	0.01	0.03	0.03	0.03	0.03
5	Vehicles	0.08	0.05	0.08	0.08	0.09	0.10
6	Furnitures & Fixtures	0.05	0.09	0.11	0.12	0.13	0.15
7	Office Equipments	0.02	0.03	0.03	0.03	0.03	0.04
8	Civil Works	0.98	0.67	0.47	0.52	0.56	0.61
	Total	**5.73**	**5.78**	**9.91**	**10.81**	**11.79**	**12.85**
	Add/deduct share of other	-	-	-	-	-	-
	Total expenses	**5.73**	**5.78**	**9.91**	**10.81**	**11.79**	**12.85**
	Less capitalized	-	-	-	-	-	-
	Net expenses	**5.73**	**5.78**	**9.91**	**10.81**	**11.79**	**12.85**
	Add prior period	*0.10*	*0.01*	-	-	-	-
	Total R&M expenses	**5.83**	**5.79**	**9.91**	**10.81**	**11.79**	**12.85**

Format - 5

Name of the Generating Company: MePGCL

ADMINISTRATION AND GENERAL EXPENSES (Excluding MLHEP Expense)

Rs. Cr

S.N	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	Rent, Rates & Taxes	0.05	0.10	0.06	0.06	0.07	0.07
2	Insurance	1.62	0.02	1.62	1.77	1.92	2.10
3	Telephone, Postage & Telegrams	0.04	0.04	0.04	0.05	0.05	0.06
4	Consultancy fees	0.05	0.00	0.00	0.00	0.00	0.00
5	Technical fees	-	-	-	-	-	-
6	Other professional charges	0.15	0.00	0.00	0.00	0.00	0.00
7	Conveyance & travel expenses	0.89	0.98	0.94	1.03	1.12	1.22
8	Electricity & water charges	0.01	0.02	0.01	0.01	0.01	0.01
9	Others	0.20	0.12	0.12	0.13	0.15	0.16
10	Freight	-	0.00	-	-	-	-
11	Other material related expenses	0.02	0.03	0.03	0.03	0.04	0.04
	Total Expenses	**3.03**	**1.31**	**2.83**	**3.08**	**3.36**	**3.66**
	Less Capitalized	*0.73*	*0.63*	-	-	-	-
	Net Expenses	**2.30**	**0.68**	**2.83**	**3.08**	**3.36**	**3.66**
	Add prior period	-	-	-	-	-	-
	Add Aportionment of MeECL Expense	*10.05*	*10.14*	*11.00*	*12.70*	*11.20*	*15.02*
	Total expenses	**12.34**	**10.82**	**13.83**	**15.78**	**14.56**	**18.69**

Name of the Generating Company: MePGCL **Format-6**

VALUE ASSETS AND DEPRECIATION: 2012-13 (Exlcuding MLHEP)

Rs. Cr

	Particulars	Opening GFA	Addition	Withdrawn	Closing GFA	Rate of Depreciation	Depreciation
1	Land	7.48	-	0.28	7.20	0%	-
2	Buildings	12.86	-	-	12.86	3%	0.39
3	Hydraulic works	128.44	-	-	128.44	5%	6.64
4	Other Civil works	23.42	0.01	-	23.43	3%	0.73
5	Plant & Machinery	124.07	105.97	-	230.04	6%	12.42
6	Lines & Cables	2.89	0.11	-	3.00	5%	0.11
7	Vehicles	1.54	0.11	0.05	1.60	10%	0.12
8	Furniture	1.71	0.36	-	2.07	6%	0.11
9	Office equipment	1.23	0.11	-	1.34	6%	0.08
	TOTAL:	**303.64**	**106.67**	**0.33**	**409.98**		**20.60**

VALUE ASSETS AND DEPRECIATION: 2013-14 (Exlcuding MLHEP)

Rs. Cr

	Particulars	Opening GFA	Addition	Withdrawn	Closing GFA	Rate of Depreciation	Depreciation
1	Land	7.20	0.01	-	7.21	0%	-
2	Buildings	12.86	0.01	-	12.87	3%	0.38
3	Hydraulic works	128.44	0.03	-	128.47	5%	6.02
4	Other Civil works	23.43	0.09	-	23.52	3%	0.73
5	Plant & Machinery	230.04	0.46	-	230.50	6%	9.40
6	Lines & Cables	3.00	0.01	-	3.01	5%	0.11
7	Vehicles	1.60	-	-	1.60	10%	0.11
8	Furniture	2.07	0.07	-	2.14	6%	0.12
9	Office equipment	1.34	0.01	-	1.35	6%	0.08
	TOTAL:	**409.98**	**0.69**	**-**	**410.67**		**16.95**

VALUE ASSETS AND DEPRECIATION: 2014-15 (Exlcuding MLHEP)

Rs. Cr

	Particulars	Opening GFA	Addition	Withdrawn	Closing GFA	Rate of Depreciation	Depreciation
1	Land	7.21	-	-	7.21	0%	-
2	Buildings	12.87	-	-	12.87	3%	0.39
3	Hydraulic works	128.47	-	-	128.47	5%	6.10
4	Other Civil works	23.52	-	-	23.52	3%	0.71
5	Plant & Machinery	230.50	-	-	230.50	6%	12.04
6	Lines & Cables	3.01	-	-	3.01	5%	0.14
7	Vehicles	1.60	-	-	1.60	10%	0.14
8	Furniture	2.14	-	-	2.14	6%	0.12
9	Office equipment	1.35	-	-	1.35	6%	0.08
	TOTAL:	**410.67**	**-**	**-**	**410.67**	**-**	**19.72**

Name of the Generating Company: MePGCL **Format-6**

VALUE ASSETS AND DEPRECIATION: 2015-16 (Exlcuding MLHEP)

Rs. Cr

	Particulars	Opening GFA	Addition	Withdrawn	Closing GFA	Rate of Depreciation	Depreciation
1	Land	7.21	6.00	-	13.21	0%	-
2	Buildings	12.87	0.09	-	12.96	3%	0.39
3	Hydraulic works	128.47	10.16	-	138.63	5%	6.35
4	Other Civil works	23.52	0.05	-	23.57	3%	0.71
5	Plant & Machinery	230.50	4.61	-	235.11	6%	12.16
6	Lines & Cables	3.01	-	-	3.01	5%	0.14
7	Vehicles	1.60	-	-	1.60	10%	0.14
8	Furniture	2.14	-	-	2.14	6%	0.12
9	IT Equipment	-	-	-	-	15%	-
10	Office equipment	1.35	-	-	1.35	6%	0.08
	TOTAL:	**410.67**	**20.90**	**-**	**431.57**		**20.08**

VALUE ASSETS AND DEPRECIATION: 2016-17 (Exlcuding MLHEP)

Rs. Cr

	Particulars	Opening GFA	Addition	Withdrawn	Closing GFA	Rate of Depreciation	Depreciation
1	Land	13.21	-	-	13.21	-	-
2	Buildings	12.96	0.55	-	13.51	0.03	0.40
3	Hydraulic works	138.63	4.70	-	143.33	0.05	6.70
4	Other Civil works	23.57	1.79	-	25.36	0.03	0.74
5	Plant & Machinery	235.11	-	-	235.11	0.06	12.28
6	Lines & Cables	3.01	-	-	3.01	0.05	0.14
7	Vehicles	1.60	-	-	1.60	0.10	0.14
8	Furniture	2.14	-	-	2.14	0.06	0.12
9	IT Equipment	-	-	-	-	0.15	-
10	Office equipment	1.35	-	-	1.35	0.06	0.08
	TOTAL:	**431.57**	**7.04**	**-**	**438.61**	**-**	**20.59**

VALUE ASSETS AND DEPRECIATION: 2017-18 (Exlcuding MLHEP)

Rs. Cr

	Particulars	Opening GFA	Addition	Withdrawn	Closing GFA	Rate of Depreciation	Depreciation
1	Land	13.21	-	-	13.21	0%	-
2	Buildings	13.51	-	-	13.51	3%	0.41
3	Hydraulic works	143.33	16.05	-	159.38	5%	7.19
4	Other Civil works	25.36	14.95	-	40.31	3%	0.99
5	Plant & Machinery	235.11	-	-	235.11	6%	12.28
6	Lines & Cables	3.01	-	-	3.01	5%	0.14
7	Vehicles	1.60	-	-	1.60	10%	0.14
8	Furniture	2.14	-	-	2.14	6%	0.12
9	IT Equipment	-	6.74	-	6.74	15%	0.45
10	Office equipment	1.35	-	-	1.35	6%	0.08
	TOTAL:	**438.61**	**37.74**	**-**	**476.35**	**0%**	**21.80**

Format-7

Name of the Generating Company: MePGCL

Interest on Loan- MePGCL (exlcluding Sonapani & MLHEP)

FY 2012-13, FY 2013-14 & FY 2014-15							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
NA							

