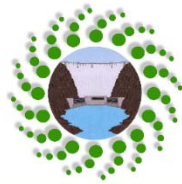


**Before  
Meghalaya State Electricity Regulatory Commission,  
Shillong**

**Petition  
For  
Approval of Final Capital Cost,  
AFC For FY 2018-19 to FY 2020-21 of MYT Second  
Control Period,  
And Tariff for FY 2020-21 for  
New Umtru Hydro Electric Project (NUHEP)**

**Filed By**



**MePGCL**

Generating Clean And Green Energy

**Meghalaya Power Generation Corporation  
Limited  
Lum Jingshai, Short Round Road,  
Shillong - 793 001**

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

At its office at Lower Lachumiere, Shillong – 793001

File/Petition No.: \_\_\_\_\_

IN THE MATTER OF

APPROVAL OF FINAL CAPITAL COST AND ANNUAL FIXED COST (AFC) FOR FY 2018-19 TO FY 2020-21, AND TARIFF FOR FY 2020-21 FOR NEW UMTRU HYDRO ELECTRIC PROJECT (NUHEP) OF THE MEGHALAYA POWER GENERATION CORPORATION LIMITED (MePGCL) WITHIN THE STATE OF MEGHALAYA 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, SHORT ROUND ROAD, SHILLONG – 793001, MEGHALAYA

**PETITIONER**

The Petitioner respectfully submits as under:

1. In exercising its powers conferred under sections 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,
  - a) **Meghalaya Energy Corporation Limited (MeECL)**: the Holding Company;
  - b) **Meghalaya Power Distribution Corporation Limited (MePDCL)**: the Distribution Utility;
  - c) **Meghalaya Power Generation Corporation Limited (MePGCL)**: the Generation Utility;
  - d) **Meghalaya Power Transmission Corporation Limited (MePTCL)**: the Transmission Utility.
2. However, the holding company – MeECL - carried out the functions of distribution, generation and transmission utilities from 1st April 2010 onwards, even after restructuring. 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), MePGCL (Generation utility), MePTCL (Transmission Utility) and MePDCL (Distribution Utility), from 1st April 2012.
3. On 23rd December 2013, the Government of Meghalaya issued the latest transfer scheme notification thereby notifying the Assets and Liabilities as on 1st April 2010 to be vested in MeECL. Subsequently, the Government of Meghalaya notified the 4th Amendment to the Notified Transfer Scheme dated 31st March 2010 on 29th April 2015, wherein the opening balances of all the four entities, namely, MePGCL, MePTCL, MePDCL and MeECL as on 1st April 2012 were notified.
4. MePGCL has begun segregated commercial operations as an independent entity from 1st April 2013.
5. The **Meghalaya State Electricity Regulatory Commission** (hereinafter referred to as “MSERC” or “the Hon'ble Commission”) is an independent statutory body constituted under the provisions of

Part – X (Sections 76 to 109) of the 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.

6. The MSERC, in exercise of its powers, determined the Provisional Annual Fixed Cost (AFC) for New Umtru Hydro Electric Plant (hereinafter referred to as 'NUHEP') for FY 2017-18 based on capital cost as on **February 2018**, in accordance with Meghalaya State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2014 in the order dated 6<sup>th</sup> November, 2017.
7. Subsequently, the petitioner filed a petition for Approval of Capital cost till **30th June, 2017** (Commercial Operation Date) and AFC for MYT Control Period FY 2018-19 to FY 2020-21 vide letter no **dated 30.11.2018**. Order for the above mentioned petition is yet to be notified by the Hon'ble Commission.
8. The final capital cost report for NUHEP is available along with the completion of the final cost audit. As such, in the present petition, the Utility is filing the approval of final Capital Cost, AFC for the Control Period FY 2018-19 to FY 2020-21 based on the final capital cost and tariff for FY 2020-21 in accordance with The Meghalaya State Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2014 (hereinafter referred to as "MYT Regulations, 2014")
9. While filing the present petition, MePGCL, to the best of its ability, has endeavored to discharge its obligations and comply with the various applicable legal and regulatory provisions, directions and stipulations.
10. The Board of Directors of MePGCL has accorded approval for filing of this petition and authorized the undersigned to file the petition accordingly. The copy of the Board's resolution is enclosed as **Annexure A.**
11. The applicant, therefore, humbly prays before the Hon'ble Commission to pass appropriate orders on the following:
  - a) Approval of the final capital cost of NUHEP of INR 607.25 Cr.
  - b) Approval of the Annual Fixed Cost of INR 132.60 Cr., INR 130.18 Cr. and INR 127.23 Cr. for FY 2018-19, FY 2019-20 and FY 2020-21 (2nd MYT Control Period) respectively as proposed in this petition for NUHEP.
  - c) Approval of tariff for FY 2020-21 for NUHEP, as proposed in this petition
  - d) To pass such orders, as Hon'ble Commission may deem fit and proper and necessary in view of the facts and circumstances of the case.
  - e) To condone any inadvertent omissions, errors & shortcomings and permit the applicant to add/change/ modify/ alter this filing and make further submissions as required.

