GUJARAT ELECTRICITY REGULATORY COMMISSION
Gandhinagar

Order No. 5 of 2016

In the matter of: **Determination of Tariff and other terms & conditions for procurement of Power by Distribution Licensees from small, mini and micro hydro power projects in the State of Gujarat.**

In exercise of the powers conferred under Sections 3(1), 61(h), 62(1)(a) and 86(1)(e) of the Electricity Act, 2003, guidelines of the National Electricity Policy, 2005, Tariff Policy, 2016 and all other powers enabling it in this behalf, the Gujarat Electricity Regulatory Commission (hereinafter referred to as "the Commission") determines the generic tariff and other terms & conditions for procurement of power by the Distribution Licensees in Gujarat from small, mini and micro hydro power projects.

The Commission had earlier issued generic tariff order and other terms & conditions for procurement of power by distribution licensees from small, mini and micro hydro power projects in Gujarat on 14th June 2007 in Petition No. 853/2005.

1. BACKGROUND

1.1 Potential for Small Hydro Power Projects

As per Ministry of New and Renewable Energy (MNRE), the potential for power generation from small, mini and micro hydro power projects in Gujarat is 201.97 MW. This potential includes the SHP schemes identified by the government agencies as well as private developers.

As per the information provided by Sardar Sarovar Narmada Nigam Ltd (SSNNL) the total estimated potential of small, mini and micro hydro power projects on Narmada branch canals, is around 105.71 MW. SSNNL has already awarded the EPC work for development of SHP projects of 85.46 MW on various branch canals of Narmada canal. Besides this, SSNNL has estimated an additional potential of hydro power development of 6 MW (2X3 MW) at Garudeshwar weir and 4 MW (2X2 MW) at Sabarmati escape hydro project.

1.2 Gujarat Small Hydel Policy - 2016

Government of Gujarat has notified the 'Gujarat Small Hydel Policy 2016' on 28th March 2016. Some important provisions of this Policy are listed below:

- The operative period of this policy is five years from the date of notification of the policy.
- The classification of hydel projects as per this policy is as follows:
  - Micro hydel: up to 100 kW
  - Mini hydel: 100 kW to 2 MW (unit size of up to 1 MW)
  - Small hydel: 2 MW to 25 MW (unit size up to 5 MW)
- Any individual, company or corporate body or association or body of individuals will be eligible for setting up the projects for the purpose of self-consumption (captive use), third party sale or sale to obligated entities to meet their Renewable Purchase Obligation (RPO).
- The developer may select suitable site in consultation with the concerned authorities and prepare a Detailed Project Report (DPR) taking into account the detailed study of past records of availability of water from the reservoir / canal and feasibility of site location for the project. Afterwards, he can submit the proposal to the concerned agency for allotment of the site and the concerned agency may allot the site(s) as per the relevant provisions of the Gujarat Infrastructure Development Act, 1999.
- Alternatively, Narmada, Water Resources, Water Supply & Kalpsar Department or such other Government Department may identify suitable sites, prepare DPR and offer the same to the developers through competitive bidding.
- Gujarat Energy Development Agency (GEDA) shall be the State nodal agency for facilitation and implementation of the projects. All the projects should be registered with GEDA.
- Interconnection voltage should be governed by Gujarat Electricity Grid Code-2013 and GERC's orders, as amended from time to time.
- The evacuation facility shall be approved by GETCO / DISCOM after conducting the system studies. The developer shall establish the dedicated transmission lines for evacuation up to the nearest GETCO sub-station/ DISCOM network at their own cost. ABT compliant meter is required to be installed at interface points.
- Obligated entities may purchase power to fulfil their RPO at the tariff determined by GERC or rate determined through competitive bidding.
- Upon entering the PPA, the developer shall be required to furnish the bank guarantee of Rs 5 lakh per MW or part thereof.

- The Open Access charges have been specified in the policy.
- Electricity generated from SHP projects is exempted from payment of Electricity Duty in case of captive and third party sale. Exemption is given from demand cut to the extent of 50% of installed capacity of SHP project in case of captive and third party sale within the State.
- The release of water in canals shall be controlled by Narmada, Water Resources, Water Supply & Kalpsar Department or SSNNL, as the case may be, and the availability of canal water for hydro-electricity generation shall be solely incidental to the requirement of water for drinking, irrigation etc. The developer shall have no right to claim release of water for the purpose of hydel generation.

1.3 GERC Multi Year Tariff Regulations, 2016

The Commission had notified 'Multi Year Tariff Regulations, 2016' on 29th March, 2016, which is applicable for determination of tariff for all existing and future Generating Companies, Transmission Licensees, Distribution Licensees and their successors, if any. It is through the framework of these Regulations, the Commission determines tariffs for various cases including supply of electricity by a Generating Company to a Distribution licensee, intra-state transmission of electricity, intra-state wheeling of electricity, retail supply of electricity, etc. The objectives of MYT Regulations are:

- Provide regulatory certainty to the utilities, investors and consumers.
- Address the risk sharing mechanism between utilities and consumers based on controllable and uncontrollable factors.
- Ensure financial viability of the sector to attract investment, ensure growth and safeguard the interest of the consumers.
- Review operational norms for generation, transmission, distribution and supply.
- Promote operational efficiency and through its improvement in long term, rationalize tariffs.

  The Commission within the framework of these Regulations and the broad principles outlined in the Tariff Policy of Central Government has to determine the tariff for procurement of power by distribution licensees in the State.

1.4 Renewable Purchase Obligation (RPO) in Gujarat

The Commission has amended the Principal GERC (Procurement of Energy from Renewable Sources) Regulations, 2010 on 4th March 2014 as GERC (Procurement of Energy from Renewable Sources) (First Amendment) Regulations, 2014 (Notification No. 2 of 2014) and specified the RE technology specific RPO targets for FY 2013-14 to FY 2016-17. The Regulations specify the RPO target of 0.50% out of 10% for the obligated entities to be met from procurement of energy generated from other renewable sources of energy projects during FY 2016-17, which include the small, mini & micro hydro projects.

The Regulations recognise the certificates issued within the scope of Central Electricity Regulatory Commission's (CERC) Notification No. L-1/12/2010-CERC dated 14th January 2010 as the valid instruments for discharge of the mandatory obligations set out in these Regulations for the obligated entities to purchase electricity from renewable energy sources termed as Renewable Energy Certificates (REC).

The RPO targets specified under above Regulations are applicable to distribution licensees and any other captive and open-access users consuming electricity (i) generated from conventional captive generating plant having capacity of 5 MW and above for their own use and/or (ii) procured from conventional generation through open access and third-party sale.

1.5 GERC SHP Tariff Order 2007

The GERC, in its Order in Petition No. 853/2005 dated 14th June 2007, determined generic tariff and other terms & conditions for procurement of power by the Distribution Licensees from small, mini and micro hydel projects in the State of Gujarat. The tariff was decided by the Commission on the basis of the then prevailing guidelines of the Ministry of Non-Conventional Energy Sources (MNES), Government of India (now renamed as Ministry of New and Renewable Energy) issued in 1995 and the proposal given by the Government of Gujarat (GoG). Although MNES prescribed tariff for non-conventional energy sources was Rs 2.25/kWh (as base price of 1995-96) with a minimum 5% escalation every year; the GoG under their proposal suggested SHP tariff as base price of Rs 2.60/kWh (at 1999-2000) with 3% annual escalation subject to the condition that escalation would be applicable only for the commissioning period specified in the project schedule. Accordingly, by taking into consideration the proposal submitted by GoG, the Commission had fixed the SHP tariff as Rs 3.29/kWh for FY 2007-08 which could be escalated at 3% per annum till the Commercial Operation Date (COD). The tariff so arrived at the time of COD shall prevail throughout the life of the SHP project. In accordance to the GoG SHP Policy of 2005, the control period of the tariff order was ten years.