FY 2015-16							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
1	PFC	-	13.25%	500.00	-	500.00	33.13
2	Market Loan	-	10.00%	45.00	-	45.00	2.25
3	State Govt. Loan	-	9.31%	84.97	-	84.97	3.96
	Total	**-**		**629.97**	**-**	**629.97**	**39.33**
	Finance Charge						-
	Total						**39.33**

FY 2016-17							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
1	PFC	500.00	13.25%	-	-	500.00	66.25
2	Market Loan	45.00	10.00%	225.00	-	270.00	15.75
3	State Govt. Loan	84.97	9.31%	40.39	-	125.36	9.79
	Total	**629.97**	**-**	**265.39**	**-**	**895.36**	**91.79**
	Finance Charge						-
	Total						**91.79**

FY 2017-18							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
1	PFC	500.00	0.13	-	-	500.00	66.25
2	Market Loan	270.00	0.10	333.00	-	603.00	43.65
3	State Govt. Loan	125.36	0.09	340.32	-	465.67	27.51
	Total	**895.36**	**-**	**673.32**	**-**	**1,568.67**	**137.41**
	Finance Charge						-
	Total						**137.41**

Note:

The rate of interest for market loan is the average interest rate for existing MePGCL Project loans

Interest on PFC loan taken based on information received from PFC

Interest on State Govt Loan is taken as per present interest rate

Format-7

Name of the Generating Company: MePGCL

Interest on Loan- MePGCL (Sonapani)

FY 2012-13, FY 2013-14 & FY 2014-15							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
NA							

FY 2015-16							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
1	Market Loan	-	10.00%	600.00	-	600.00	30.00
2	State Govt. Loan	-	9.31%	-	-	-	-
	Total	**-**	**-**	**600.00**	**-**	**600.00**	**30.00**
	Finance Charge						-
	Total						**30.00**

FY 2016-17							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
1	Market Loan	600.00	10.00%	-	-	600.00	60.00
2	State Govt. Loan	-	9.31%	-	-	-	-
	Total	**600.00**	**-**	**-**	**-**	**600.00**	**60.00**
	Finance Charge						-
	Total						**60.00**

FY 2017-18							Rs. Lac
Sl. No.	Particulars	Opening Balance	Rate of Interest	Addition during the year	Repayment during the year	Closing balance	Amount of Interest paid
1	Market Loan	600.00	10.00%	-	-	600.00	60.00
2	State Govt. Loan	-	9.31%	3.80	-	3.80	0.18
	Total	**600.00**	**-**	**3.80**	**-**	**603.80**	**60.18**
	Finance Charge						-
	Total						**60.18**

Note:

The rate of interest for market loan is the average interest rate for existing MePGCL Project loans

Interest on State Govt Loan is taken as per present interest rate

Format- 8

Name of the Generating Company: MePGCL

INTEREST CAPITALISED

Rs. Lacs

S.N.	Interest capitalized	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	WIP	27,353.22	24,835.33	25,698.04	26,206.46	31,096.08	33,016.34
2	GFA at the end of the year	155,174.00	166,384.00	166,384.00	168,474.00	169,178.00	172,952.00
3	WIP+GFA at the end of the year	182,527.22	191,219.33	192,082.04	194,680.46	200,274.08	205,968.34
4	Interest (Excluding interest on WCL)	-	-	-	-	-	-
5	Interest Capitalised	3,796.39	1,748.28	-	-	-	-

WIP=Work -in - Progress
GFA=Gross Fixed Assets
WCL=Working Capital Loan

Format- 9

Name of the Generating Company: MePGCL

INFORMATION REGARDING RESTRUCTURING OF OUTSTANDING LOANS DURING THE YEAR

(Rs. in lakhs)

S.N	Source of loan	Amount of original loan	Old rate of interest (%)	Amount already restructured	Revised rate of interest (%)	Amount now being restructured	New rate of interest (%)
1	2	3	4	5	6	7	8
NA							

Format- 10

Name of the Generating Company: MePGCL

INFORMATION REGARDING REVENUE FROM OTHER BUSINESS

Rs. Lacs

S.N	Particulars	FY 2015-16 to FY 2017-18
1	Total Revenue from other business	30.83
2	Income from other business to be considered for licenses business as per regulations	30.83

Format- 11

Name of the Generating Company: MePGCL

INFORMATION REGARDING WORKING CAPITAL-MePGCL Old Stations

Rs. Lacs

S.N	Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)
1	Fuel cost	NA	
2	Power Purchase Cost		
3	One month O & M Cost	4.58	5.30
4	Two Months Receivables	20.47	24.76
5	Total	**25.05**	**30.06**

Format- 11

Name of the Generating Company: MePGCL

INFORMATION REGARDING WORKING CAPITAL-Sonapani

Rs. Lacs

S.N	Particulars	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)
1	Fuel cost	NA	
2	Power Purchase Cost		
3	One month O & M Cost	0.04	0.04
4	Two Months Receivables	0.24	0.33
5	Total	**0.28**	**0.37**

Format- 12

Name of the Generating Company: MePGCL

INFORMATION REGARDING FOREIGN EXCHANGE RATE VARIATION (FERV)

(Rs. in lakhs)

S.N	Particulars	Amount
1	2	3
1	Amount of liability provided	NA
2	Amount recovered	
3	Amount adjusted	

Format- 13

Name of the Generating Company: MePGCL

INFORMATION REGARDING WHOLESALE PRICE INDEX (ALL COMMODITIES)
(to be supplied with documentary evidence)

(Rs. in lakhs)

S.N	Period	WPI	Increase over
1	2	3	4
1	As on April 1 of previous years N-1, N-2	NA	
2	As on April 1 of current year N		
3	As on April 1 of ensuing years N+1, N+2, N+3		

Format- 14 (A)

Name of the Generating Company: MePGCL

A. ESTIMATED REVENUE AT EXISTING TARIFF (LT)

S. No	Category	Connected Load (KW)	Fixed Charges per KW (Rs.)	Total Fixed Charges (Rs. in Lakhs)	Slab in the Category	Sale in each Slab (MU)	Existing Tariff	Amount (in lakh)	Total amount for the category (lakh)	Average tariff for the year (paise per Kwhr)
							Rate (paise per Kwh)			
NA										

Format- 14 (B)

Name of the Generating Company: MePGCL

B. ESTIMATED REVENUE AT EXISTING TARIFF (HT)

S.No	Category	Contract Demand (kVA)	Billing Demand (KVA)	Sale of Energy (MU)	Fixed Charge (Rs / kVA)	Energy Charges (Ps / kWH)	Total Fixed Charges (Rs. Lakhs)	Total Energy Charges (Rs. lakhs)	Grand Total amount for the category (Lakh)	Average tariff for the year (paise per Kwhr)
NA										

Format- 14 (c)

Name of the Generating Company: MePGCL

C. ESTIMATED REVENUE AT EXISTING TARIFF

S. No	Category	Contract Demand (KVA)	Billing Demand (KVA)	Sale of Energy (MU)	Existing Tariff	Total amount for the year (lakh)	Total amount for the category (Lakh)	Average tariff for the year (Paise per kwhr)
NA								

Format- 14 (d)

Name of the Generating Company: MePGCL

D. ESTIMATED REVENUE AT EXISTING TARIFF

S.No	Category	Contract Demand (KVA)	Billing Demand (KVA)	Sale of Energy (MU)	Existing Tariff	Total amount for the year (lakh)	Total amount for the category (Lakh)	Average tariff for the year (Paise per kwhr)
NA								

Format - 15

Name of the Licensee:MePGCL

Investment Plan (Ongoing/New Projects)

(Rs. in lakhs)

Sl No.	Name of Scheme/ Project	Approved Outlay*	FY 2012-13 (Actual)	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)	Progressive Expenditure upto FY 2017-18
	Ongoing/New Projects								
1	Lakroh HEP (1.5MW)	1,751.00	169.92	119.09	63.91	575.00	-	-	1,751.00
2	Riangdo SHP	3,200.00	-	-	-	800.00	1,600.00	800.00	3,200.00
3	New Umtru HEP	48,400.10	50.73	63.63	88.46	143.54			48,400.10
4	Power System Development Fund	4,850.00	-	-	-	242.50	2,182.50	2,182.50	4,607.50

** Investment Plan includes some schemes which are yet to be approved*

Name of the Licensee:MePGCL **Format - 15**

Investment Plan (Umiam Stage-I Additional Capital Expenditures)

(Rs. in lakhs)