(A Lyngdoh)  
Superintending Engineer  
(Project Monitoring)

For and on behalf  
Meghalaya Power Generation Corporation Ltd

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## 1. Capital Cost and General Details of Plant

### 1.1. Introduction

The Umtru River, a tributary of the Brahmaputra River, is the major source of Hydro Power in the State of Meghalaya. The power potential of Umtru Basin was planned for integrated development with the adjacent Umiam and Khri Basin Schemes.

The power potential of Umtru was developed progressively beginning in the first decade of independence of the country. Umtru H.E. Project (commissioned with three units of 2.8MW each in 1957 and the fourth unit of 2.8MW in 1968), was the first development in the Basin and has served more than the design life of Power Plants. Past operational experience of this plant indicated that the potential of the site was not optimally exploited and there was scope to provide additional capacity and energy benefits to Meghalaya Grid economically in a short time. In this context, the New Umtru Hydro Electric Project (2x20MW) was proposed alongside the Old Umtru Project with common water storage. A new Dam was being constructed at the location of the now dismantled Umtru Weir of the existing Project to create an enhanced storage for both the existing and new projects.

#### 1.1.1. Location

The Project Site is approachable through National Highway-40 from Guwahati to Byrnihat and thereafter through a state PWD road to the dam site at Dehal, passing through the existing Umtru Power House.

#### 1.1.2. Salient features of the project

The New Umtru HEP envisaged the following features:

- i) Dehal Dam:** The Dam Axis was fixed at 10.69m from the axis of the old un-gated weir. The spillway portion has 6 (six) radial gates of size 13.40 m x 6.10m each with FRL at the original HFL of El. 130.10 m to cater for a Design Flood of 3820 cumec. The crest of the spillway is fixed at El. 124.00m. The Full Reservoir Level at El. 130.10m and Minimum Drawdown Level (MDDL) at El. 124.50m will create a Live Storage of 2.38Mcum. This will be the diurnal storage which regulates the flow from upstream peaking power stations. It will be able to provide peak power from the New Umtru as well as the existing Umtru Power Station.
- ii) Power Intake:** The new Intake block is located in the dam body in between the new Spillway and the Old Sluice and Intake combination. Beside the new Intake, a scouring sluice of size 3.00 x 5.00m is provided on silt consideration with invert level at El. 112.50m. The invert level of the Intake is at El 113.50m. The Trash Rack of the Intake is 4.75m wide x 12.80m high and is provided in 8 segments / panels of size 2.375m x 3.20m each. The Power Intake has been designed to draw a discharge of 75.00 cumec. A fixed wheel gate of size 5.00mx5.00m is provided at the Intake with Rope Drum hoist to raise or lower the gate.
- iii) Head Race Tunnel (HRT):** HRT takes off from the Intake Block in the dam body in the form of RCC circular conduit of 5.00m diameter for a length of 146.20m and then through an underground tunnel (modified horse shoe) for a length of 630.50m upto the Surge Shaft. The alignment is almost parallel to the existing HRT. An Access/Construction Adit of 202.00m inclined length at a distance of 140.00m from centre line of Surge Shaft was made to help in the excavation and concreting of HRT.

- iv) Surge Shaft:** Surge Shaft has been provided at the end of the HRT and before commencement of the Pressure Shaft. The height of the Shaft is 58.00m. It is connected to the HRT by means of a Vertical Riser of diameter 7.00 m and 21.60m height and a Surge tank of diameter 17.20 m and 32.50m height. The Surge Shaft has been provided with a gate (Vertical Lift type of Size 4.46 mx4.40m) and a Rope drum Hoist to control flow into the Pressure Shaft.
- v) Pressure Shaft:** The Pressure Shaft connects the Head Race Tunnel to the Power House. Its total length is 167.47 m. The diameter of the main shaft is 4.40 m and its length is 112.765 m. The Pressure Shaft bifurcates into two 3.0 m diameter branches of length 27.35 m each upto the Power House (upto D-Line) and each branch is connected by a 2.55 m length reducer (reducing from 3.00m to 2.70m dia) to the Main Inlet Valve. The Pressure Shaft is fully steel-lined and thickness of steel liner varies from 16 mm to 22 mm. An Access /Construction Adit 92.00m long is provided from EL 89 m on the point which houses the Pressure Shaft for getting an additional heading for construction of the HRT.
- vi) Power House:** The New Umtru Power House is a deep-set structure. It is located on the Left Bank of the River Umtru near the location where the HRT of the existing Umtru Project passes through a steel pipe conduit. The dimensions of the powerhouse are 33.00m×29.78m (L×B) at Generator Floor Level of 68.50m. Two T.G Sets of 20MW each are installed in this Power House.
- vii) Switchyard:** The switchyard is located downstream of the Tail Pool of the Power House at El 91.00m and its size is 60.00mx 40.00m.
- viii) Tail Race Tunnel including outlet works:** The Tail Race Tunnel is designed as a free-flow tunnel operating between the Tail Pool downstream of the Powerhouse at the entry point and the Umtru river at its exit end. It is a D-shaped 5.50m dia. tunnel. The length of TRT is 702.00m, with the invert level of 60.04 m at the entry point and the exit level of 57.50m at the point where it joins the river.
- ix) Hydro Mechanical Equipment (Gates):** These are constructed to control the discharge as well as to facilitate planned and controlled reservoir operation and for maintenance purposes. These consist of the following:
- Six nos. of Radial Gates with rope drum hoist over the Spillway Crest.
  - Stop Log Gate on the Spillway Crest.
  - Power Intake Service and Emergency gates of vertical fixed wheel roller type with rope drum hoist.
  - Sluice Service and Emergency gates of vertical fixed wheel roller type with rope drum hoist.
  - Surge Shaft gate of vertical roller type with rope drum hoist.
  - Two Draft Tube Gates with rope drum hoist in Power House.
  - Tail Race tunnel (TRT) outlet gate of vertical roller type with rope drum hoist.
- x) Electro Mechanical Works:** Two Vertical Francis Turbine-driven Generating Units, each of 20MW capacity and operating under a Rated Head of 65.40 m are installed in the Power House. Two nos. 3-Phase Step-up 11/132 kV, 24.5 MVA Transformers are located in a Transformer Yard on the downstream Draft Tube Deck at an elevation of 76.50 m. The Transformer on the 11kV side is connected to the Generator by 11kV segregated phase Bus Duct. The 132 kV side of the Transformer is connected through 132 kV overhead short lines to the 132 kV Outdoor Switchyard (60.00 m x 40.00 m) located at an elevation of 90.00 m and at a distance of 50 m from the Transformer Yard. The Switchyard has five 132 kV Bays (2-Incoming Bays, 1-Bus Coupler Bay and 2-Outgoing Bays). Power is evacuated through two nos 132 kV feeders. One (1) feeder is terminated at 132Kv Switchyard of Old Umtru Power Station and the other in EPIP-II Sub-