1.6 GERC Discussion Paper on Determination of Tariff for Small Hydro Power Projects

The Commission prepared a discussion paper on "Determination of Tariff and other terms & conditions for procurement of Power by Distribution Licensees from Small, Mini and Micro Hydro Power projects in the State of Gujarat" during the new control period starting from date of issue of the new tariff order on the subject. The discussion paper was placed on the website of the Commission on 6th September 2016 for inviting comments and suggestions from the stakeholders. The list of stakeholders who have filed their written objections and suggestions is provided in Annexure-I.

1.7 Public Hearing

A public hearing was held on 3rd October 2016 at the office of the Commission to hear the stakeholder's views/suggestions /objections on the discussion paper. The list of those who participated in the hearing and made oral submission during the hearing is provided in Annexure-II.

2. DETERMINATION OF GENERIC TARIFF AND OTHER TERMS & CONDITIONS FOR PROCUREMENT OF POWER BY DISTRIBUTION LICENSEES FROM SMALL, MINI AND MICRO HYDRO POWER PROJECTS

2.1 Tariff Determination Methodology

The Commission has determined the small, mini and micro hydro power projects tariff based on the broad principles contained in the (i) GERC (Multi Year Tariff) Regulations, 2016, (ii) GERC (Procurement of Energy from Renewable Sources) Regulations, 2010, GERC (Procurement of Energy from Renewable Sources) (First Amendment) Regulations, 2014 and (iii) CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012.

2.2 Tariff Determination Approach

Tariff Policy dated 28th January 2016, notified by the Central Government in pursuance of Section 3 of the Electricity Act, 2003 stipulates that the appropriate Commission may determine tariff for procurement of power by distribution licensees from non-conventional sources of energy under *Section 62 of the Electricity Act, 2003,* till issuance of notification of procurement of power from renewable energy sources through competitive bidding by Central Government. The relevant extract of para 6.4 of the Tariff Policy is given below:

“.........(2) States shall endeavor to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government.

However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003. While determining the tariff from such sources, the Appropriate Commission shall take into account the solar radiation and wind intensity which may differ from area to area to ensure that the benefits are passed on to the consumers.

(3) The Central Commission should lay down guidelines for pricing intermittent power, especially from renewable energy sources, where such procurement is not through competitive bidding. The tariff stipulated by CERC shall act as a ceiling for that category.”

In view of the above, the Commission decides to continue with the cost-plus tariff approach as proposed in the discussion paper and as followed for other renewable energy technologies, for determination of tariff for procurement of electricity from small, mini and micro hydro power projects by the distribution licensees in the State during the next control period starting from the date of issue of this tariff order.

2.3 Preferential Tariff

Clause 6.4(1) of the Tariff Policy, 2016 provides that the State Electricity Regulatory Commissions shall fix minimum percentage of power purchase from non-conventional energy sources, taking into account the availability of such resources in the region and its impact on retail tariff. Clause 6.4(2) of Tariff Policy provides that states shall endeavor to procure power from renewable energy sources through competitive bidding from the date of notification to this effect from the Central Government. However, till such notification any such procurement of power from renewable energy sources may be done under Section 62 of the Electricity Act 2003. Keeping in view provisions of the Tariff Policy, and larger objectives with reference to climate change and global warming, the Commission has determined the tariff on cost-plus basis and other terms & conditions for procurement of power from small, mini and micro hydro power projects by Distribution Licensees.

With regard to the structure and design of the tariff, following two approaches are possible:

i) Single-Part Tariff Vs Two-Part Tariff

In case of renewable energy technologies, single-part tariff is adopted where no fuel cost component is involved in power generation whereas two-part tariff is generally adopted in case of RE technologies where fuel cost is involved in power generation. In the case of small, mini and micro hydro power projects, no fuel is used for generation of power. Therefore, the Commission has adopted single-part tariff for procurement of electricity from small, mini and micro hydro power projects by the distribution licensees in the State during the new control period starting from the date of issue of this order.

ii) Project Specific Tariff Vs Generic Tariff

A generic tariff mechanism would provide incentives to the investors for use of most efficient equipment to maximize returns and for selecting the most efficient site, while a project-specific tariff would provide each investor, irrespective of the machine type and the site selected, the stipulated return on equity and it would shield the investor from the uncertainties involved in capacity utilization due to machine choice and site location. Considering the small capacities and diverse ownership of the small, mini and micro hydro power projects, the Commission decides to determine the generic tariff, rather than going for a project specific tariff on case-to-case basis.

Tariff Design

The generic tariff in this order is determined on levelized basis. Levelization is carried out over the useful life of the small hydro project, whereas tariff is specified for the period equivalent to tariff period defined in this order. For the purpose of computation of levelized tariff, discount rate as specified in this order has been considered.

2.4 Computation of Tariff

2.4.1 General Principles

a. Control Period

The Commission in the discussion paper has proposed the control period from date of issue of order to 31st March 2019.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the control period.

Commission's Decision

The Commission decides to retain the control period as proposed in the discussion paper i.e. from the date of issuance this order to 31st March, 2019.

b. Useful Life of Plant and Tariff Period

The Commission in the discussion paper has proposed useful life and tariff period equal to 35 years for the small, mini and micro hydro power projects to be commissioned during the new control period starting from the date of issue of order.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the useful life of plant and tariff period.

Commission's Decision

The CERC in its 'RE Tariff Regulations 2012' as well as most of the other SERCs have considered the project life of 35 years for small, mini and micro hydro power projects. In view of this, the Commission decides to retain the useful life of the small, mini and micro hydro power projects and the tariff period as 35 years.

c. Tariff structure & design

The Commission in its discussion paper had proposed to award single-part generic tariff for small, mini and micro hydro power projects commissioned during the control period starting from the date of this order. The generic tariff in this order is determined on levelized basis over the useful life of the small, mini and micro hydro power projects.

Suggestions of the Objectors

One of the objectors suggested that Commission should determine project-specific tariff considering the varying civil costs involved in small hydro power projects (canal based or run-of-river projects) based on the terrain, and other such constraints. This will be a fair reflection of the actual costs incurred by the developer on the tariff so determined.

Ajanta Energy Pvt. Ltd has submitted that the generic tariff approved by the Commission in 2007 tariff order for SHP was valid till January 2015. The Commission may consider the simple arithmetic extrapolation of that tariff for year 2016-17 which works out to Rs. 4.28/kWh. They submitted that the tariff of Rs 4.28/kWh seems to be reasonable.

Commission's Decision

The benchmark technical and financial parameters for determination of generic tariff presented in the discussion paper is the result of detailed study of various aspects like the availability of hydro potential in the State, type and design of the upcoming SHP schemes, cost of installation of SHP projects etc. The SHP tariff determined in 2007 was decided by the Commission on the basis of the then prevailing guidelines of the Ministry of Non-Conventional Energy Sources (MNES), Government of India and the proposal of Government of Gujarat. The Commission through this discussion paper has initiated a fresh regulatory process for determination of generic tariff for small, mini and micro hydro power projects to be commissioned in the control period starting from the date of this order. In view of this, the Commission decides to retain the tariff structure and design as proposed in the discussion paper.