Sl No.	Name of Scheme/ Project	Approved Outlay*	FY 2012-13 (Actual)	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)	Progressive Expenditure upto FY 2017-18
Umiam Stage-I Additional Capital Expenditures									
1	Stand-by power supply at Umiam Stage-I Dams.	15.00	-	-	-	15.00	-	-	15.00
2	Replacement of Intake gate and Trash Rack of Intake structure at Umiam Stage I HEP	200.00	-	-	-	-	80.00	120.00	200.00
3	Providing facilities for security of Hydraulic structures at Umiam Stage-I HEP.	15.00	-	-	-	-	15.00	-	15.00
4	To replace the existing Main Inlet Valve (MIV) of Unit-3 & Unit-4	247.48	-	-	24.75	222.74	-	-	247.49
5	Refurbishing of two Bypass valves along with the control system	92.50	-	-	-	92.50	-	-	92.50
6	Re-engineering of fire fighting system of Generator and Transformer	8.71	-	-	-	8.71	-	-	8.71
7	Replacement of transformer for unit-2 and reconditioning of other transformer	303.86	-	-	-	30.39	273.47	-	303.86
8	Construction of Transformer Yard to accomodate station service transformers, Unit-1 & Unit-3 and procurement of the same.	35.00	-	-	-	-	35.00	-	35.00
9	Procurement and installation of 250KVA DG Set	25.00	-	-	-	-	25.00	-	25.00
10	Installation of supervisory control to monitor the power station parameters.	250.00	-	-	-	-	25.00	225.00	250.00
11	Construction of Beams and By-pass Isolators for KPS-1, KPS-2 & Umiam feeders.	49.16	-	-	-	-	-	49.16	49.16

** Investment Plan includes some schemes which are yet to be approved*

Format - 15

Name of the Licensee:MePGCL

Investment Plan (Umiam Stage-II Additional Capital Expenditures)

(Rs. in lakhs)

Sl No.	Name of Scheme/ Project	Approved Outlay*	FY 2012-13 (Actual)	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)	Progressive Expenditure upto FY 2017-18
Umiam Stage-II Additional Capital Expenditures									
1	Providing facilities for security of Hydraulic structures at Umiam Stage-II HEP.	15.00	-	-	-	-	15.00	-	15.00
2	Installation of 250 KVA, 11kv substation dedicated to the station supply of Umiam Stage-II Power Station	10.50	-	-	-	1.05	9.45	-	10.50
3	Station Battery bank along with Charger.	10.00	-	-	-	10.00	-	-	10.00
4	Emulsifier system for Generator Transformer in both Units.	10.00	-	-	-	10.00	-	-	10.00
5	Installation of On Line Supervisory system (SCADA) for the entire Power Station	100.00	-	-	-	-	10.00	90.00	100.00

** Investment Plan includes some schemes which are yet to be approved*

Format - 15

Name of the Licensee:MePGCL

Investment Plan (Umiam Stage-III Additional Capital Expenditures)

(Rs. in lakhs)

Sl No.	Name of Scheme/ Project	Approved Outlay*	FY 2012-13 (Actual)	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)	Progressive Expenditure upto FY 2017-18
Umiam Stage-III Additional Capital Expenditures									
1	Stand-by power supply at Umiam Stage-III Dam.	15.00	-	-	-	15.00	-	-	15.00
2	Improvement of road from Zeropoint office to Kyrdemkulai Stage-III Dam	70.00	-	-	-	28.00	42.00	-	70.00
3	Improvement of road from Zeropoint to Stage-III Power Station	102.00	-	-	-	-	41.00	61.00	102.00
4	Improvement of road from Stage-III Power Station to Stage-IV P.S	156.00	-	-	-	-	62.00	94.00	156.00
5	Improvement of approach road to Stage-III Switch Yard	50.00	-	-	-	-	-	50.00	50.00
6	Improvement of approach road to Stage-III Tunnel Intake Phase-I	25.00	-	-	-	-	-	25.00	25.00
7	Providing facilities for security of Hydraulic structures at Umiam Stage-III HEP.	40.00	-	-	-	-	40.00	-	40.00
8	Refurbishing of stator and rotor	500.00	-	-	100.00	400.00	-	-	500.00
9	Installation of new Sub Station	20.00	-	-	-	20.00	-	-	20.00
10	CCTV surveillance at Switch Yard , Penstock and Power House.	40.00	-	-	-	40.00	-	-	40.00
11	Procurement of new Meters for Temperature monitoring of Unit-I machine	15.00	-	-	-	13.50	1.50	-	15.00
12	Procurement of new Meters Water pressure monitoring of Unit-I machine	10.00	-	-	-	9.00	1.00	-	10.00
13	Procurement of new panel.	25.00	-	-	2.50	22.50	-	-	25.00
14	Re-Engineering of 132 KV BUS.	150.00	-	-	-	-	135.00	15.00	150.00

** Investment Plan includes some schemes which are yet to be approved*

Format - 15

Name of the Licensee:MePGCL

Investment Plan (Umiam Stage-IV Additional Capital Expenditures)

(Rs. in lakhs)

Sl No.	Name of Scheme/ Project	Approved Outlay*	FY 2012-13 (Actual)	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)	Progressive Expenditure upto FY 2017-18
Umiam Stage-IV Additional Capital Expenditures									
1	Replacement of static excitation equipments	144.00	-	-	72.00	72.00	-	-	144.00
2	Stand-by power supply at Umiam Stage-IV Dam	15.00	-	-	-	15.00	-	-	15.00
3	Restoration of water Bodies of Stage-IV Reserviour	585.00	-	-	-	-	234.00	351.00	585.00
4	Flood Controll works of Stage-IV & Umtru Power House	525.00	-	-	-	-	210.00	315.00	525.00
5	Installation of Stop log gate, embedded parts of the guide grooves, gantry crane etc. at Umiam-Umtru Stage-IV concrete Dam	350.00	-	-	-	-	140.00	210.00	350.00
6	Improvement of water supply in Umiam	85.00	-	-	-	-	85.00	-	85.00
7	Automation and monitoring of MIV of the Generating units	106.00	-	-	-	106.00	-	-	106.00
8	1.Overhauling and replacement of damaged parts of Unit-II 2. Cooling water system 3. Procurement of excitation transformer	211.00	-	-	-	211.00	-	-	211.00
9	Online Vibration monitoring of Generating Units	20.00	-	-	-	20.00	-	-	20.00
10	Outside Source	160.00	-	-	-	-	8.00	152.00	160.00
11	Telecommunication and Internet Facilty	24.00	-	-	-	-	2.40	21.60	24.00
12	Supervisory Control System	300.00	-	-	-	-	30.00	270.00	300.00
13	Procurement of Spare Runner	650.00	-	-	-	-	65.00	585.00	650.00

** Investment Plan includes some schemes which are yet to be approved*

Format - 15

Name of the Licensee:MePGCL

Investment Plan (Umtru, Sonpanai & Leshka Additional Capital Expenditures)

(Rs. in lakhs)

Sl No.	Name of Scheme/ Project	Approved Outlay*	FY 2012-13 (Actual)	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)	Progressive Expenditure upto FY 2017-18
Umtru HEP Additional Capital Expenditures									
1	Refurbishing of MIV(2 Nos) & By-Pass Valves(2 Nos)	50.00	-	-	-	-	50.00	-	50.00
2	Replacemet of old CT with new ones	40.00	-	-	-	-	40.00	-	40.00
3	Replacement of Old CVT,PT & Isolators for four nos. feeders of Umtru Power station.	60.00	-	-	-	-	-	60.00	60.00
Sonapani HEP Additional Capital Expenditures									
1	1. Procurement and Installation of 415V 3 Phase LT Panel, 2. Relays and Cards to replace some existing defective ones and as spares, 3. Station Battery bank along with Charger 4. Generator Circuit breaker to replace the existing one.	38.00	-	-	-	-	20.00	18.00	38.00
Leshka HEP Additional Capital Expenditures									
1	Cooling System modification & improvement	116.30	-	-	-	-	116.30	-	116.30
2	Stand by Power supply in DAM	50.00	-	-	-	50.00	-	-	50.00

** Investment Plan includes some schemes which are yet to be approved*

Format- 16

Name of the Licensee: MePGCL

Investment Plan (Year - wise) for 2014-15, 2015-16, 2016-17, 2017-18

(Rs. in lakhs)

S.N	Year	Originally proposed by the Utility	Approved by the Commission	Revised by the Utility	Revised approval by the Commission in review	Actual expenditure
1	2	3	4	5	6	7
This is the 1st Control Period therefore this Format is not applicable						

Format- 17

Name of the Generating Company: MePGCL

WORKS-IN-PROGRESS

(Rs. in lakhs)

S.N	Particulars	FY 2012-13 (Provisional)	FY 2013-14 (Provisional)	FY 2014-15 (Estimated)	FY 2015-16 (Estimated)	FY 2016-17 (Estimated)	FY 2017-18 (Estimated)
1	2	3	4	5	6	7	8
1	Opening balance	137,430.69	27,353.22	24,835.33	25,698.04	26,206.46	31,096.08
2	Add: New inverstments	13,161.06	7,606.96	862.71	2,598.42	5,593.62	5,694.26
3	Total	150,591.75	34,960.18	25,698.04	28,296.46	31,800.08	36,790.34
4	Less investment capitalised	123,238.53	10,124.85	-	2,090.00	704.00	3,774.00
5	Closing balance	27,353.22	24,835.33	25,698.04	26,206.46	31,096.08	33,016.34