Station, Norbong. The Generating Units (Turbines, Generators and all other required electrical and mechanical equipment and auxiliaries) are designed for continuous 10% overload capability (over and above the Unit Rating of 20 MW at a Rated Head of 65.40 m), which may be utilized during occurrence of any of the two conditions, viz., (i) Shutdown of any one of the two Units and (ii) High discharge conditions during monsoon period.

## **1.2. Capital Cost**

### **1.2.1. Regulatory Provisions**

Regulation 52 of the MSERC MYT Regulations, 2014 provides for norms of determining the Capital Cost. The same is reproduced below for reference.

#### ***Regulation 52: Capital cost***

*“52.1 The actual capital expenditure on the date of commercial operation in the case of new investment shall be subject to prudence check by the commission.*

*52.2 Scrutiny of cost estimates by the Commission shall be limited to the reasonableness of the capital cost, financial plan, and interest during construction period, use of efficient technology, and such other matters for determination of tariff.*

.....

*52.8 In case the site of a hydro generating station is awarded to a developer (not being a state controlled or owned company), by a State Government by following a two stage transparent process of bidding, any expenditure incurred or committed to be incurred by the project developer for getting the project site allotted shall not be included in the capital cost.*

*Provided the capital cost in case of such hydro station shall include:*

- (a) Cost of approved rehabilitation and resettlement (R&R) plan of the project in conformity of National R&R policy and (R&R) package as approved; and*
- (b) Cost of the developer's 10% contribution towards Rajiv Gandhi Grameen, Vidyutikaran Yojana (RGGVY) project in affected area.”*

#### ***Regulation 29: Additional Capitalization***

Regulation 29 of the MSERC MYT Regulations, 2014 provides for additional capitalization. The same is reproduced hereunder:

#### ***“29 Additional Capitalization***

*29.1 The following capital expenditure, actually incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to the prudence check:*

- a) Due to Un-discharged liabilities within the original scope of work;*
- b) On works within the original scope of work, deferred for execution;*



c) To meet award of arbitration and compliance of final and unappealable order or decree of a court arising out of original scope of works;

d) On account of change in law;

e) On procurement of initial spares included in the original project costs subject to the ceiling norm specified;

f) Any additional works/services, which have become necessary for efficient and successful operation of a generating station or a transmission system or a distribution system but not included in the original capital cost”

29.2 Impact of additional capitalization on tariff, as the case may be, shall be considered during Truing Up of each financial year of the Control Period.”

The definition of **cut off** as per Clause 2 of the MSERC 2014 Regulations is given below for reference:

19) “Cut-off Date” means 31<sup>st</sup> March of the year closing after two years of the year of commercial operation of the project, and in case the project is declared under commercial operation in the last quarter of a year, the cutoff date shall be 31<sup>st</sup> March of the year closing after three years of the year of commercial operation;

### 1.2.2. Capital Cost of NUHEP

The New UmtruHEP achieved its CoD on 1st July 2017. However, the Utility incurred additional capital costs on the following grounds:

- a) Undischarged liabilities
- b) Works deferred for execution
- c) Additional works required for efficient functioning of the project

As per the regulation, the works which are within the original scope of works but deferred for execution and works due to un-discharged liabilities within the original scope of work, will form the part of additional capitalization. As per Regulation 29 of the MSERC MYT Regulations, 2014 (the clause mentioned above) the project can have additional capex works till 31<sup>st</sup> March 2020. The Utility has incurred additional capex for NUHEP till 30<sup>th</sup> September 2019 which is well within the cutoff date of 30<sup>th</sup> March, 2020, for consideration in the capital cost of NUHEP.