Eligibility Criteria

The Commission in its discussion paper has specified that the small, mini and micro hydro power projects using new plant and machinery and commissioned after the notification of this tariff order will be eligible to sell power to distribution licensees of Gujarat at tariff determined by the Commission in this order. As per definition of CEA, the SHP projects are classified as micro hydro projects having capacity up to 100 kW; mini hydro project with capacity from 101 kW up to 2MW and small hydro projects with capacity beyond 2 MW up to 25 MW.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the eligibility criteria specified in the discussion paper.

Commission's Decision

The Commission decides to retain the eligibility criteria for SHP projects as proposed in the discussion paper for availing the benefits under this tariff order.

d. Scheduling of Power and applicability of Intra-State ABT

The Commission in the discussion paper proposed to keep small hydro power projects out of the purview of Intra-state ABT mechanism / scheduling requirements during the control period of this order.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the scheduling of power and applicability of Intra-state ABT specified in the discussion paper.

Commission's Decision

As proposed in the discussion paper, the Commission decides that the small hydro power projects shall not be covered under the ambit of Intra-state ABT and no scheduling is required from such projects.

e. Applicability of merit order despatch principle

In the discussion paper it was proposed that, small hydro power project irrespective of its capacity shall be treated as 'MUST RUN' power plant and shall not be subjected to merit order despatch principles.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the applicability of merit order despatch specified in the discussion paper.

Commission's Decision

The Commission decides that, like other RE technologies the small hydro power projects shall be provided 'MUST RUN' status and exempted from the principle of Merit Order Despatch. However, the project operator shall follow the instructions of the grid operator in view of overall security of the grid.

f. Interconnection point and Metering point

In the discussion paper, it was proposed that the interconnection point will be at the line isolator on outgoing feeder on HV side of generator transformer and the metering point will be at the receiving end of GETCO sub-station.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the interconnection point and metering point.

Commission's Decision

The Commission decides to retain the interconnection and metering point as per the discussion paper, i.e. the interconnection point will be at the line isolator on outgoing feeder on HV side of generator transformer and the metering point will be at the receiving end of GETCO sub-station.

g. Subsidy or Incentive by State or Central Government

In the discussion paper it was proposed that the Commission while calculating the tariff shall take into account any incentive or subsidy offered by the Central and State Government, including the accelerated depreciation (AD) benefit if availed by the small hydro power projects. However, while deciding the tariff the Commission has proposed to include only the benefits accrued due to AD; any other benefits offered by the Central or State Government or their agencies like capital subsidy, if availed will be deducted by the distribution utilities in subsequent bills raised by the small hydro power project owner towards sale of electricity in suitable instalments or within such period as may be stipulated by the Commission.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the subsidy or incentive by State or Central Government.

Commission's Decision

The Commission decides to include the benefit of accelerated depreciation (AD) in the tariff However, any other benefits like capital subsidy, grant availed from the Central or State Government or other agencies, will be deducted by the distribution utilities in subsequent bills raised by the small hydro power project owner towards sale of electricity in suitable instalments or within such period as may be stipulated by the Commission. In such cases the project developer / distribution licensee shall file separate petition.

2.4.2 Operational and Financial Parameters

The following operational and financial parameters have been considered while determining the tariff for small hydro power projects under the cost-plus approach: -

a. Capital cost

b. Operations & Maintenance Charges

c. Capacity Utilization Factor (CUF)

d. Auxiliary Consumption

e. Debt-Equity Ratio

f. Loan Tenure and Rate of Interest on Term Loan

g. Depreciation

h. Working Capital and Interest on Working Capital

i. Return on Equity

j. Discount Rate

k. Income Tax

a. Capital Cost

In order to arrive at bench mark capital cost of SHP projects for tariff determination purpose, the Commission has carefully studied the SHP potential available in the State and the type and design of the SHP projects going to be set up in the control period of this order. The potential assessment study conducted by the Commission reveal that most of the future SHP schemes shall be developed on the irrigation canals. Considering the potential for canal based low head SHP schemes in the State, the Commission has studied the capital cost benchmark fixed by other Regulatory Commissions for similar SHP schemes under regulatory approach. The Commission has also studied the SHP costing benchmark monogram prepared by IIT, Roorkee as a part of study sponsored by MNRE. The trend of EPC cost of SHP projects discovered in tendering process conducted by SSNNL in the State of Gujarat has also been examined by the Commission. On the basis of above exercise, the Commission in its discussion paper had proposed a benchmark capital cost of Rs 8.20 Cr/MW for SHP projects up to 5 MW capacity and

Rs 7.48 Cr/MW for SHP projects between 5 MW to 25 MW capacity for tariff determination purpose. The proposed capital cost includes the cost of evacuation infrastructure from project site to GETCO sub-station.

Suggestions of the Objectors

One of the objectors suggested that rising cost of civil works should be taken in to account while fixing the benchmark capital cost for SHP projects. The Commission may consider a capital cost of Rs. 12 Crores/MW while determining the tariff for SHP projects. GUVNL in its submission stated that, for FY 2016-17 Hon'ble CERC has fixed benchmark capital cost at Rs. 6.46 Cr/MW and Rs. 5.92 Cr/MW for small hydro projects of capacity below 5 MW and SHP projects of capacity between 5 MW to 25 MW respectively. GUVNL requested the Commission to consider the capital cost as considered by CERC. Another objector stated that the capital cost considered by the Commission is high by comparing it with the capital cost considered by the CERC and other SERCs for canal based projects.

Commission's Decision

The benchmark capital cost proposed in the discussion paper was arrived at after studying all aspects as discussed above. The Commission has examined the capital cost benchmark fixed by CERC and other SERCs in their recent tariff orders/Regulations. The Commission has studied the SHP costing Benchmark Report prepared by IIT, Roorkee for MNRE. The Commission has also examined the cost of the SHP projects awarded by SSNNL at various locations of Saurashtra, Kachchh, Miyagam and Vadodara Branch Canals to different agencies. The Commission has also observed the capital cost related data of some of the SHP projects for which the DPRs have been submitted to Narmada Water Resources, Water Supply and Kalpsar Department, Government of Gujarat

In view of above, the Commission decides to retain the capital cost considered in its discussion paper for tariff determination purpose. The Commission decides the benchmark capital cost of Rs 8.20 Cr/MW for SHP projects up to 5 MW capacity and Rs 7.48 Cr/MW for SHP projects between 5 MW to 25 MW capacity. The capital cost considered by the Commission also includes the cost of evacuation infrastructure from project site to GETCO sub-station.

b. Operations & Maintenance Charges

Operations and Maintenance (O&M) cost consists of the statutory charges, spares, employee cost, administration and general expenses, consumables, repairs and maintenance, insurance expenses, etc. The Commission in the discussion paper had proposed O&M charges at 3.3 % of capital cost for SHP projects up to 5MW capacity and 2.5% of capital cost for SHP projects of 5 MW to 25 MW capacity. The annual O&M escalation for SHP projects was proposed @ 5.72% per annum from 2nd year onwards.

Suggestions of the Objectors

One of the objectors suggested that the wear and tear of electrical and mechanical components in low head SHP projects is very low due to its operation at very low RPM. This leads to low maintenance cost and requested that the O&M costs be considered at 1% of the capital costs.

