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**Bangladesh Energy Regulatory Commission (BERC)
TCB Bhaban (3rd Floor), 1, Kawran Bazar
Dhaka-1215, Bangladesh
88-02-9140125**

In exercise of the power conferred by the Bangladesh Energy Regulatory Commission Act, 2003 (Act No 13 of 2003), as amended, The Bangladesh Energy Regulatory Commission hereby adopts the following regulations.

1. SHORT TITLE AND COMMENCEMENT:

- a. This regulation shall be called Bangladesh Energy Regulatory Commission Electric Generation Tariff Regulation, 2007.
- b. It shall come into force upon publication in the official Gazette.

2. SCOPE AND APPLICATION:

- a. This Regulation shall define: (1) the process of submitting an application by a Licensee for a tariff containing the rate, terms, and conditions of service, or a change thereof; (2) the methodology to be used by the Commission in reviewing the application; (3) and the procedures for the issuance of an approved tariff of the applicant licensee; or an approved change thereof.
- b. This Regulation shall apply to licensed applicants for electric generation. The methodology consists of two parts – the methodology for regulation of routine electric generation licensees and the methodology for special long term contracts issued to independent and small power producers. Captive power generation methodology is incorporated in the electric distribution regulation.
- c. The rates established pursuant to contractual power purchase agreements between the Government of Bangladesh and small power or independent power producers, which have been completely executed and accepted by both parties prior to the publication of this regulation, shall be deemed to have provisional approval by the Commission for recovery from consumers. Such agreements shall be filed with the Commission for record keeping purposes. Any rates established through contract subsequent to the publication of this regulation, shall be filed with the Commission for approval. The Commission may approve all or part of the contractual rate for recovery from consumers. Any portion of the rate not deemed recoverable from electricity consumers will have to borne by some other arrangement than through electricity rates paid by consumers.
- d. Pursuant to Article 24 of the BERC Act, the Commission will work in consultation with the Government in developing any standards for the encouragement and specific support of renewable and alternative energy development within the energy sector. The Commission will consider applications for individual plants, but renewable energy sector policy development requires Government consultation.
- c. In developing this regulation, the Commission has taken into consideration: Electricity Act, Related Presidential Order, Rural Electrification Act and DESA Act; and other applicable acts, orders, etc.

3. DEFINITIONS:

a. Words, terms and phrases that are defined in the Bangladesh Energy Regulatory Commission Act, 2003 (Act No 13 of 2003), including subsequent amendments to the Act, and Commission's Regulations, shall have the same meaning for the purposes of this Electric Generation Tariff Regulation.

b. Words, terms and phrases that are not defined in this Regulation or in the Bangladesh Energy Regulatory Commission Act, 2003 (Act No 13 of 2003), including subsequent amendments to the Act and Commission's Regulations, shall have the meaning assigned to them in the Electricity Act, 1910 (Act No 9 of 1910); or other applicable legislation. Words, terms and phrases that are not defined in either the Bangladesh Energy Regulatory Commission Act, 2003 (Act No 13 of 2003), including subsequent amendments to the Act, and the Regulations, or in the Electricity Act, 1910 (Act No 9 of 1910) shall be defined by the Commission as needed.

c. Unless the context requires otherwise, the words, terms and phrases in the Electric Generation Tariff Regulation and any attachments hereto shall have the following meanings:

(1) "Acceptance Date" means the date on which a tariff application has been officially received by the Commission, and the process for hearing commences.

(2) "Accounts" means the accounts prescribed in the uniform system of accounts.

(3) "Act" means the Bangladesh Energy Regulatory Commission Act, 2003 (Act No 13 of 2003) including any subsequent amendments.

(4) "Applicant" means a licensed entity who applied to the Commission in accordance with these Regulations to establish tariffs for operations by the licensee.

(5) "Availability Factor" means the ratio of (a) the number of hours a generating unit is mechanically able to produce power in a given period to (b) the number of hours in the period. A factor less than 100% indicates planned or unplanned outages for maintenance. A plant's availability factor will be higher than its capacity factor, because a plant is not used in every hour it is available.