The final capital cost audit for New Umtru HEP is also complete and is attached as Annexure B. Given below are the details of capital cost as verified by statutory auditor:

**Table 1: Capital Cost of NUHEP**

Capital Cost	Amount (In INR Cr.)
Audited Capital Cost as on 31 March 2018	580.71
Audited Capital Cost as on 31 March 2019	583.73
<b>Final Audited Capital Cost</b>	<b>584.00</b>

However, the actual capital cost for NUHEP has not been approved in entirety by the Auditor. The actual capital cost for NUHEP works is attached as annexure I and is given below for reference.

**Table 2: Capital Cost of NUHEP (Based on Actuals)**

<b>Capital Cost</b>	<b>Amount (In INR Cr.)</b>
Capital Cost as on 31 March 2018	603.96
Capital Cost as on 31 March 2019	606.98
<b>Final Capital Cost</b>	<b>607.25</b>

**The Utility has used the final capital cost (based on actuals) for calculation of different components of AFC for NUHEP in the subsequent chapters.**

The infirm power is calculated by SLDC as the total units multiplied by the UI rates based on monthly energy data submitted to NERLDC which comes at INR 1.22 Cr. The same has been adjusted to arrive at the net actual capital cost of INR 607.25 Cr. for NUHEP (Table 2 above). The details of cost of infirm power during April, May and June of 2017 has been provided in **Annexure – J (i) to (iii)**.

In line with the provisions of MSERC Regulations and as instructed by the Gov.t of Meghalaya for third party evaluation of the project cost, the Utility appointed IIT Guwahati to study the technical and financial aspects and for third party vetting of the project cost. **The report is attached as Annexure -C**. The administrative approval from the State Govt. for implementation of the project is attached as **Annexure -D**. The same is required before commencement of works for the project. The Utility also obtained Environmental Clearance for the NUHEP project which is attached as **Annexure -E**.

MePGCL submits before the Hon'ble Commission to kindly approve the final actual capital cost of New UmtruHEP as **INR 607.25 Cr.**

### **1.3. Funding Pattern of NUHEP**

The New Umtru HEP was funded by a mix of Loan and Equity as elaborated below.

**Table 3: Funding pattern of NUHEP**

<b>Capital funding</b>	<b>Total (INR Cr.)</b>	<b>Loan (INR Cr.)</b>	<b>Equity (INR Cr.)</b>
Capital cost as on 31 <sup>st</sup> March 2018	603.96	415.36	188.60
Capital cost as on 31 <sup>st</sup> March 2019	606.98	418.38	188.60
Final Capital cost	607.25	418.65	188.60

Abstracts of various notifications of loan and equity disbursement is provided as Annexure –F (i) to (iii).

As seen in the above table, the equity component for the NUHEP project is greater than 30%. Equity portion greater than 30% of the capital cost has been considered as normative loan in line with the MSERC MYT Regulations which is given below for reference.

#### ***“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;”

The above funding pattern for the capital cost has been used to compute components of tariff in the subsequent sections.

#### **1.4. Operational norms and Design Energy**

##### **1.4.1. Norms of Operation**

Regulation 58 of the MSERC (Multi Year Tariff) Regulations, 2014 provides for norms of operation of 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, e.g. 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.”

The features of the NUHEP in terms of type of plant, type of excitation, etc. are provided in the table below:

**Table 4: Features of NUHEP**

Particulars	New Umtru
<b>Type of Station</b>	
Surface/ Underground	Surface (Deep set)
Purely ROR/ Pondage/ Storage	RoR with Pondage
Peaking/ Non-Peaking	Non-Peaking
No. of hours Peaking	NA
Overload Capacity	10%
<b>Type of Excitation</b>	
Rotating exciters on Generator	Nil
Static excitation	Static type

#### 1.4.2. Design Energy

The plant is designed to generate 193 Million Units (235 Mu if old Umtru Power Station is not operated) of electricity in a year. It is submitted that the Design Energy of 235 MU shall be adopted for computation of Energy charge till old Umtru Station is renovated and start generation.

#### 1.4.3. Normative Annual Plant Availability Factor (NAPAF)

Based on the Regulation 58.1 of the MYT Regulations, 2014 quoted above, the NAPAF for NUHEP works out to be 67.60%. Considering the allowance of 5% for difficulties in North Eastern Region, the net NAPAF for NUHEP is computed at 62.60%. The computation of NAPAF is furnished as Annexure -G.