Commission's Decision

The Commission has examined the O&M costs of SHP project considered by CERC and SERCs of other States in the tariff orders for SHP. The O&M charges specified by the CERC as well as other SERCs are in the range of 2.6% to 3.6% of capital cost depending on the capacity of SHP plant. Hence, the Commission decides the O&M charges as 3.3 % of capital cost for SHP projects up to 5 MW capacity and 2.5% of capital cost for SHP projects of 5 MW to 25 MW capacity. The O&M charges as fixed above shall be escalated @ 5.72% per annum from second year onwards.

c. Capacity Utilization Factor (CUF)

The Capacity Utilization Factor (CUF) of generating station can be defined as the estimated energy likely to be generated as a percentage of maximum energy that could have been generated with full capacity utilization of the installed capacity of the project. While arriving at the representative CUF for the SHP projects for generic tariff determination purpose, the Commission has examined the SHP potential and the type of SHP schemes going to be developed in the State during the control period of this tariff order. The Commission has studied the discharge release pattern in the irrigation canals along with the seasonal variation in discharge. The Commission has examined the approach followed by the CERC and SERCs of other States while fixing the CUF for tariff determination purpose. Also, the CUF achieved by the operating SHP plants in the State was studied along with the actual CUF recorded by similar SHP projects set up in other States. Based on above exercise, the Commission in its discussion paper had proposed normative CUF of 42% for tariff determination purpose.

Suggestions of the Objectors

GUVNL in its submission suggested that majority of the SHP projects in Gujarat are canal based, which have higher CUF than Run-of-River type SHP projects. GUVNL requested the Commission to consider CUF of at least at 60%. Considering the high CUF of existing SHP projects in the State, one of the objectors requested the Commission to consider CUF of 65%.

Commission's Decision

The Commission noted the stakeholder's submission with regard to CUF. While arriving at the normative CUF the Commission has carried out its own exercise, wherein the Commission considered all relevant aspects which has direct relation with the Capacity Utilization Factor. The Commission has also studied the type and design of the SHP schemes likely to come up during the control period of this order. The Commission has examined the availability of flow of water in the irrigation canals on which majority of SHP schemes would be developed. The Commission has studied normative CUF fixed by SERCs of other States. The Commission has also referred the actual CUF of the operating SHP plants in other States reported under the Report "Benchmark cost for Small and Large Hydropower Projects" prepared by AHEC, IIT Roorkee. Similarly, the CUF achieved by the SHP plants commissioned in the State of Gujarat has also been examined. The Commission is of the opinion that in generic tariff determination process the benchmark CUF should be representative of all future SHP schemes going to be developed in the State during the control period of the order. The Commission, therefore, decides the normative CUF of 42% for tariff determination of small, mini and micro hydro power projects for the control period of this order.

d. Auxiliary Consumption

The Commission in its discussion paper has proposed auxiliary consumption equal to 1% of gross generation for SHP tariff determination purpose.

Suggestions of the Objectors

No suggestions were received from the stakeholders on auxiliary consumption.

Commission's Decision

The Commission decides to retain the auxiliary consumption at 1% of gross generation for tariff determination of small, mini and micro hydro power projects.

e. Debt-Equity Ratio

GERC (Multi Year Tariff) Regulations, 2016 provide for the normative debt-equity ratio of 70:30 for Generating Company/Licensees. The Commission had proposed the debt equity ratio as 70:30 in the discussion paper for determination of SHP tariff.

Suggestions of the Objectors

No suggestions were received from the stakeholders about the debt-equity ratio.

Commission's Decision

The Tariff Policy formulated by the Ministry of Power, Govt. of India, stipulates debt-equity ratio of 70:30 for power projects. GERC Multi Year Tariff (MYT) Regulations, 2016 has also specified the debt-equity ratio as 70:30. Hence, the Commission decides to retain the debt-equity ratio of 70:30 for determination of tariff for small, mini and micro hydro projects for the control period starting from the date of this order.

f. Loan Tenure and Rate of Interest on Term Loan

GERC, in its earlier tariff orders for procurement of power from RE projects had specified the loan tenure as 10 years. While considering the interest rate of loan, the Commission noted the trend of SBI base rate from March 2013 to June 2016 and observed that the SBI base rate is un-changed from October 2015. Hence, the Commission in the discussion paper had considered the interest rate as 11.80% and loan tenure as 10 years for the purpose of tariff determination for the new control period.

Suggestions of the Objectors

M/s Ajanta Energy Pvt. Ltd. requested the Commission to consider the interest on term loan at 13%. GUVNL in its submission cited GERC (Multi Year Tariff) Regulations, 2016 which allows term loan at rate of interest equal to SBI base rate plus 200 basis points. They requested that interest on term loan be considered at 11.30% i.e. SBI base rate plus 200 basis points in line with GERC (Multi Year Tariff) Regulations, 2016.

Commission's Decision

The Commission has noted that the project financing interest rates are typically indicated by SBI base Rate. The Commission further noted that the current SBI base rate (MCLR) is 8.90%. A reasonably sound project could avail funding at 250 basis points above the base rate. Hence, the Commission decides the interest on term loan as SBI base rate plus 250 basis points which is 11.40% and loan repayment period as 10 years for determination of tariff for small, mini and micro hydro projects commissioning during the next control period.

g. Depreciation

The CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012 considers the capital cost of asset admitted by the Commission as value base for the purpose of determination of depreciation. The salvage value of the asset is considered as 10% of capital cost of the asset and the balance value is depreciated over the project life as per Straight Line Method. The Commission, in its earlier RE tariff orders had considered a higher rate of depreciation during first ten years and then the remaining depreciation is spread over the remaining useful life. In the discussion paper the Commission had considered depreciation at 7% per annum for the first 10 years, and 0.8% from 11th year to 35th year.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the depreciation methodology proposed in the discussion paper.

Commission's Decision

GERC (Multi Year Tariff) Regulations, 2016 notified by the Commission specify that depreciation rate should be calculated based on straight Line Method. The MYT Regulations further lay down that asset is to be depreciated up to 90% of its initial value (considering residual value as 10% of its initial value) over the entire asset life. To facilitate the principal loan repayment, the Commission decides to consider the depreciation rate as 7% per annum during the loan repayment period i.e. first 10 years; beyond loan tenure period, the depreciation is allowed as per 'Straight Line Method' over remaining useful life of the plant i.e. depreciation at the rate of 0.8% per annum from 11^{th} to 35^{th} year for the purpose of tariff determination for new control period starting from the date of this order.

h. Working Capital and Interest Rate on Working Capital

The Commission in its discussion paper had considered the components of working capital as follows:

1) O&M expenses for one month.
2) Receivables of one month charges for sale of electricity.

The Commission had proposed the interest on working capital equal to the SBI base rate plus 250 basis points i.e. 11.80% for the purpose of tariff determination for new control period starting from the date of order.

Suggestions of the Objectors

M/s Ajanta Energy Pvt. Ltd requested to consider the Interest on working capital as 13%.