Format-HG1

Name of the Hydro Generating Station: Umtru Power Station

DETAILS OF COD, TYPE OF HYDRO STATIONS, NORMATIVE ANNUAL PLANT, AVAILABILITY FACTOR (NAPAF) & OTHER NORMATIVE PARAMETERS CONSIDERED FOR TARIFF CALCULATION								
SL NO	DESCRIPTION	UNIT	2012-13 (Provisional)	2013-14 (Provisional)	2014-15 (ESTIMATED)	2015-16 (Projected)	2016-17 (Projected)	2017-18 (Projected)
1	Installed Capacity	MW	11.20					
2	Free Power to Home State	%	NIL					
3	Date of Commercial Operation	-	-					
	Unit – I	-	MAY'57					
	Unit – II	-	MAY'57					
	Unit – III		MAY'57					
	Unit - IV		JULY'68					
4	Type of Station							
	Surface/Underground	-	SURFACE					
	Purely ROR/Pondage/Storage	-	PONDAGE					
	Peaking/Non Peaking	-	NON PEAKING					
	No. of hours Peaking	-	N.A					
	Overload Capacity (MW) 7& period	-	NIL					
5	Type of Excitation	-	-					
	Rotating exciters on Generator	-	ROTATING EXCITERS ON GENERATOR					
	Static excitation	-	N.A					
6	Design Energy (Annual)	Gwh	39.01	39.01	39.01	36.01	9.60	9.60
7	Auxiliary consumption including Transformation losses	%	1.20					
8	Normative Plant Availability Factor (NAPAF)	%	80					
9.1	Maintenance spares for WC	Rs. Lakh						
9.2	Receivable for WC	Rs. Lakh						
9.3	Base rate on return on equity	%	14%					
9.4	Tax rate +2	%						
9.5	Prime lending rate of SBI as on 01.04.14	%	14.75%					

Format-HG1

Name of the Hydro Generating Station: Umiam Stage-I Power Station

DETAILS OF COD, TYPE OF HYDRO STATIONS, NORMATIVE ANNUAL PLANT, AVAILABILITY FACTOR (NAPAF) & OTHER NORMATIVE PARAMETERS CONSIDERED FOR TARIFF CALCULATION

SL NO	DESCRIPTION	UNIT	2012-13 (Provisional)	2013-14 (Provisional)	2014-15 (ESTIMATED)	2015-16 (Projected)	2016-17 (Projected)	2017-18 (Projected)
1	Installed Capacity	MW	36					
2	Free Power to Home State	%	N.A					
3	Date of Commercial Operation							
	Unit – I	-	21.2.1965					
	Unit - II		16.3.1965					
	Unit - III		9.6.1965					
	Unit - IV		9.11.1965					
4	Type of Station	-	-					
	Surface/Underground	-	SURFACE					
	Purely ROR/Pondage/Storage	-	STORAGE					
	Peaking/Non Peaking	-	NON PEAKING					
	No. of hours Peaking	-	N.A					
	Overload Capacity (MW) 7& period	-	NIL					
5	Type of Excitation	-	-					
	Rotating exciters on Generator	-	Rotating exciters on Generator					
	Static excitation	-	N.A					
6	Design Energy (Annual)	Gwh	116.29					
7	Auxiliary consumption including Transformation losses	%	1.2					
8	Normative Plant Availability Factor (NAPAF)	%	59.83					
9.1	Maintenance spares for WC	Rs. Lakh						
9.2	Receivable for WC	Rs. Lakh						
9.3	Base rate on return on equity	%	14%					
9.4	Tax rate +2	%						
9.5	Prime lending rate of SBI as on 01.04.14	%	14.75%					

Format-HG1

Name of the Hydro Generating Station: Umiam Stage-II Power Station

DETAILS OF COD, TYPE OF HYDRO STATIONS, NORMATIVE ANNUAL PLANT, AVAILABILITY FACTOR (NAPAF) & OTHER NORMATIVE PARAMETERS CONSIDERED FOR TARIFF CALCULATION								
SL NO	DESCRIPTION	UNIT	2012-13 (Provisional)	2013-14 (Provisional)	2014-15 (ESTIMATED)	2015-16 (Projected)	2016-17 (Projected)	2017-18 (Projected)
1	Installed Capacity	MW	20					
2	Free Power to Home State	%	NIL					
3	Date of Commercial Operation	-	-					
	Unit – I	-	22-Jul-70					
	Unit – II	-	24-Jul-70					
4	Type of Station	-	-					
	Surface/Underground	-	SURFACE					
	Purely ROR/Pondage/Storage	-	PONDAGE					
	Peaking/Non Peaking	-	NON PEAKING					
	No. of hours Peaking	-	-					
	Overload Capacity (MW) & period	-	NIL					
5	Type of Excitation	-	-					
	Rotating exciters on Generator	-	ROTATING EXCITERS ON GENERATOR					
	Static excitation	-	NA					
6	Design Energy (Annual)	Gwh	45.51					
7	Auxiliary consumption including Transformation losses	%	1.20					
8	Normative Plant Availability Factor (NAPAF)	%	85.00					
9.1	Maintenance spares for WC	Rs. Lakh	NA					
9.2	Receivable for WC	Rs. Lakh	NA					
9.3	Base rate on return on equity	%	14%					
9.4	Tax rate +2	%	NA					
9.5	Prime lending rate of SBI as on 01.04.2014	%	14.75%					

Format-HG1

Name of the Hydro Generating Station: Umiam Stage-III Power Station

DETAILS OF COD, TYPE OF HYDRO STATIONS, NORMATIVE ANNUAL PLANT, AVAILABILITY FACTOR (NAPAF) & OTHER NORMATIVE PARAMETERS CONSIDERED FOR TARIFF CALCULATION

SL NO	DESCRIPTION	UNIT	2012-13 (Provisional)	2013-14 (Provisional)	2014-15 (ESTIMATED)	2015-16 (Projected)	2016-17 (Projected)	2017-18 (Projected)
1	Installed Capacity	MW	60					
2	Free Power to Home State	%	NIL					
3	Date of Commercial Operation	-	-					
	Unit – I	-	6-Jan-79					
	Unit – II	-	30-Mar-79					
4	Type of Station	-	-					
	Surface/Underground	-	SURFACE					
	Purely ROR/Pondage/Storage	-	PONDAGE					
	Peaking/Non Peaking	-	NON PEAKING					
	No. of hours Peaking	-	N.A					
	Overload Capacity (MW) & period	-	NIL					
5	Type of Excitation	-	-					
	Rotating exciters on Generator	-	Rotating exciters on Generator					
	Static excitation	-	NA					
6	Design Energy (Annual)	Gwh	139.40					
7	Auxiliary consumption including Transformation losses	%	1.20					
8	Normative Plant Availability Factor (NAPAF)	%	64	63.67	63.67	63.67	63.67	63.67
9.1	Maintenance spares for WC	Rs. Lakh	NA					
9.2	Receivable for WC	Rs. Lakh	NA					
9.3	Base rate on return on equity	%	14%					
9.4	Tax rate+2	%	NA					
9.5	Prime lending rate of SBI as on 01.04.2014	%	14.75%					

Format-HG1

Name of the Hydro Generating Station: Umiam Stage-IV Power Station

DETAILS OF COD, TYPE OF HYDRO STATIONS, NORMATIVE ANNUAL PLANT, AVAILABILITY FACTOR (NAPAF) & OTHER NORMATIVE PARAMETERS CONSIDERED FOR TARIFF CALCULATION								
SL NO	DESCRIPTION	UNIT	2012-13 (Provisional)	2013-14 (Provisional)	2014-15 (ESTIMATED)	2015-16 (Projected)	2016-17 (Projected)	2017-18 (Projected)
1	Installed Capacity	MW	60					
2	Free Power to Home State	%	NIL					
3	Date of Commercial Operation	-	-					
	Unit – I	-	16-Sep-92					
	Unit – II	-	11-Aug-92					
4	Type of Station	-	-					
	Surface/Underground	-	SURFACE					
	Purely ROR/Pondage/Storage	-	PONDAGE					
	Peaking/Non Peaking	-	NON PEAKING					
	No. of hours Peaking	-	N.A					
	Overload Capacity (MW) & period	-	NIL					
5	Type of Excitation	-	-					
	Rotating exciters on Generator	-	N.A					
	Static excitation	-	STATIC EXCITATION					
6	Design Energy (Annual)	Gwh	207.50					
7	Auxiliary consumption including Transformation losses	%	1.50					
8	Normative Plant Availability Factor (NAPAF)	%	61.79					
9.1	Maintenance spares for WC	Rs. Lakh	NA					
9.2	Receivable for WC	Rs. Lakh	NA					
9.3	Base rate on return on equity	%	14%					
9.4	Tax rate+2	%	NA					
9.5	Prime lending rate of SBI as on 01.04.2014	%	14.75%					