#### 1.4.4. Auxiliary Consumption and Transformation Losses

The New Umtru HEP is a surface hydroelectric power generating station with static excitation system. Therefore, based on Regulation 58.2 (b) and 58.3 of the MSERC MYT Regulations, 2014 quoted above, the normative auxiliary consumption and transformation losses applicable for NUHEP are as shown below:

**Table 5: Auxiliary Consumption and Transformation Losses of NUHEP**

Particulars	Rate
Auxiliary consumption for surface hydroelectric power generating stations with static excitation system	1.0%
Transformation losses from generation voltage to transmission voltage	0.5%

#### 1.4.5. Gross and Net Generation for NUHEP

Net Generation for FY 2017-18 (Actual from July, 2017 to March 2018), FY 2018-19 and FY 2019-20 (April 2019 – Sept 2019) is provided in the table below:

**Table 6: Actual Generation of NUHEP**

Petition for Approval of Final Capital Cost, AFC For FY 2018-29 to FY 2020-21 of MYT Second Control Period, And  
 Tariff for FY 2020-21 of NUHEP

<b>Year</b>	<b>Gross Generation (MU)</b>	<b>Normative Aux Cons @ 1% of Energy Generated (MU)</b>	<b>Normative Transformation Loss @ 0.50% of Energy Generated (MU)</b>	<b>Net Generation (MU)</b>
FY 2017-18	173.61	1.74	0.87	171.01
FY 2018-19	179.82	1.80	0.90	177.12
FY 2019-20 (April – Sept)	97.18	0.207	0.693	96.49

## 2. AFC for FY 2018-19 to FY 2020-21 of MYT Second Control Period

### 2.1. Approach

In accordance with the provisions of the MYT Regulations, 2014, MePGCL hereby submits AFC for FY 2018-19 to FY 2020-21 based on final actual capital cost (**Table 2 of Section 1.2.2**) and other available data.

MePGCL submits that Power Purchase Agreement (PPA) for supply of power to MePDCL has been signed and as per the PPA, 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.

### 2.2. Operational norms, Design Energy and Approved Energy Generation

Details of Design Energy, NAPAF, features of the NUHEP in terms of type of plant, type of excitation have been provided in Section 1.4.

As per the approved Business Plan for MYT control period from FY 2018-19 to FY 2020-21 dated 15<sup>th</sup> November 2017, the approved energy generation for each year of the control period is 219 MU for FY 2019-20 and FY 2020-21. The table below provides the Approved Energy Generation and Net Generation for FY 2018-19 to FY 2020-21:

**Table 7: Approved Energy Generation of NUHEP**

Year	Approved Energy Generation (MU)	Normative Aux Cons @ 1% of Energy Generated (MU)	Normative Transformation Loss @ 0.50% of Energy Generated (MU)	Net Generation (MU)
FY 2019-20	219	2.19	1.10	215.72
FY 2020-21	219	2.19	1.10	215.72

MePGCL submits before the Hon'ble Commission to kindly approve the total net generation as provided in table above for NUHEP.

### 2.3. Components of Tariff

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”

Based on above provisions, MePGCL computes and provides herewith various cost elements for determination of tariff.

### 2.3.1. Gross Fixed Assets (GFA) & Additional Capex & Capitalization

The Utility has requested the Hon’ble Commission to approve the final capital cost of NUHEP as INR 607.25 Cr. The NUHEP started its commercial operation on 1 July 2017. The details of actual capital cost of NUHEP as on March 2018, March 2019 and final cost has been provided in Section 1.2.2.

Gross Asset addition based on the capital cost as on commercial date of operation and subsequent additional capitalization has been given below:

**Table 8: Gross Fixed Asset Details (INR Cr.)**

Particulars	FY 2017-18 (Actual)	FY 2018-19 (Provisional)	FY 2019-20 (Estimated)	FY 2020-21 (Projected)
Opening GFA (a)	0.00	603.96	606.98	607.25
Additions during the year (b)	603.96	3.02	0.27	-
Retirements during the year (c)	-	-	-	-
<b>Closing GFA (d=a+b-c)</b>	<b>603.96</b>	<b>606.98</b>	<b>607.25</b>	<b>607.25</b>

MePGCL submits before the Hon’ble Commission to kindly approve Gross Fixed Assets for NUHEP as submitted in the above table. Any further asset addition due to subsequent capex works will be adjusted in the true up of NUHEP.

### 2.3.2. Return on Equity (RoE)

The return on equity for NUHEP has been computed based on Regulation 31 read with Regulation 27 of the MSERC MYT Regulations, 2014. The relevant sections of the Regulations are reproduced hereunder:

#### **“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%.

...

## 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.”

The Return on Equity of NUHEP for control period FY 2018-19 to FY 2020-21 is shown in the table below:

**Table 9: Return on Equity (RoE) of NUHEP (INR Cr.)**

Particulars	FY 2018-19 (Provisional)	FY 2019-20 (Estimated)	FY 2020-21 (Projected)
Opening Equity (INR Cr.) (a)	188.60	188.60	188.60
Addition of Equity (INR Cr.) (b)	0.00	0.00	0.00
Closing Equity (INR Cr.) (c=a+b)	188.60	188.60	188.60
Average Equity Base (INR Cr.) (d=a+c/2)	188.60	188.60	188.60
30% of Capital Cost (e)	182.09	182.18	182.18
<b>Equity to be considered for RoE Calculations (f=lower of d and e)</b>	<b>182.09</b>	<b>182.18</b>	<b>182.18</b>
RoE (%) (g)	14%	14%	14%
<b>Return on Equity (INR Cr.) (h=f*g)</b>	<b>25.49</b>	<b>25.50</b>	<b>25.50</b>
<b>Equity Portion to be treated as Normative Loan (INR Cr.) (i=d-e)</b>	<b>6.50</b>	<b>6.42</b>	<b>6.42</b>

Regulation 27 of the MSERC MYT Regulations, 2014 provides the guidelines for **normative loan**. As per the regulation, if the equity invested in a project is more than 30% of the total capital cost of the project, the additional equity component is treated as **normative loan**. As can be observed from the above table, **INR 6.42 Cr** (total equity portion of capital cost – equity as 30% of capital cost) has been treated as normative loan for computation of AFC for the control period. The Normative loan amount has been used for computing interest on normative loan (**Section 2.3.3 Interest on Loan**).