Commission's Decision

As per GERC (Multi Year Tariff) Regulations, 2016, interest on working capital shall be allowed at a rate equal to the SBI Base Rate (MCLR) plus 250 basis points. Further the Commission noted that the working capital requirement by the project developer would be generally on short term basis which can be managed at lower rate. In view of above, the Commission decides the interest on working capital as 11.40% for determination of tariff for small, mini and micro hydro projects for the control period of this order.

i. Return on Equity (RoE)

In the discussion paper, the equity base for computing return was considered as 30% of the capital cost of SHP project. If the equity employed by the project developer is more than 30%, the amount of equity for the purpose of determining the tariff was proposed to be limited to 30% only and the rest would be treated as loan. In case the equity employed is less than 30%, then the actual equity employed would be considered. In line with the GERC (Multi Year Tariff) Regulations, 2016, the Commission in its discussion paper had considered RoE of 14% per annum. Also the tax payment in the form of MAT at the rate of 21.34% per annum for first 10 years and corporate tax at the rate of 34.61% per annum for the next 15 years has been considered as cost in tariff calculation as per earlier order of the Commission.

Suggestions of the Objectors

No suggestions were received from the stakeholders on the RoE.

Commission's Decision

GERC (Multi Year Tariff) Regulations, 2016 notified by the Commission specify the RoE of 14%; the same was specified by the Commission in its discussion paper. The Commission follows the principle of allowing 14% RoE plus the applicable tax payment for conventional and renewable power projects. The Commission decides to consider RoE of 14% and the tax payment of MAT at the rate of 21.34% for first 10 years and corporate tax at the rate of 34.61% for the next 15 years as a cost for the purpose of computing the tariff for the new control period starting from date of this order.

j. Discount Rate

The Commission in its discussion paper had calculated the annual levellized tariff based on the discount rate of 9.91%. This discount rate is based on the standard methodology followed by CERC and other SERCs which is the weighted average cost of capital (WACC).

Suggestions from Objectors:

GUVNL requested to revise the discount rate, considering the rate of interest on loan at 11.30%.

Commission's Decision

The Commission decides the discount rate of 9.72% which is a weighted average cost of capital (WACC) considering the downward revision in the rate of interest. This discount rate shall be considered while determination of levellized tariff of small, mini and micro hydro power projects to be commissioned during the control period of this order. The formula for computation of WACC is given below:

WACC = Cost of Debt + Cost of Equity

Where, Cost of Debt (For first 10 Years) =0.70 x (Market Rate of Interest) x (1- MAT)

Cost of Debt (11th Year to 35th Year) =0.70 x (Market Rate of Interest) x (1- Corporate tax)

Cost of Equity = 0.30 x Return on Equity (i.e. 14%)

Resulting WACC = {(WACC for first 10 Years X 10) + (WACC from 11th Year to 35th Year X 10)}/

(10 + 25)

Cost of Debt (For first 10 Years) = 0.70 x 11.40% x (1- 21.34%) = 6.28%

Cost of Debt (11th Year to 35th Year) = 0.70 x 11.40% x (1- 34.61%) = 5.22%

Cost of Equity = 0.30 x 14% = 4.2%

Resulting WACC = {(10.48% X 10) + (9.42% X 10)}/ (10 + 25) = 9.72%

k. Income Tax

Suggestions from Objectors:

No suggestions were received from the stakeholders on Income Tax.

Commission's Decision

The Commission decides the rate of MAT as 21.342% for first ten (10) years of operations and Corporate Tax rate of 34.068% for balance period of 25 years.

3. Tariff Determination

Based on the foregoing discussion, the operational and financial parameters decided by the Commission during the control period starting from the date of the tariff order have been given in the table below:

Table No. 3 Proposed benchmark parameters for Small Hydro Power Projects

Parameters	**Decided for next control period**	
	Below 5 MW	**5 – 25 MW**
Project Cost		
Total Project Cost (Land + Plant & Machinery + Erection Cost + Evacuation Infrastructure Cost up to GETCO Sub-station) (Rs. Lakh/MW)	820	748
Normative O&M Cost for first year (% of project cost)	3.3%	2.5%
Escalation in O&M (per annum from 2nd year)	5.72%	5.72%
Performance Parameters		
CUF	42%	42%
Auxiliary Consumption	1%	1%
Project Life in Years	35	35
Financial Parameters		
Debt-Equity ratio	70:30	70:30
Term of Loan in Years	10	10
Interest on Term Loan	11.40%	11.40%
Interest on Working Capital	11.40%	11.40%
Depreciation	7% (for first 10 years) 0.8% (from 11 to 35 years)	7% (for first 10 years) 0.8% (from 11 to 35 years)
Minimum Alternate Tax	21.34%	21.34%
Corporate Income Tax	34.61%	34.61%
Return on Equity	14%	14%
Discount Rate	9.72%	9.72%
Tariff	Gross Tariff – Rs 4.32 / kWh AD benefit – Rs 0.38 / kWh Net Tariff – Rs 3.94 / kWh	Gross Tariff – Rs 3.64 / kWh AD benefit – Rs 0.35/ kWh Net Tariff – Rs 3.29 / kWh

The net tariff determined by the Commission is Rs 3.94/kWh for SHP projects up to 5 MW and Rs 3.29/kWh for SHP projects above 5 MW and upto 25 MW projects; payable by the distribution licensees to the SHP projects commissioned during the control period of this order for which the PPAs shall be signed by the distribution licensees with the Small Hydro Generators.

4 Other Commercial Issues

4.1 Transmission and Wheeling Charges

The Commission in its Discussion Paper had allowed wheeling of power as under:

Third Party Sale

a. Wheeling of Power for third party sale from small, mini and micro hydro projects shall be allowed on payment of transmission charges, transmission losses, wheeling charges and wheeling losses of the energy fed into grid, as applicable to normal open access consumer. Set off of wheeled energy at recipient unit(s) shall be carried out in the same 15 –minutes time block.

b. Small hydro project owners who desire to wheel electricity for third party sale to more than one location shall pay 5 paisa per unit on energy fed in the grid to the Distribution company concerned in whose area power is consumed in addition to above mentioned transmission charges and losses as applicable.

c. 50% of the cross subsidy surcharge and additional surcharge, as applicable to normal open access consumer, shall be applicable.

Wheeling of power for Captive Use

a. **Wheeling of power to consumption site at 66 kV voltage level and above**

Wheeling of electricity generated from small, mini and micro hydro projects to the desired location(s) within the State shall be allowed on payment of transmission charges and transmission losses as applicable to normal open access consumer.

b. **Wheeling of Power to consumption site below 66 kV voltage level**

In case the injection of power is at 66 kV or above and drawal is at below 66 kV, wheeling of electricity generated from small, mini and micro hydro projects to the desired location(s) within the State, shall be allowed on payment of transmission charges and transmission losses applicable to normal open access consumers and 50% of wheeling charges and 50% of distribution losses of the energy fed into the grid as applicable to normal open access consumers.

c. **Wheeling of electricity for injection at 11 kV and drawl at 11 kV and below voltage level within the same distribution area**

When the point of injection at 11 kV and drawl at 11 kV or below voltage level lies within the same distribution area, the user shall pay 50% of wheeling charges and 50% of wheeling losses of the energy fed to the grid as applicable to normal open access consumers.

d. **Wheeling of electricity for injection at 11 kV and drawl at 11 kV and below voltage level in the different distribution area**

When the point of injection at 11 kV and drawl at 11 kV or below voltage level lies in area of different distribution licensee, the user shall pay 50% of wheeling charges and 50% of wheeling losses of the energy fed to the grid as applicable to normal open access consumers for each distribution licensee. In addition, transmission charges and transmission losses as applicable to normal open access consumer shall be payable.