Format-HG1

Name of the Hydro Generating Station: Sonapani Mini Hydel Project

DETAILS OF COD, TYPE OF HYDRO STATIONS, NORMATIVE ANNUAL PLANT, AVAILABILITY FACTOR (NAPAF) & OTHER NORMATIVE PARAMETERS CONSIDERED FOR TARIFF CALCULATION								
SL NO	DESCRIPTION	UNIT	2012-13 (Provisional)	2013-14 (Provisional)	2014-15 (ESTIMATED)	2015-16 (Projected)	2016-17 (Projected)	2017-18 (Projected)
1	Installed Capacity	MW	1.50					
2	Free Power to Home State	%	NIL					
3	Date of Commercial Operation	-	-					
	Unit – I	-	27-Oct-09					
4	Type of Station	-	-					
	Surface/Underground	-	SURFACE					
	Purely ROR/Pondage/Storage	-	ROR					
	Peaking/Non Peaking	-	NON PEAKING					
	No. of hours Peaking	-	N.A					
	Overload Capacity (MW) & period	-	N.A					
5	Type of Excitation	-	-					
	Rotating exciters on Generator	-	ROTATING EXCITERS ON GENERATOR					
	Static excitation	-	N.A					
6	Design Energy (Annual)	Gwh	5.50					
7	Auxiliary consumption including Transformation losses	%	1.20					
8	Normative Plant Availability Factor (NAPAF)	%	45					
9.1	Maintenance spares for WC	Rs. Lakh						
9.2	Receivable for WC	Rs. Lakh						
9.3	Base rate on return on equity	%	14%					
9.4	Tax rate	%						
9.5	Prime lending rate of SBI as on 01.04.2014	%	14.75%					

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: UMTRU

1. Location	
State /Distt.	Meghalaya State/ Ribhoi District
River	Umtrew River and Tail Water of Umiam – Umtru Stage-IV HEP
2. Diversion Tunnel	Diversion Sluice
Size, Shape	1.8 m x 2.44 m, Rectangular
Length	29.70m
3. Dam	
Type	Masonry Weir
Maximum dam height	23.8 m
4. Spillway	
Type	Ogee - Ungated
Crest level of Spillway	123.32 m
5. Reservoir	
Full Reservoir Level (FRL)	123.32 m
Minimum Draw Down Level(MDDL)	118.87 m
Live Storage (MCM)	Not available due to high siltation
6. De-silting Arrangement	
Type	Scouring Sluice
Number and Size	1 No. 1.8 m x 2.4 m, Rectangular
Particle size to be removed (mm)	N.A
7. Head Race Tunnel	
Size and Type	2.97 m Dia, Horse shoe.
Length	1298.46 m
Design Discharge (Cumecs)	25 Cumecs
8. Surge Shaft	
Type	Circular
Diameter	9.75 m
Height	35.40 m
9. Penstock/ Pressure Shafts	
Type	Steel Liner, Circular
Diameter & Length	2.44 m, 105.8 m breaking into 4 lines of 1.22 m pipes.
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	4 x 2.8 MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis Turbine
Rated Head (M)	53.34 m
Rated Discharge (Cumecs)	5.95 Cumecs
11. Tail Race Tunnel	
Diameter, Shape	Rectangular Channel
Length	7.6 m
Minimum tail water level	62.96 m
12. Switch yard	
Type of Switch gear	Outdoor
No. Of generator bays	4
No. Of Bus Coupler bays	
No. Of line Bays	10

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-I

1. Location	
State /Distt.	Meghalaya State/,Ri-Bhoi District
River	Umiam River
2. Diversion Tunnel Size, Shape Length	N.A
3. Dam Type	Concrete Gravity
Maximum dam height	73 m
4. Spillway	
Type	Ogee – gated control/Crest control
Crest level of Spillway	969.26 m
5. Reservoir	
Full Reservoir Level (FRL)	981.46 m
Minimum Draw Down Level(MDDL)	960.12 m
Live Storage (MCM)	142.35 Mm3
6. De-silting Arrangement Type Number and Size Particle size to be removed (mm) ***7. Head Race Tunnel***	N.A
Size and Type	3.05 m Dia, Horse Shoe
Length	2058 m
Design Discharge (Cumecs)	28.12 Cumecs
8. Surge Shaft	
Type	Circular
Diameter	4.90 m
Height	48.3 m
9. Penstock/ Pressure Shafts	
Type	Steel Liner
Diameter & Length	2 Nos of 1.98 m dia. each & 618.70 m (Combined length) each.
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	4 x 9 MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	145 m
Rated Discharge (Cumecs)	8.27 Cumecs
11. Tail Race Tunnel	
Diameter, Shape	Open Channel
Length	366 m
Minimum tail water level	809.40 m
12. Switch yard	
Type of Switch gear	Outdoor
No. Of generator bays	4
No. Of Bus Coupler bays	1
No. Of line Bays	8

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-II

1. Location	
State /Distt.	Meghalaya State/ Ribhoi District
River	Umiam River – Tail water of Umiam Stage-I HEP
2. Diversion Tunnel Size, Shape Length	N.A
3. Dam Type Maximum dam height	N.A
4. Spillway Type Crest level of Spillway	NA
5. Reservoir	Forebay :Size: 76.2M x 34 M x 9.75 M
Full Reservoir Level (FRL)	804.06 M
Minimum Draw Down Level(MDDL)	800.85 M
Live Storage (MCM)	0.0083 Mm3
6. De-silting Arrangement Type Number and Size Particle size to be removed (mm)	N.A
7. Head Race Tunnel	
Size and Type	3.05m Dia. D-type section
Length	1869 m + 1113 m Open Canal/Channel
Design Discharge (Cumecs)	28.12 Cumecs
8. Surge Shaft Type Diameter Height	N.A
9. Penstock/ Pressure Shafts	
Type	Steel Liner
Diameter & Length	Diameter =2.74 m, Length = 333 m
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	2x10 MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	77.67 M
Rated Discharge (Cumecs)	15.47 Cumecs per unit
11. Tail Race Tunnel	
Diameter, Shape	Open Channel
Length	19.44M
Minimum tail water level	722.376M
12. Switch yard	
Type of Switch gear	Out door
No. Of generator bays	2
No. Of Bus Coupler bays	
No. Of line Bays	1

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-III

1. Location		
State /Distt.	Meghalaya, Ri-Bhoi District, 45 Km from Shillong	
River	Tail water of Umiam Stage – II PH & Umtru river.	
2. Diversion Tunnel	Link Tunnel between Kyrdemkulai pondage and Nongmahir Forebay.	
Size, Shape	Circular – 3.0 m Dia.	
Length	2840 m	
3. Dam	**Kyrdemkulai pondage**	**Nongmahir Forebay.**
Type	Concrete Gravity	Earth Dam
Maximum dam height	27.50 M	47.25 m
4. Spillway	Kyrdemkulai pondage	Nongmahir Forebay.
Type	Ogee – gated control	Chute with Weir
Crest level of Spillway	672.08 m	672.07 m
5. Reservoir	Kyrdemkulai pondage	Nongmahir Forebay.
Full Reservoir Level (FRL)	679.7 M	672.05 m
Minimum Draw Down Level(MDDL)	672.05 M	669.80 m (2197 ft)
Live Storage (MCM)	2.78 Mm3	2.16 Mm3
6. De-silting Arrangement	N.A	
Type		
Number and Size		
Particle size to be removed (mm)		
7. Head Race Tunnel		
Size and Type	3.96 m Dia, Circular	
Length	601.50 M	
Design Discharge (Cumecs)	51.00 Cumecs	
8. Surge Shaft		
Type	Circular	
Diameter	7.30 M	
Height	55.15 m Depth	
9. Penstock/ Pressure Shafts		
Type	Steel Liner	
Diameter & Length	2 Nos of 2.59 m dia.each, 472.66 m (combined length)	
10. Power House		
Type	Surface	
Installed Capacity (No of Units x MW)	2 X 30 MW	
Peaking Capacity during lean period (MW)	N.A	
Type of Turbine	Vertical Francis	
Rated Head (M)	150 M	
Rated Discharge (Cumecs)	23.5 Cumecs	
11. Tail Race Tunnel		
Diameter, Shape	Trapezoidal	
Length	50 m	
Minimum tail water level	504.5 m	
12. Switch yard		
Type of Switch gear	Outdoor	
No. Of generator bays	2	
No. Of Bus Coupler bays	1	
No. Of line Bays	7	