MePGCL submits before the Hon'ble Commission to kindly approve the Return on Equity as computed in the above table for NUHEP for the control period.

### 2.3.3. Interest on Loan and Finance Charges

Regulation 32 read with regulation 27 of the MYT Regulations, 2014 provides the guidelines for computation of interest and finance charges. The relevant sections of the regulations are reproduced below:



**“32 Interest and finance charges on loan capital**

*32.1 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 lending rate specified therein.*

*Provided that the outstanding loan capital shall be adjusted to make it consistent with the loan amount determined in accordance with regulation 27.”*

**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.”*

As detailed in the section 1.3 above, loan component for final NUHEP Capital cost is INR 418.65 Cr. and the Utility is fulfilling the interest obligations as on date.

The Interest on Loan for the control period has been computed by considering Interest obligation for the project loans. The detailed Loan statement along with repayment schedule is enclosed as Format-7 of Annexure -H. The summarized statement of Interest and Finance charges due to project loans for the Control Period is shown below:

**Table 10: Computation of Interest on Loan - NUHEP**

<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
Opening Balance (a) (INR Cr.)	479.49	448.04	418.55
Addition during the Year (b) (INR Cr.)	0.00	1.96	2.06
Repayment during the Year (c) (INR Cr.)	31.45	31.45	31.45
<b>Closing Balance (d=a+b-c) (INR Cr.)</b>	<b>448.04</b>	<b>418.55</b>	<b>387.10</b>
Average Interest Rate (e)	12.05%	12.02%	11.98%
<b>Interest Payable on Loan (f=(a+d)/2*e) (INR Cr.)</b>	<b>55.89</b>	<b>52.08</b>	<b>48.26</b>

PFC had sanctioned a loan amount of INR 440.30 Cr. for NUHEP, whereas INR 418.65 Cr. was used for NUHEP project works. Based on this, the interest payable on loan has been apportioned based on the actual loan utilization of NUHEP for MYT 2<sup>nd</sup> control period, and has been shown below:

**Table 11: Interest on Loan Apportioned - NUHEP (INR Cr.)**

<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
Interest payable for the year (a)	<b>55.89</b>	<b>52.08</b>	<b>48.26</b>
PFC Loan for NUHEP (b)		440.30	
Actual Loan Amount used for NUHEP works (c)	418.38	418.65	418.65
<b>Interest payable for the year Apportioned (d=a*c/b)</b>	<b>53.11</b>	<b>49.52</b>	<b>45.89</b>

As mentioned in Section 2.3.2, **INR 6.42Cr.** has been treated as normative loan for the MYT 2<sup>nd</sup> control period. The interest payable on the Normative loan amount for FY 2018-19 to FY 2020-21 for NUHEP has been calculated as below:

**Table 12: Computation of Interest Due to Normative Loan – NUHEP (In Rs Cr)**

<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
Opening Balance (a) (INR Cr.)	0.00	6.42	5.96
Addition during the Year (b) (INR Cr.)	6.42	0.00	0.00
Repayment during the Year (c) ** (INR Cr.)	0.00	0.46	0.46
<b>Closing Balance (d=a+b-c) (INR Cr.)</b>	<b>6.42</b>	<b>5.96</b>	<b>5.51</b>
Interest Rate (e)*	12.05%	12.02%	11.98%
<b>Interest Payable on Normative Loan (f=d*e) (INR Cr.)</b>	<b>0.39</b>	<b>0.74</b>	<b>0.69</b>

\* Interest Rate for Normative Loans has been computed by considering the average interest rate of projects loans for NUHEP for a given year.

\*\* Repayment period has been considered equal to the repayment period of loan component, i.e., 14 years.

**Table 13: Computation of Net Interest on Loan - NUHEP (INR Cr.)**

<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
Interest Payable on Loan Apportioned (from Table 10 (a))	53.11	49.52	45.89
Interest Payable on Normative Loan (from Table 11 (b))	0.39	0.74	0.69
<b>Net Interest on Loan and Finance Charges (c=a+b)</b>	<b>53.50</b>	<b>50.26</b>	<b>46.57</b>

MePGCL submits before the Hon'ble Commission to kindly approve the Interest and Finance Charges for FY 2018-19, FY 2019-20 and FY 2020-21 respectively for NUHEP as shown in the table above.