Wheeling of power to more than one locations

Small, mini and micro hydro projects owners, who decide to wheel electricity for captive use , to more than one location, shall pay 5 Paisa/kWh on energy fed into the grid to the distribution company concerned in whose area power is consumed in addition to above mentioned transmission charges and losses, as applicable.

Wheeling of power below 100 kW

Small, mini and micro hydro projects owners, who decide to wheel electricity for captive use / third party sale below 100 kW, will be allowed only within the same distribution licensee area where plant is located.

Small mini, micro hydro power projects availing open access for captive use/third-party sale and willing to register under REC mechanism should be governed as per CERC REC Regulations in force. Renewable Energy projects installed for captive use will have to meet the eligibility criteria specified in CERC REC Regulations (Fourth Amendment), 2016 for availing RECs on total generation including self-consumption. Provided that such projects have to forego the concessional transmission and wheeling charges/losses and banking benefit.

Suggestions from Objectors

M/s Ajanta Energy Pvt. Ltd requested to exempt the cross subsidy surcharges and additional surcharges for third party sale of power generated from SHP projects. M/s WIL Power Projects

Ltd cited previous order dated 12th March 2014 in petition 1302 of 2013 and sought exemption from payment of cross subsidy surcharge and additional surcharge.

Commission's Decision

The Commission recognizes the fact that the cost of transmission/distribution assets created for evacuation of power from any generating project should be recovered to, a reasonable extent, from such generators. Otherwise, it will amount to cross-subsidizing such generators by other users. The category of consumers which generally sources power through open access can afford to pay normal transmission and wheeling charges from the savings made through such transactions.

In view of above and as per the provisions of Gujarat Small Hydel Policy 2016, the Commission decides the following norms for the open access transactions of power generated by small, mini and micro hydro projects for control period of this order.

i. Wheeling of power for third party sale from the small hydro projects shall be allowed on payment of transmission charges, wheeling charges and losses of energy fed into the grid, as applicable to normal open access consumers.

ii. Further, the small hydro projects who desire to wheel electricity under third party open access has to pay 50% of cross subsidy surcharge as applicable to normal open access consumers. Further, additional surcharge as determined by the Commission from time to time shall also be applicable for selling power to third party under open access.

The Commission decides the following norms for captive transaction of power generated by small, mini and micro hydro projects for control period of this order:

i. **Wheeling of power to consumption site at 66 kV voltage level and above:** Wheeling of electricity generated from small, mini, micro hydro projects within the State shall be allowed on payment of transmission charges and transmission losses as applicable to normal open access consumer.

ii. **Wheeling of Power to consumption site below 66 kV voltage level:** In case the injection of power is at 66 kV or above and drawal is below 66 kV, wheeling of electricity generated from small, mini, micro hydro projects within the State, shall be allowed on payment of transmission charges and transmission losses applicable to normal open access consumers and 50% of wheeling charges and 50% of distribution losses of the energy fed into the grid as applicable to normal open access consumers.

iii. **Injection at 11 kV and drawal at 11 kV and below voltage level within the same distribution area:** When the point of injection is at 11 kV and drawal is at 11 kV or below, and both injection and drawl points lies within the same distribution area, the charges levied on the user shall be 50% of wheeling charges and 50% of wheeling losses of the energy fed into the grid as applicable to normal open access consumers. No other charges shall be levied on such transaction.

iv. **Injection at 11 kV and drawal at 11 kV and below voltage level in different distribution area:** When the point of injection is at 11 kV and drawal is at 11 kV or below, and the injection and drawl is in different distribution area, the charges levied on the user shall be 50% of wheeling charges and 50% of wheeling losses of the energy fed in to the grid as applicable to normal open access consumers. In addition, transmission charges and transmission losses as applicable to normal open access consumer shall be payable.

v. Further, the Commission, specifies that project owners, who wheel electricity for captive use / third party sale, to more than one location, shall pay 5 Paisa/kWh of energy fed into the grid to the distribution company concerned in the area, in which the power is consumed in addition to above mentioned applicable transmission charges and losses.

vi. For captive use and third party sale, wheeling of electricity below 100 KW will be allowed only within the same distribution licensee area where plant is located.

Small mini, micro hydro power projects availing open access for captive use/third-party sale and willing to register under REC mechanism shall be governed as per CERC REC Regulations in force. Renewable Energy projects installed for captive use will have to meet the eligibility criteria specified in CERC REC Regulations (Fourth Amendment), 2016 for availing RECs on total generation including self-consumption, provided that such projects have to forego the concessional transmission and wheeling charges/losses and banking benefit.

4.2 Energy Metering

In the discussion paper it was proposed that, the developers of small hydro projects shall provide energy metering and communication facility in accordance with the following regulations/codes/orders and their subsequent amendments.

1) Central Electricity Authority (Installation and Operation of meters) (Amendment) Regulations 2014 and its subsequent amendments

2) Gujarat Electricity Grid Code 2004 and its subsequent amendments

3) GERC (Terms and Conditions of Intra-State Open Access) Regulations, 2011 and its subsequent amendments

4) GERC Distribution Code 2004 and its subsequent amendments

However, for the purpose of energy accounting, such projects shall have to provide ABT compliant meters at generators and if the power is to be wheeled to consumer's premises, then ABT compliant meter is to be installed at the consumer premises also.

Suggestions from Objectors

No suggestions received from the stakeholders on energy metering.

Commission's Decision

The Commission decides to retain the provisions related to Energy Metering as proposed in the discussion paper. The Commission has defined the interconnection point and metering point in para 2.4.1 (f) of this order. In order to have uniformity in metering standards irrespective of the installed capacity of power generation projects, the Commission directs that the small hydro projects shall install ABT compliant meters at the point of metering. The ABT meters shall conform to the Central Electricity Authority (Installation and Operation of meters) (Amendment) Regulations 2010 and its subsequent amendments. The project developers shall also install Remote Terminal Unit (RTU) for transferring the real time data to SLDC for the monitoring purpose.

4.3 Pricing of Reactive Power

In the discussion paper it was proposed that small hydro projects shall pay the reactive energy charges at par with that of other renewable energy generation sources. Hence, the reactive energy tariff approved by the Commission for the RE technologies like wind and solar shall be made applicable to small hydro projects as well.

Suggestions from Objectors

GUVNL requested the applicability of revised reactive energy charge for all existing and proposed hydel projects, irrespective of its date of commissioning so as to make it uniform for all RE projects.

Commission's Decision

The Commission decides that for the purpose of having uniformity the following reactive energy charges shall be applicable to all small hydro power projects from date of issue of this order:

"10 paise/kVARh – For the drawal of reactive energy at 10% or less of the net energy exported.

50 paise/kVARh – For the drawal of reactive energy at more than 10% of the net active energy exported".

4.4 Sharing of Clean Development Mechanism (CDM) Benefits

In the discussion paper, the Commission had proposed to retain the provisions for sharing of CDM benefits in line with the recommendations made by the Working Group on Renewable Energy Generation constituted by the Forum of Regulators for the next control period. However, such projects availing CDM benefit shall share the net CDM proceeds annually, by 31 March of every year with an affidavit stating the annual energy generation (date of commissioning as starting point of the first year), CER generated, gross receipts, and net receipts.

Suggestions from Objectors

No comments have been received from the Objectors.