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-IV

1. Location	
State /Distt.	Meghalaya, Ri-Bhoi District, 55 Km from Shillong.
River	Tail water of Stage – III PH & own catchment.
2. Diversion Tunnel	N.A
Size, Shape	
Length	
3. Dam	
Type	Concrete Gravity
Maximum dam height	43.00 M
4. Spillway	
Type	Ogee- gated Controlled
Crest level of Spillway	491M
5. Reservoir	
Full Reservoir Level (FRL)	503.00 M
Minimum Draw Down Level(MDDL)	496.00 M
Live Storage (MCM)	0.80 Mm3
6. De-silting Arrangement	N.A
Type	
Number and Size	
Particle size to be removed (mm)	
7. Head Race Tunnel	
Size and Type	3.96 m Dia. Circular
Length	6128.38 M
Design Discharge (Cumecs)	51 Cumecs
8. Surge Shaft	
Type	Orifice Type
Diameter	10.00 M
Height	73.06 M
9. Penstock/ Pressure Shafts	
Type	Steel Liner
Diameter & Length	2.59 M, 2 Nos of 540.67 m & 546.01 m (combined length)
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	(2X30) MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	140.00 M
Rated Discharge (Cumecs)	25.04 Cumecs
11. Tail Race Tunnel	
Diameter, Shape	Channel, Trapezoidal
Length	50 m
Minimum tail water level	338.9 m
12. Switch yard	
Type of Switch gear	Outdoor (SF-6)
No. Of generator bays	2
No. Of Bus Coupler bays	1
No. Of line Bays	4

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT		
Name of the Hydro Generating Station: Sonapani		
1. Location		
State /Distt.	Meghalaya, East Khasi Hills District, Lumkshaid Shillong.	
River	Umshyrpi &Wahumkhrah	
2. Diversion Tunnel	N.A	
Size, Shape		
Length		
3. Dam/Weir	**Wahumkhrah**	**Umshyrpi**
Type	RCC Counterfort	Composite (Masonry &RCC)
Maximum dam height	3.50 m	4.45 m
4. Spillway	**Wahumkhrah**	**Umshyrpi**
Type	Ogee Spillway	Ogee Spillway
Crest level of Spillway	1399.095 m	1413.55 m
5. Reservoir	Forebay, Sise – 41 m x 9 m x 3.35 m	
Full Reservoir Level (FRL)	1396.295 m	
Minimum Draw Down Level(MDDL)	1395.045 m	
Live Storage (MCM)	395 cum	
6. De-silting Arrangement	**Wahumkhrah**	**Umshyrpi**
Type	RCC	RCC
Number and Size	11.00 m x 2.20 m x 1.75 m	11.00 m x 2.20 m x 1.75 m
Particle size to be removed (mm)	0.25 mm and above	0.25 mm and above
7. Head Race Tunnel	**Wahumkhrah**	**Umshyrpi**
Size and Type	1.00m x 1.00 m,	1.00m x 1.00 m,
	Open Channel	Open Channel
Length	632.0 m	1128.50 m
Design Discharge (Cumecs)	0.54 cumecs	0.44 cumecs
8. Surge Shaft	N.A	
Type		
Diameter		
Height		
9. Penstock/ Pressure Shafts		
Type	Steel Pipe	
Diameter & Length	0.70m Dia ,370.00m(Length)	
10. Power House		
Type	Surface	
Installed Capacity (No of Units x MW)	1x1.5MW	
Peaking Capacity during lean period (MW)	N.A	
Type of Turbine	Horizontal Pelton Wheel	
Rated Head (M)	172.42m	
Rated Discharge (Cumecs)	0.98 Cumecs	
11. Tail Race Tunnel		
Size, Shape	1.50m x 1.50m, Rectangular	
Length	20.00m	
Minimum tail water level	1216.50 m	
12. Switch yard		
Type of Switch gear	Out door	
No. Of generator bays	1	
No. Of Bus Coupler bays	2	
No. Of line Bays	3	

Format - HG4

Name of the Hydro Generating Station: Umtru

SL NO	MONTH	Unit	FY 12-13 (Actual)		FY 13-14 (Actual)		FY 14-15 (Estimated)		FY 15-16 (Projected)		FY 16-17 (Projected)		FY 17-18 (Projected)	
			ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS
1	APRIL	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.45	2.02	0.88	1.22	1.42	1.97	0.00	0.00	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		IV.	1.15	1.60	0.60	0.83	0.56	0.78	0.00	0.00	0.00	0.00		
2	MAY	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.60	2.15	0.79	1.06	1.49	2.00	0.80	1.08	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.67	0.00	0.00		
		IV.	1.39	1.87	1.30	1.75	0.77	1.03	0.40	0.54	0.00	0.00		
3	JUNE	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.48	2.05	0.00	0.00	0.52	0.72	1.00	1.39	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.11	0.00	0.00		
		IV.	1.55	2.15	0.00	0.00	0.36	0.50	0.60	0.83	0.00	0.00		
4	JULY	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.64	2.21	0.00	0.00	0.00	0.00	1.00	1.34	1.00	1.34		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.08	0.80	1.08		
		IV.	1.21	1.63	0.00	0.00	0.00	0.00	0.60	0.81	0.60	0.81		
5	AUGUST	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.49	2.00	0.00	0.00	0.00	0.00	1.00	1.34	1.00	1.34		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.08	0.80	1.08		
		IV.	1.29	1.73	0.00	0.00	0.00	0.00	0.60	0.81	0.60	0.81		
6	SEPTEMBER	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.14	1.59	0.01	0.01	1.19	1.65	1.00	1.39	1.00	1.39		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.11	0.80	1.11		
		IV.	1.54	2.13	1.68	2.33	1.13	1.57	0.60	0.83	0.60	0.83		
7	OCTOBER	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NIL	NIL
		II.	1.28	1.71	1.50	2.02	1.50	2.02	1.00	1.34	1.00	1.34		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.08	0.80	1.08		
		IV.	1.14	1.53	1.55	2.08	1.33	1.79	0.60	0.81	0.60	0.81		
8	NOVEMBER	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.72	2.40	1.04	1.44	1.14	1.58	1.00	1.39	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.11	0.00	0.00		
		IV.	0.56	0.78	1.32	1.83	0.34	0.47	0.60	0.83	0.00	0.00		
9	DECEMBER	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.01	1.36	0.21	0.28	0.21	0.28	1.00	1.34	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.20	0.27	0.80	1.08	0.00	0.00		
		IV.	1.88	2.52	0.25	0.34	0.25	0.34	0.60	0.81	0.00	0.00		
10	JANUARY	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.30	1.74	0.88	1.18	0.40	0.54	1.00	1.34	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.50	0.67	0.80	1.08	0.00	0.00		
		IV.	1.23	1.66	0.33	0.44	0.30	0.40	0.60	0.81	0.00	0.00		
11	FEBRUARY	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	1.39	2.07	0.97	1.39	0.70	1.01	1.00	1.44	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.60	0.86	0.80	1.15	0.00	0.00		
		IV.	0.75	1.12	0.55	0.79	0.25	0.36	0.60	0.86	0.00	0.00		
12	MARCH	I.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		II.	0.18	0.24	1.42	1.91	0.80	1.08	1.00	1.34	0.00	0.00		
		III.	0.00	0.00	0.00	0.00	0.80	1.08	0.80	1.08	0.00	0.00		
		IV.	1.03	1.38	0.69	0.93	0.50	0.67	0.60	0.81	0.00	0.00		