#### **2.3.4. Operation and Maintenance Expenses**

As per Regulation 56 of the MYT Regulations, 2014, the Operation and Maintenance Expenses for new generating plants (commissioned after 1st April, 2009) is to be determined on a normative basis. The extract of the relevant regulation is reproduced below:

***“56 Operation and maintenance expenses***

*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”*

Since NUHEP achieved its CoDon 1<sup>st</sup> July 2017, i.e., after 1.04.2009, its O & M expenses have been computed as per Regulation 56 (7) based on the above regulations. But as there were some additional capitalization after CoD which adds to the actual capital cost, the O&M cost for FY 2018-19 to FY 2020-21 has been calculated as per the norms but based on the actual capital cost as at the end of that

financial year. The details of O&M expense of NUHEP for FY 2018-19 to FY 2020-21 of the MYT 2<sup>nd</sup> control period is shown below:

**Table 14: O&M Expenses of NUHEP (In INR Cr.)**

<b>Particulars</b>	<b>Amount</b>
Capital Cost of NUHEP as on 31st March 2018	603.96
O&M Expenses for FY 2017-18 (2% of Project Cost)	12.08
Capital Cost of NUHEP as on 31st March 2019	606.98
O&M Expenses for FY 2018-19 (5.72% escalation but with capital cost as on 31.03.2018)	12.83
Final Capital Cost of NUHEP	607.25
O&M Expenses for FY 2019-20 (5.72% escalation but with final capital cost)	13.57
O&M Expenses for FY 2020-21 (5.72% escalation over previous Year)	14.35

MePGCL submits before the Hon'ble Commission to kindly approve the O&M expenses of NUHEP as computed above for FY 2019-20 and FY 2020-21 for the MYT control period.

### 2.3.5. Depreciation

Since the detail of category-wise assets (Break Up as in Format 6) is not available at this point of time, MePGCL has computed the depreciation at a flat rate of 5.26% on the average GFA for the year. **The Hon'ble Commission in the tariff order dated 6 November 2017 for provisional tariff of NUHEP, had computed INR 27.27 Cr. depreciation (full year depreciation) on asset base of INR 518.54 Cr, from which average depreciation of 5.26% has been derived by the Utility.**

Based on the above, the depreciation of NUHEP for the control period is computed below:

**Table 15: Depreciation of NUHEP for Control Period (INR Cr.)**

<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
Value of Assets at the beginning of the year (a) (INR Cr.)	603.96	606.98	607.25
Addition during the year (b) (INR Cr.)	3.02	0.27	-
Withdrawn during the year (c) (INR Cr.)	-	-	-
Value of Assets at the end of the year (d=a+b-c) (INR Cr.)	<b>606.98</b>	<b>607.25</b>	<b>607.25</b>
Average Value of Asset (e=(a+d/2)) (INR Cr.)	605.47	607.12	607.25
Average depreciation (%) (f)	5.26%	5.26%	5.26%
<b>Depreciation charges for the year (g=e*f) (INR Cr.)</b>	<b>31.85</b>	<b>31.93</b>	<b>31.94</b>

The Utility will adjust the actual depreciation based on category - wise assets vis-a-vis projected depreciation in the true up for the particular year. Based on the above submissions, MePGCL submits before the Hon'ble Commission to kindly approve the depreciation for NUHEP as computed above.

### 2.3.6. Interest on Working Capital

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:*

*Interest on working capital shall be allowed at a rate equal to the State Bank Advance Rate (SBAR) as on 1st April of the financial year in which the Petition is filed.”*

As per the above-mentioned regulation, the computation of Interest on Working Capital for NUHEP is shown below:

**Table 16: Interest on Working Capital of NUHEP**

<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
Operation and Maintenance Expense for One Month (INR Cr.) (a)	1.07	1.13	1.20
Maintenance Spares at 15% O&M (INR Cr.) (b)	1.93	2.04	2.15
Two Months Receivables of AFC (INR Cr.) (c)	22.10	21.70	21.20
<b>Working capital required (INR Cr.) (d=a+b+c)</b>	<b>25.10</b>	<b>24.86</b>	<b>24.55</b>
SBI short term PLR (%) (e)	13.45%	13.80%	13.80%
<b>Amount of interest on working capital (INR Cr.) (f=d*e)</b>	<b>3.38</b>	<b>3.43</b>	<b>3.39</b>

MePGCL submits before the Hon’ble Commission to kindly approve the Interest on Working Capital for NUHEP as computed above.

**2.3.7. Income Tax**

Regulation 35 of the MYT Regulations, 2014, provides for claim of Income Tax as expenses. MePGCL submits that in the control period, income tax would be charged at the effective Minimum Alternate Tax (MAT) rate on the return on equity. The effective MAT rate prevailing is as shown below:

**Table 17: Effective Tax Rate**

<b>Particulars</b>	<b>Rate</b>
MAT Rate	18.5%
Surcharge rate for net income > 1 Cr.	15.0%

Particulars	Rate
MAT + Surcharge	21.3%
Education and Higher Education Cess thereon	3.0%
Total effective tax rate	21.91%

Accordingly, the tax payable on the Return on Equity of NUHEP works out as below:

**Table 18: Income tax on NUHEP**

Particulars	FY 2018-19 (Provisional)	FY 2019-20 (Estimated)	FY 2020-21 (Projected)
Return on equity (INR Cr.) (a)	25.49	25.50	25.50
Effective tax rate (%) (b)	21.91%	21.91%	21.91%
<b>Tax payable (INR Cr.) (c=a*b)</b>	<b>5.59</b>	<b>5.59</b>	<b>5.59</b>

MePGCL submits before the Hon'ble Commission to kindly approve the Income Tax for NUHEP as computed above.