Commission's Decision

Considering the initial cost of registering CDM projects and long time frame taken to realize the CDM benefits, the Commission decides that the sharing of net proceeds on account of CDM benefits realized through sale of CER generated from the corresponding annual energy generation from small hydro projects shall be as follows:

- 100% of net proceeds through sale of CER generated from the energy generation in the first year after the date of commercial operation of the project shall be retained by the beneficiary/developer.
- In the second year, the share of the beneficiary shall be 10% which shall be progressively increased by 10% every year till it reaches 50% in the sixth year; thereafter

the proceeds shall be shared in equal proportion by the power generating company and the beneficiary.

Small Hydro projects availing CDM benefit shall share the net CDM proceeds annually as per above, by 31 March of every year with affidavit stating the annual energy generation (date of commissioning as starting point of the first year), CER generated, gross receipts and net receipts.

4.5 Banking of Surplus Energy and Purchase of Surplus Power from Projects Opting for Captive Use and Third Party Sale under Open Access (Non REC projects)

In the discussion paper, it was proposed that in case of small, mini and micro hydro projects established for captive use purpose can set-off their consumption against the energy generated during peak and normal hours within a month. The one month banking was allowed by deducting 2% banking charges in kind and the surplus energy at the end of month was proposed to be purchased by the concerned distribution licensee at 85% of the feed-in tariff declared by the Commission

In the case of third party sale of power from small, mini and micro hydro projects, it was proposed that energy shall be settled in 15-minute time block basis. For non REC projects, the surplus energy available after set off was proposed to be purchased by the concerned distribution licensee at 85% of the feed-in tariff declared by the Commission.

Suggestions from Objectors

Utility Users Welfare Association submitted that, banking should not be allowed to such hydro power projects because the availability of water is known and PLF/CUF is lower. Whenever the electricity is generated, it is possible to utilize it and therefore, no banking should be allowed. Further, M/s Ajanta Energy Pvt. Ltd. cited the provisions related to banking in other States and requested the Commission to extend banking facility for a period of six months.

Commission's Decision

The Commission noted the observations made by the stakeholders regarding banking and purchase of surplus power by the utilities in respect of the SHP projects not registered under REC mechanism. The Commission also considered the banking and surplus power purchase provisions given under the Gujarat Small Hydel Policy, 2016 announced by the Government of

Gujarat. The Commission decides the banking and purchase of surplus power from non REC SHP projects as follows:

a) If the consumer does not take renewable attribute for meeting its RPO, energy generated by SHP power project shall be set off against the consumption during the consumers billing cycle. Surplus power after giving set off shall be purchased by DISCOM at Average Pooled Power Purchase Cost (APPC) of the year of commissioning of project and entire generation shall be credited to DISCOM's account for meeting RPO. For net import of power, Distribution Utilities will charge applicable tariff of respective category to the consumer including fixed / demand charges, energy charges, peak charges, other charges/penalty, etc. as applicable to other consumers.
b) If the consumer takes renewable attribute of SHP energy for meeting its RPO, energy accounting shall be based on 15 minutes' time block basis. Surplus power after giving set off shall be purchased by DISCOM at APPC of the year of commissioning of project. Surplus SHP energy purchased by DISCOM shall be considered for meeting RPO of DISCOM. For net import of power, Distribution Utilities will charge applicable tariff of respective category to the consumer including fixed / demand charges, energy charges, peak charges, other charges / penalty, etc. as applicable to other consumers.

4.6 Renewable Energy Certificates for Third Party Sale and Captive Use of Electricity Generated from Small Hydro Projects

In the discussion paper it was proposed that, power generated from small, mini and micro hydro projects if wheeled to third party or for captive use will be eligible for availing the Renewable Energy Certificates under the CERC REC mechanism. REC benefit shall be governed by the CERC (Terms and Conditions for Recognition and Issuance of REC) Regulations, 2010 and its subsequent amendments. It was further proposed that energy settlement shall be on 15 minutes' time block basis and the surplus power available after set off was proposed to be purchased by the distribution licensee at 85% of the Average Pooled Purchase Cost (APPC) of the year of commissioning of the project.

Suggestions from Objectors

No comments were received from the objectors on REC for Third Party Sale and Captive Use of electricity from SHP projects.

Commission's Decision

Power generated from small, mini and micro hydro projects, if wheeled to third party or used for captive purpose, will be eligible for availing the Renewable Energy Certificates. Qualification of such projects for availing REC benefit shall be governed by the CERC (Terms and Conditions for Recognition and Issuance of REC for Renewable Energy Generation) Regulations, 2010 and its subsequent amendments. Further, in line with the provisions of the Gujarat Small Hydel Policy 2016, energy accounting shall be based on 15 minutes' time block basis and surplus power, after set off in the 15 min time block, shall be purchased by Distribution Company at 85% of APPC of the year of commissioning of project. For net import of power, Distribution Utilities will charge applicable tariff of respective category to the consumer including fixed / demand charges, energy charges, peak charges, other charges / penalty, etc. as applicable to other consumers.

4.7 Security Deposit

In the discussion paper it was proposed that, in order to have developer's seriousness about the project, the project developers are required to furnish a security deposit in the form of bank guarantee of Rs. 5 Lakh/MW after entering into PPA. Project developers are expected to commission the project within the time frame mentioned in the power purchase agreement. In case of default, bank guarantee shall be forfeited.

Suggestions from Objectors

Gujarat Urja Vikas Nigam Limited requested to incorporate a provision for submission of Bank Guarantee / Security Deposit of at least Rs. 25 lacs / MW at the time of signing the PPA with Distribution Licensee on the lines of provisions made in the tariff order for solar power projects.

Commission's Decision

The Commission recognizes the fact that the small hydro generators have to show their commitments for utilization of infrastructure created by GETCO. Hence, the Commission decides to retain the provision for submission of security deposit in the form of Bank Guarantee of Rs 5 Lakh/MW by the project developers to GETCO. With regard to submission of GUVNL, the Commission feels that it will result into increase in the expenses and hence GUVNL's request is not considered.

The bank guarantee shall be encashed by GETCO if the project is not commissioned within the time period specified in the PPA. In case of delay in commissioning of the project beyond the prescribed time period due to unforeseen reasons beyond the control of the project developer, the developer may approach GETCO for the approval of time limit extension.

4.8 Other Issues

(i) Royalty Premium on Water

Suggestions from Objectors

M/s Ajanta Energy Pvt Ltd submitted that as per the provisions of GID Act 1999, the Government of Gujarat charges royalty premium on water. Therefore, in tariff analysis, royalty premiums on water should be provided separately and categorically, as per the actual charges.

Commission's Decision

The Commission noted the submission made by the stakeholder with regard to water royalty, under the provisions of GID Act 1999. The Commission is of the opinion that the water premium referred by the stakeholders in its submission is not a statutory tax or royalty levied or charged by the State Government rather it is a premium offered by the developer on which the selection of developer and project allotment is decided by the concerned authorities. Such premium /charges offered by developer for project allotment purpose is a commercial decision of the developer /investor. For generic tariff determination purpose, the Commission cannot consider the same as cost component. Therefore, the Commission decides to keep water premium outside the tariff computation process.

(ii) Applicability of the Order

In the discussion paper, it was proposed that the provisions under this order shall be made applicable to the SHP projects to be commissioned on or after the date of issue of the order for which PPAs would be signed with GUVNL on or after the date of order. However, the provisions under this order shall not be applicable for the projects already awarded under Gujarat Infrastructure Development Act. Those projects shall file separate tariff petition giving techno-financial details of the project for project specific tariff determination by the Commission.