*NOTE: Design Energy = 39.01 Gwh

Format - HG4

Name of the Hydro Generating Station: Umiam Stage-I

SL NO	MONTH	Unit	FY 12-13 (Actual)		FY 13-14 (Actual)		FY 14-15 (Estimated)		FY 15-16 (Projected)		FY 16-17 (Projected)		FY 17-18 (Projected)	
			ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS
1	APRIL	I.	0.36	0.50	0.96	1.33	0.81	1.13	1.13	1.56	1.13	1.56	1.13	1.56
		II.	1.17	1.62	2.79	3.87	1.13	1.57	1.13	1.56	1.13	1.56	1.13	1.56
		III.	0.00	0.00	0.99	1.37	0.95	1.32	1.13	1.56	1.13	1.56	1.13	1.56
		IV.	1.55	2.15	1.23	1.71	1.20	1.67	1.13	1.56	1.13	1.56	1.13	1.56
2	MAY	I.	0.51	0.68	1.27	1.71	0.91	1.22	1.00	1.34	1.00	1.34	1.00	1.34
		II.	2.61	3.51	2.00	2.69	1.29	1.73	1.00	1.34	1.00	1.34	1.00	1.34
		III.	0.00	0.00	1.19	1.60	1.02	1.37	1.00	1.34	1.00	1.34	1.00	1.34
		IV.	3.41	4.58	0.00	0.00	1.12	1.51	1.00	1.34	1.00	1.34	1.00	1.34
3	JUNE	I.	1.06	1.47	2.36	3.28	0.69	0.96	1.63	2.26	1.63	2.26	1.63	2.26
		II.	2.58	3.59	2.90	4.03	0.65	0.90	1.63	2.26	1.63	2.26	1.63	2.26
		III.	0.00	0.00	1.91	2.65	0.69	0.96	1.63	2.26	1.63	2.26	1.63	2.26
		IV.	3.50	4.86	2.03	2.82	0.10	0.14	1.63	2.26	1.63	2.26	1.63	2.26
4	JULY	I.	1.65	2.21	2.07	2.78	0.50	0.69	2.50	3.36	2.50	3.36	2.50	3.36
		II.	3.68	4.94	2.27	3.05	0.88	1.22	2.50	3.36	2.50	3.36	2.50	3.36
		III.	0.00	0.00	1.01	1.36	0.69	0.96	2.50	3.36	2.50	3.36	2.50	3.36
		IV.	4.46	6.00	2.55	3.43	0.67	0.93	2.50	3.36	2.50	3.36	2.50	3.36
5	AUGUST	I.	0.82	1.10	0.98	1.32	1.43	1.92	3.00	4.03	3.00	4.03	3.00	4.03
		II.	2.15	2.89	1.31	1.76	1.49	2.00	3.00	4.03	3.00	4.03	3.00	4.03
		III.	0.00	0.00	0.83	1.11	1.48	1.99	3.00	4.03	3.00	4.03	3.00	4.03
		IV.	2.86	3.85	1.39	1.87	1.45	1.95	3.00	4.03	3.00	4.03	3.00	4.03
6	SEPTEMBER	I.	2.95	4.10	1.46	2.03	4.28	5.94	4.25	5.90	4.25	5.90	4.25	5.90
		II.	3.66	5.08	1.48	2.06	4.30	5.97	4.25	5.90	4.25	5.90	4.25	5.90
		III.	0.00	0.00	0.93	1.29	4.47	6.21	4.25	5.90	4.25	5.90	4.25	5.90
		IV.	4.20	5.83	1.78	2.47	4.38	6.08	4.25	5.90	4.25	5.90	4.25	5.90
7	OCTOBER	I.	3.92	5.27	2.06	2.77	3.49	4.69	3.75	5.04	3.75	5.04	3.75	5.04
		II.	5.54	7.44	2.06	2.77	3.75	5.04	3.75	5.04	3.75	5.04	3.75	5.04
		III.	0.00	0.00	2.06	2.77	3.56	4.78	3.75	5.04	3.75	5.04	3.75	5.04
		IV.	5.96	8.02	2.06	2.77	4.05	5.44	3.75	5.04	3.75	5.04	3.75	5.04
8	NOVEMBER	I.	2.92	4.05	1.81	2.52	1.26	1.75	2.50	3.47	2.50	3.47	2.50	3.47
		II.	3.47	4.83	1.81	2.52	1.51	2.10	2.50	3.47	2.50	3.47	2.50	3.47
		III.	0.11	0.16	1.81	2.52	1.62	2.25	2.50	3.47	2.50	3.47	2.50	3.47
		IV.	4.16	5.78	1.81	2.52	1.58	2.19	2.50	3.47	2.50	3.47	2.50	3.47
9	DECEMBER	I.	1.92	2.58	1.88	2.52	2.29	3.08	2.50	3.36	2.50	3.36	2.50	3.36
		II.	2.94	3.95	1.88	2.52	2.29	3.08	2.50	3.36	2.50	3.36	2.50	3.36
		III.	1.25	1.68	1.88	2.52	2.29	3.08	2.50	3.36	2.50	3.36	2.50	3.36
		IV.	3.86	5.18	1.88	2.52	2.29	3.08	2.50	3.36	2.50	3.36	2.50	3.36
10	JANUARY	I.	2.02	2.71	1.75	2.35	2.29	3.08	2.00	2.69	2.00	2.69	2.00	2.69
		II.	3.55	4.77	1.75	2.35	2.29	3.08	2.00	2.69	2.00	2.69	2.00	2.69
		III.	0.35	0.47	1.75	2.35	2.29	3.08	2.00	2.69	2.00	2.69	2.00	2.69
		IV.	4.08	5.48	1.75	2.35	2.29	3.08	2.00	2.69	2.00	2.69	2.00	2.69
11	FEBRUARY	I.	0.69	1.03	1.50	2.23	2.29	3.29	1.75	2.51	1.75	2.51	1.75	2.51
		II.	2.28	3.40	1.50	2.23	2.29	3.29	1.75	2.51	1.75	2.51	1.75	2.51
		III.	0.60	0.89	1.50	2.23	2.29	3.29	1.75	2.51	1.75	2.51	1.75	2.51
		IV.	2.91	4.32	1.50	2.23	2.29	3.29	1.75	2.51	1.75	2.51	1.75	2.51
12	MARCH	I.	0.56	0.75	1.25	1.68	2.29	3.08	1.50	2.02	1.50	2.02	1.50	2.02
		II.	2.58	3.47	1.25	1.68	2.29	3.08	1.50	2.02	1.50	2.02	1.50	2.02
		III.	0.96	1.29	1.25	1.68	2.29	3.08	1.50	2.02	1.50	2.02	1.50	2.02
		IV.	3.08	4.13	1.25	1.68	2.29	3.08	1.50	2.02	1.50	2.02	1.50	2.02

***NOTE: Design Energy = 116.29 Gwh**

Format - HG4

Name of the Hydro Generating Station: Umiam Stage-II

SL NO	MONTH	Unit	*FY 12-13 (Actual)*		*FY 13-14 (Actual)*		*FY 14-15 (Estimated)*		*FY 15-16 (Projected)*		*FY 16-17 (Projected)*		*FY 17-18 (Projected)*	
			ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS
1	APRIL	I.	1.15	1.60	0.35	0.49	0.28	0.39	1.25	1.74	1.35	1.88	1.35	1.88
		II.	0.35	0.49	2.83	3.93	1.86	2.58	1.00	1.39	1.35	1.88	1.35	1.88
2	MAY	I.	0.06	0.07	0.39	0.52	0.39	0.52	1.00	1.34	1.15	1.55	1.15	1.55
		II.	3.35	4.51	2.07	2.78	1.97	2.65	1.00	1.34	1.15	1.55	1.15	1.55
3	JUNE	I.	0.49	0.69	1.46	2.02	0.34	0.47	1.25	1.74	1.50	2.08	1.50	2.08
		II.	3.27	4.55	3.39	4.71	1.33	1.85	1.25	1.74	1.50	2.08	1.50	2.08
4	JULY	I.	1.59	2.13	1.36	1.83	0.32	0.44	2.50	3.36	1.50	2.02	1.50	2.02
		II.	3.42	4.59	2.89	3.89	1.15	1.60	2.50	3.36	1.50	2.02	1.50	2.02
5	AUGUST	I.	0.75	1.00	0.97	1.30	1.18	1.59	3.00	4.03	3.00	4.03	3.00	4.03
		II.	2.19	2.94	1.44	1.93	1.78	2.39	3.00	4.03	3.00	4.03	3.00	4.03
6	SEPTEMBER	I.	2.22	3.09	0.90	1.25	4.21	5.85	4.00	5.56	3.50	4.86	3.50	4.86
		II.	2.97	4.13	2.01	2.79	4.43	6.15	4.00	5.56	3.50	4.86	3.50	4.86
7	OCTOBER	I.	5.90	7.94	2.15	2.88	3.09	4.15	3.75	5.04	3.50	4.70	3.50	4.70
		II.	0.19	0.26	2.15	2.88	4.20	5.65	3.75	5.04	3.50	4.70	3.50	4.70
8	NOVEMBER	I.	3.23	4.48	1.89	2.62	0.98	1.36	3.00	4.17	3.00	4.17	3.00	4.17
		II.	2.06	2.86	1.89	2.62	1.99	2.76	2.00	2.78	3.00	4.17	3.00	4.17
9	DECEMBER	I.	2.00	2.69	1.95	2.62	1.93	2.59	3.00	4.03	3.00	4.03	3.00	4.03
		II.	2.99	4.02	1.95	2.62	1.93	2.59	2.00	2.69	3.00	4.03	3.00	4.03
10	JANUARY	I.	1.54	2.07	1.82	2.45	1.93	2.59	2.00	2.69	2.00	2.69	2.00	2.69
		II.	3.56	4.78	1.82	2.45	1.93	2.59	2.00	2.69	2.00	2.69	2.00	2.69
11	FEBRUARY	I.	1.10	1.64	1.56	2.32	1.93	2.77	1.75	2.51	2.00	2.87	2.00	2.87
		II.	2.27	3.38	1.56	2.32	1.93	2.77	1.75	2.51	2.00	2.87	2.00	2.87
12	MARCH	I.	0.55	0.74	1.30	1.75	1.93	2.59	1.50	2.02	2.00	2.69	2.00	2.69
		II.	3.20	4.30	1.30	1.75	1.93	2.59	1.50	2.02	2.00	2.69	2.00	2.69