### 2.3.8. Non-Tariff Income

Based on the provisional figures available for FY 2018-19, the Non-Tariff income for NUHEP is INR 0.112 Cr. for FY 2018-19. Accordingly, the Utility has determined the non-tariff income for FY 2019-20 and FY 2020-21 considering a 3% year on year increment. The same is shown below for reference.

**Table 19: Non-Tariff Income**

Particulars	FY 2018-19 (Provisional)	FY 2019-20 (Estimated)	FY 2020-21 (Projected)
Non-Tariff Income (INR Cr.)	0.112	0.116	0.119

MePGCL submits before the Hon'ble Commission to kindly approve the non-tariff income for NUHEP as computed above.

### 2.3.9. Summary of Annual Fixed Cost of New Umtru Hydro Electric Plant

Based on the submissions in the previous sections, the summary of the total fixed cost of NUHEP for 2nd MYT Control Period is provided in the table below:

**Table 20: Total AFC of NUHEP (In INR Cr.)**

Sl. No.	Particulars	FY 2018-19 (Provisional)	FY 2019-20 (Estimated)	FY 2020-21 (Projected)
1	Interest on Loan capital	53.50	50.26	46.57
2	Depreciation	31.85	31.93	31.94
3	O&M Expenses	12.83	13.57	14.35
4	Interest on working capital	3.38	3.43	3.39
5	Return on Equity	25.49	25.50	25.50
6	Income Tax	5.59	5.59	5.59
7	Net Prior Period Items	0.08		
	<b>Total Annual Fixed Cost</b>	<b>132.71</b>	<b>130.29</b>	<b>127.35</b>

Petition for Approval of Final Capital Cost, AFC For FY 2018-19 to FY 2020-21 of MYT Second Control Period, And  
Tariff for FY 2020-21 of NUHEP

<b>Sl. No.</b>	<b>Particulars</b>	<b>FY 2018-19 (Provisional)</b>	<b>FY 2019-20 (Estimated)</b>	<b>FY 2020-21 (Projected)</b>
8	Less: Non-Tariff Income	0.112	0.116	0.119
	<b>Net Annual Fixed Cost</b>	<b>132.60</b>	<b>130.18</b>	<b>127.23</b>

MePGCL prays before the Hon'ble Commission to kindly approve AFC for MYT 2<sup>nd</sup> Control period as shown in the table above.

### 3. Computation of Capacity Charge and Energy Charge

#### 3.1. Regulatory Provisions

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 the following provisions of the MYT Regulations, 2014:

#### ***“57 Computation and payment of capacity charge and energy charge for Hydro generating 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*

$$= AFC \times 0.5 \times NDM / NDY \times (PAFM / NAPAF) \text{ (in Rupees)}$$

*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:*

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

*Where,*

*AUX = Normative auxiliary energy consumption in percentage*

*DC<sub>i</sub> = 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:

$$= (\text{Energy charge rate in Rs. / kWh}) \times \{\text{Scheduled energy (ex-bus) for the month in kWh}\} \times (100 - \text{FEHS}) / 100.$$

(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):

$$\text{ECR} = \text{AFC} \times 0.5 \times 10 / \{ \text{DE} \times (100 - \text{AUX}) \times (100 - \text{FEHS}) \}$$

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  $100 / (100 - \text{AUX})$ .

(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  $\{ \text{DE} \times (100 - \text{AUX}) \times (100 - \text{FEHS}) / 10000 \}$  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.”

### 3.2. Capacity Charge and Energy Charge for New Umtru HE Project

As submitted in the previous sections, the net Annual Fixed Cost to be considered for the determination of final tariff of NUHEP is as shown below:

**Table 21: Annual Fixed Cost – New Umtru HEP (INR Cr.)**

Particulars	FY 2018-19 (Final)	FY 2019-20 (Estimated)	FY 2020-21 (Projected)
<b>Net Annual Fixed Cost</b>	<b>132.60</b>	<b>130.18</b>	<b>127.23</b>

Now, based on the Regulations, 50% of the Annual Fixed Cost is to be recovered as fixed charge and the balance is to be recovered as energy charge from the beneficiary. As per the approved Business Plan for MYT control period from FY 2018-19 to FY 2020-21 dated 15 November 2017, the approved energy generation for FY 2020-21 is 219 MUs. The same has been used for computation of energy tariff for NUHEP. Therefore, the fixed and energy charges for NUHEP for FY 2020-21 are as computed below:

**Table 22: Fixed and Energy Charges for New Umtru HEP for the Control Period**

Particulars	FY 2020-21 (Projected)
<b>Net AFC for Computation of Tariff (INR Cr.)</b>	<b>127.23</b>
<b>Energy Approved in Business Plan (MU)</b>	219.00
Less: Auxiliary Consumption @ 1%	2.19
Less: Transformation Loss @ 0.5%	1.10
<b>Net Energy (MU)</b>	215.72
Fixed Charge (INR Cr.)	63.61
Variable Charge (INR/ kWh)	2.95

Based on all the above submissions, the petitioner humbly prays before the Hon'ble Commission to kindly approve the tariff for FY 2020-21 of New Umtru Hydro Electric Project as computed in the above table.