Suggestions from Objectors

Gujarat Urja Vikas Nigam Limited requested to make it clear that the order shall be applicable to SHP projects to be commissioned/PPAs to be signed with Discoms on or after the date of issuance of order, without any kind of dispensation with regard to awarded project under Gujarat Infrastructure Development Act. Further, they also requested to specifically provide in the order that once PPA is signed for agreed tariff, it will not be open for project developers to seek revision in tariff for any reason.

Commission's Decision

The Commission decides that this order shall come into force from the date of issue of this order. Therefore, the tariff and other commercial terms as determined by the Commission in this order shall be applicable to all SHP projects to be commissioned and for which the PPAs would be signed on or after the date of this order. The provisions in this order shall not be made applicable to the projects already awarded under Gujarat Infrastructure Development Act.

Sd/-	**Sd/-**	**Sd/-**
[P. J. Thakkar]	**[K. M. Shringarpure]**	**[Anand Kumar]**
Member	**Member**	**Chairman**

Place: Gandhinagar

Date: 14/12/2016

Annexure I

List of Entities that have submitted written comments on the Discussion Paper on Determination of tariff for procurement of power by distribution licensees and others, from small, mini and micro hydro power projects in the state of Gujarat- September, 2016

Sr. No	Name of Stakeholder
1	Ajanta Energy Pvt Ltd
2	Gujarat Urja Vikas Nigam Ltd (GUVNL)
3	Utility Users Welfare Association
4	WIL Power Projects Ltd

Annexure II

List of stakeholders, who have attended the public hearing on 03 October 2016.

Sr. No	Name of Stakeholder
1	Ajanta Energy Pvt Ltd
2	Gujarat Urja Vikas Nigam Ltd (GUVNL)
3	Utility Users Welfare Association
4	WIL Power Projects Ltd

Annexure – III

Tariff Calculations for Small Hydro (Below 5 MW)																				
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Net Energy sold (lakh kWhs)	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42
Costs (Rs./Lakh)																				
O&M	27.06	28.61	30.24	31.97	33.80	35.74	37.78	39.94	42.23	44.64	47.20	49.89	52.75	55.77	58.96	62.33	65.89	69.66	73.65	77.86
Depreciation (SLM)	57.40	57.40	57.40	57.40	57.40	57.40	57.40	57.40	57.40	57.40	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
Interest on term loan	62.16	55.62	49.08	42.53	35.99	29.45	22.90	16.36	9.82	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	2.09	2.05	2.02	1.99	1.96	1.93	1.90	1.88	1.86	1.84	1.41	1.47	1.52	1.58	1.64	1.70	1.77	1.84	1.92	2.00
Return on Equity	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44
Tax on equity	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92
Total Cost (Rs lakh)	190.50	185.47	180.53	175.68	170.94	166.30	161.78	157.37	153.09	148.94	101.53	104.28	107.19	110.26	113.51	116.95	120.59	124.43	128.49	132.78
Tariff (Rs/kWh)	5.23	5.09	4.96	4.82	4.69	4.57	4.44	4.32	4.20	4.09	2.79	2.86	2.94	3.03	3.12	3.21	3.31	3.42	3.53	3.65

Tariff Calculations for Small Hydro (Below 5 MW)															
Year	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Net Energy sold (lakh kWhs)	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42
Costs (Rs./Lakh)															
O&M	82.31	87.02	92.00	97.26	102.83	108.71	114.92	121.50	128.45	135.80	143.56	151.77	160.46	169.63	179.34
Depreciation (SLM)	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
Interest on term loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	2.09	2.18	2.27	2.37	2.48	2.59	2.71	2.84	2.97	3.11	3.26	3.42	3.59	3.76	3.95
Return on Equity	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44	34.44
Tax on equity	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92	11.92
Total Cost (Rs lakh)	**137.32**	**142.12**	**147.19**	**152.56**	**158.23**	**164.22**	**170.56**	**177.26**	**184.34**	**191.83**	**199.75**	**208.11**	**216.96**	**226.32**	**236.21**
Tariff (Rs/kWh)	3.77	3.90	4.04	4.19	4.34	4.51	4.68	4.87	5.06	5.27	5.48	5.71	5.96	6.21	6.48
Discount Rate	**9.72 %**														
Levelized Fixed Tariff (Rs / kWh)	**4.32**														

Tariff :

Levelized Tariff	**Tariff in Rs/kWh**
Gross Tariff (1 to 35 years)	4.32
A D Benefit	0.38
Net Tariff (1 to 35 years)	3.94

Annexure - IV

Tariff Calculations for Small Hydro (5-25 MW)																				
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Net Energy sold (lakh kWhs)	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42
Costs (Rs/Lakh)																				
O&M	18.70	19.77	20.90	22.10	23.36	24.70	26.11	27.60	29.18	30.85	32.61	34.48	36.45	38.54	40.74	43.07	45.54	48.14	50.89	53.81
Depreciation (SLM)	52.36	52.36	52.36	52.36	52.36	52.36	52.36	52.36	52.36	52.36	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98
Interest on term loan	56.71	50.74	44.77	38.80	32.83	26.86	20.89	14.92	8.95	2.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	1.79	1.75	1.71	1.68	1.64	1.61	1.58	1.55	1.52	1.49	1.09	1.12	1.16	1.20	1.24	1.29	1.34	1.39	1.44	1.50
Return on Equity	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42
Tax on equity	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87
Total Cost (Rs lakh)	**167.68**	**162.74**	**157.86**	**153.05**	**148.31**	**143.65**	**139.06**	**134.55**	**130.13**	**125.80**	**81.98**	**83.88**	**85.89**	**88.01**	**90.26**	**92.64**	**95.15**	**97.80**	**100.61**	**103.57**
Tariff (Rs/kWh)	4.60	4.47	4.33	4.20	4.07	3.94	3.82	3.69	3.57	3.45	2.25	2.30	2.36	2.42	2.48	2.54	2.61	2.69	2.76	2.84

Tariff Calculations for Small Hydro (5-25 MW)															
Year	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Net Energy sold (lakh kWhs)	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42	36.42
Costs (Rs/Lakh)															
O&M	56.88	60.14	63.58	67.21	71.06	75.12	79.42	83.96	88.77	93.84	99.21	104.89	110.88	117.23	123.93
Depreciation (SLM)	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98
Interest on term loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	1.55	1.62	1.68	1.75	1.83	1.90	1.99	2.07	2.17	2.26	2.37	2.48	2.59	2.71	2.84
Return on Equity	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42	31.42
Tax on equity	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87	10.87
Total Cost (Rs lakh)	**106.71**	**110.03**	**113.53**	**117.24**	**121.16**	**125.30**	**129.68**	**134.31**	**139.20**	**144.38**	**149.85**	**155.63**	**161.75**	**168.21**	**175.05**
Tariff (Rs/kWh)	2.93	3.02	3.12	3.22	3.33	3.44	3.56	3.69	3.82	3.96	4.11	4.27	4.44	4.62	4.81

Discount Rate	9.72%
Levelized Fixed Tariff (Rs / kWh)	3.64

Tariff :

Levelized Tariff	**Tariff in Rs/kWh**
Gross Tariff (1 to 35 years)	3.64
A D Benefit	0.35
Net Tariff (1 to 35 years)	3.29