***NOTE: Design Energy = 45.51 Gwh**

Name of the Hydro Generating Station: Umiam Stage-III

Format - HG4

SL NO	MONTH	Unit	*FY 12-13 (Actual)*		*FY 13-14 (Actual)*		*FY 14-15 (Estimated)*		*FY 15-16 (Projected)*		*FY 16-17 (Projected)*		*FY 17-18 (Projected)*	
			ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS
1	APRIL	I.	4.81	6.68	8.08	11.22	0.00	0.00	0.00	0.00	3.00	4.17	3.00	4.17
		II.	0.00	0.00	0.00	0.00	2.77	3.85	5.20	7.22	1.00	1.39	1.00	1.39
2	MAY	I.	8.34	11.20	8.04	10.80	0.00	0.00	0.00	0.00	6.00	8.06	2.00	2.69
		II.	0.03	0.04	0.00	0.00	4.88	6.56	7.00	9.41	1.00	1.34	5.00	6.72
3	JUNE	I.	8.30	11.53	0.81	1.13	0.00	0.00	0.00	0.00	7.00	9.72	2.00	2.78
		II.	2.71	3.76	5.62	7.80	7.55	10.49	8.00	11.11	1.00	1.39	6.00	8.33
4	JULY	I.	1.87	2.52	0.00	0.00	0.00	0.00	0.00	0.00	10.00	13.44	2.00	2.69
		II.	8.23	11.06	16.94	22.77	10.38	14.42	14.00	18.82	4.00	5.38	10.00	13.44
5	AUGUST	I.	5.38	7.23	15.91	21.38	0.00	0.00	0.00	0.00	10.00	13.44	3.00	4.03
		II.	6.47	8.70	0.00	0.00	14.09	18.94	14.00	18.82	4.00	5.38	10.00	13.44
6	SEPTEMBER	I.	11.88	16.51	0.00	0.00	1.11	1.54	0.00	0.00	10.00	13.89	4.00	5.56
		II.	1.93	2.67	16.00	22.22	1.11	1.54	15.00	20.83	4.00	5.56	10.00	13.89
7	OCTOBER	I.	17.27	23.21	4.85	6.51	0.00	0.00	0.00	0.00	12.00	16.13	5.00	6.72
		II.	0.00	0.00	4.85	6.51	1.84	2.47	16.00	21.51	3.00	4.03	10.00	13.44
8	NOVEMBER	I.	9.63	13.38	4.35	6.03	5.74	7.97	0.00	0.00	8.00	11.11	8.00	11.11
		II.	0.00	0.00	4.35	6.03	5.74	7.97	12.00	16.67	2.00	2.78	2.00	2.78
9	DECEMBER	I.	13.34	17.93	4.47	6.01	5.74	7.72	4.00	5.38	2.00	2.69	8.00	10.75
		II.	0.00	0.00	4.47	6.01	5.74	7.72	9.00	12.10	10.00	13.44	2.00	2.69
10	JANUARY	I.	12.40	16.67	4.22	5.67	5.74	7.72	10.00	13.44	2.00	2.69	7.00	9.41
		II.	0.00	0.00	4.22	5.67	5.74	7.72	2.00	2.69	10.00	13.44	3.00	4.03
11	FEBRUARY	I.	7.91	11.77	3.72	5.54	5.74	8.25	6.00	8.62	2.00	2.87	6.00	8.62
		II.	0.00	0.00	3.72	5.54	5.74	8.25	2.00	2.87	6.00	8.62	2.00	2.87
12	MARCH	I.	9.24	12.41	3.22	4.33	5.74	7.72	6.00	8.06	2.00	2.69	6.00	8.06
		II.	0.00	0.00	3.22	4.33	5.74	7.72	2.00	2.69	6.00	8.06	2.00	2.69

***NOTE: Design Energy =139.40 Gwh**

Format - HG4

Name of the Hydro Generating Station: Umiam
Stage-IV

SL NO	MONTH	Unit	*FY 12-13 (Actual)*		*FY 13-14 (Actual)*		*FY 14-15 (Estimated)*		*FY 15-16 (Projected)*		*FY 16-17 (Projected)*		*FY 17-18 (Projected)*	
			ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS
1	APRIL	I.	1.56	2.16	6.13	8.51	3.24	4.50	5.00	6.94	5.00	6.94	5.00	6.94
		II.	3.64	5.06	2.18	3.03	2.07	2.88	5.00	6.94	5.00	6.94	5.00	6.94
2	MAY	I.	4.88	6.56	6.22	8.35	3.29	4.42	4.50	6.05	4.50	6.05	4.50	6.05
		II.	3.95	5.31	5.27	7.09	2.07	2.78	4.50	6.05	4.50	6.05	4.50	6.05
3	JUNE	I.	6.86	9.53	10.20	14.17	0.43	0.60	5.50	7.64	5.50	7.64	5.50	7.64
		II.	6.41	8.91	10.86	15.08	7.49	10.40	5.50	7.64	5.50	7.64	5.50	7.64
4	JULY	I.	12.96	17.42	8.65	11.62	5.29	7.35	7.50	10.08	7.50	10.08	7.50	10.08
		II.	5.82	7.83	11.87	15.95	6.91	9.60	7.50	10.08	7.50	10.08	7.50	10.08
5	AUGUST	I.	15.02	20.19	11.74	15.77	9.39	12.62	14.00	18.82	14.00	18.82	14.00	18.82
		II.	9.62	12.93	10.09	13.56	14.41	19.37	14.00	18.82	14.00	18.82	14.00	18.82
6	SEPTEMBER	I.	17.63	24.48	14.21	19.74	1.75	2.43	14.00	19.44	14.00	19.44	14.00	19.44
		II.	10.91	15.16	9.03	12.54	1.17	1.63	14.00	19.44	14.00	19.44	14.00	19.44
7	OCTOBER	I.	13.67	18.37	4.85	6.51	9.20	12.37	12.50	16.80	12.50	16.80	12.50	16.80
		II.	12.64	16.99	4.85	6.51	16.13	21.68	12.50	16.80	12.50	16.80	12.50	16.80
8	NOVEMBER	I.	9.80	13.62	4.35	6.03	8.06	11.20	10.00	13.89	10.00	13.89	10.00	13.89
		II.	6.29	8.73	4.35	6.03	8.06	11.20	10.00	13.89	10.00	13.89	10.00	13.89
9	DECEMBER	I.	9.80	13.17	4.47	6.01	8.06	10.84	7.00	9.41	7.00	9.41	7.00	9.41
		II.	4.67	6.27	4.47	6.01	8.06	10.84	7.00	9.41	7.00	9.41	7.00	9.41
10	JANUARY	I.	10.10	13.58	4.22	5.67	8.06	10.84	6.00	8.06	6.00	8.06	6.00	8.06
		II.	3.03	4.07	4.22	5.67	8.06	10.84	6.00	8.06	6.00	8.06	6.00	8.06
11	FEBRUARY	I.	5.75	8.56	3.72	5.54	8.06	11.59	5.50	7.90	5.50	7.90	5.50	7.90
		II.	2.61	3.89	3.72	5.54	8.06	11.59	5.50	7.90	5.50	7.90	5.50	7.90
12	MARCH	I.	10.02	13.46	3.22	4.33	8.06	10.84	4.25	5.71	4.25	5.71	4.25	5.71
		II.	0.00	0.00	3.22	4.33	8.06	10.84	4.25	5.71	4.25	5.71	4.25	5.71

***NOTE: Design Energy = 207.5 Gwh**

Format - HG3

Name of the Hydro Generating Station: Sonapani

SL NO	MONTH	Unit	*FY 12-13 (Actual)*		*FY 13-14 (Actual)*		*FY 14-15 (Estimated)*		*FY 15-16 (Projected)*		*FY 16-17 (Projected)*		*FY 17-18 (Projected)*	
			ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS	ENERGY* (MU)	MW CONTINUOUS
1	APRIL	I.	0.34	0.47	0.25	0.35	0.18	0.25	0.18	0.25	0.20	0.28	0.20	0.28
2	MAY	I.	0.46	0.62	0.42	0.57	0.20	0.27	0.20	0.27	0.28	0.38	0.28	0.38
3	JUNE	I.	0.77	1.07	0.56	0.78	0.44	0.61	0.44	0.61	0.48	0.67	0.48	0.67
4	JULY	I.	0.77	1.03	0.64	0.86	0.56	0.61	0.56	0.75	0.59	0.79	0.59	0.79
5	AUGUST	I.	0.76	1.03	0.61	0.82	0.67	0.90	0.75	1.01	0.68	0.91	0.68	0.91
6	SEPTEMBER	I.	0.81	1.13	0.62	0.86	0.74	1.03	0.75	1.04	0.70	0.97	0.70	0.97
7	OCTOBER	I.	0.89	1.20	0.78	1.05	0.70	0.94	0.61	0.82	0.64	0.86	0.64	0.86
8	NOVEMBER	I.	0.75	1.04	0.65	0.90	0.62	0.86	0.51	0.71	0.56	0.78	0.56	0.78
9	DECEMBER	I.	0.61	0.82	0.63	0.85	0.50	0.67	0.45	0.60	0.44	0.59	0.44	0.59
10	JANUARY	I.	0.51	0.68	0.58	0.78	0.50	0.67	0.40	0.54	0.39	0.52	0.39	0.52
11	FEBRUARY	I.	0.30	0.45	0.54	0.80	0.50	0.72	0.31	0.45	0.26	0.37	0.26	0.37
12	MARCH	I.	0.29	0.39	0.51	0.69	0.50	0.67	0.26	0.35	0.27	0.36	0.27	0.36

***NOTE: Design Energy = 5.50 Gwh**