(6) "Capacity Factor" means the ratio of (a) the net amount of electricity a plant actually generates in a given time period to (b) the amount that the plant could have produced if it had operated continuously at full power operation during the same period. Capacity factor is dependent on both the mechanical availability of the plant and the economic desirability to run the plant given the particular cost to run it.

(7) "Commission" means the Bangladesh Energy Regulatory Commission.

(8) "Effective Date" means the date on which a proposed tariff schedule with rates is permitted by the Commission to become effective.

(9) "Fuel Cost Recovery Rate" means the rate charged which allows the generation company to recover the includable acquisition and delivery costs of fuel used for the generation of electricity.

(10) "Heat Rate" means a measure of the thermal efficiency of a power plant. The measure is expressed in British thermal units per net kilowatt-hour of electricity. The lower the plant's heat rate, the higher the plant's efficiency, because it requires fewer units of fuel input to produce a kwh of electricity.

(11) "Independent Power Producer/Small Power Producer (IPP/SPP)" is a non-government owned generation company, The Government of Bangladesh solicits, selects, and contracts with Independent Power Producers (IPP) and Small Power Producers (SPP) under the terms and conditions of its policies as published. Under the terms of the BERC Act, all IPP/SPP are required to obtain a license from the BERC and have tariff rates charged-to-consumers approved by the BERC.

(12) “Kilowatt (KW)” means a measure of electricity defined as a unit of demand or capacity, measured as 1 kilowatt (1,000 watts) of power generated.

(13) “Kilowatt-hour (kWh)” means a measure of electricity defined as a unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour.

(14) “Load Factor” means the ratio of the average load to peak load served by a plant or power system during a specified time interval. A higher load factor indicates higher use of the generating resources.

(15) “Rate” means the authorized charges, per unit or level of consumption, for a specified time period for any of the classes of generation licensee services provided to a customer.

(16) "Regulations" means any regulations developed and promulgated by the Commission according to the Bangladesh Energy Regulatory Commission Act, 2003 (Act No 13 of 2003), including subsequent amendments to the Act.

(17) “Schedule” means a statement of the pricing format of electricity and the terms and conditions governing its applications.

(18). “Tariff” means a document, approved by the Commission, listing the terms and conditions of service and a schedule of rates, under which licensee services will be provided.

(19) “Terms and Conditions of Service” means a published document included as part of a licensee’s tariff that establishes the licensee’s terms and conditions for providing service to a customer, discussing such issues as the conditions under which connection will be provided to a customer, metering, disconnection policies, payment instructions, consumer complaints procedures, etc.

4. APPLICATION FORM AND FEES:

a. An application for the filing of initial, or the changing of a current generation tariff, shall be filed with the Bangladesh Energy Regulatory Commission in accordance with this regulation.

b. An application shall be made upon payment of an application fee, which will be fixed by the Commission from time to time. The application fee shall be paid by means of demand draft/pay order from a schedule bank in Bangladesh, in the name of the Bangladesh Energy Regulatory Commission.

5. DOCUMENTS TO ACCOMPANY A TARIFF APPLICATION:

a. The filing of an application for a tariff, with rates and terms and conditions of service, shall include the following:

- (1) A list of documents submitted with the filing;
- (2) The date on which service under the proposed schedule is expected to commence;
- (3) The names and addresses of those whom the tariff schedule will be mailed;
- (4) A copy of the draft notice announcing the rate;
- (5) A brief description of the kinds of services to be furnished and the rates specified therein;

(6) A summary of the circumstances which show that all requisite agreement to the tariff schedule or to the filing thereof, including any contract embedded therein, has in fact, been obtained;

(7) Estimates of the transactions and revenues under a tariff schedule;

(i) This shall include estimates by months and for the year, of the quantities of services to be rendered and of the revenues to be derived there from during the twelve months immediately following the month in which those services will commence.

(ii) Such estimates should be divided by classes of service, customers, and delivery points and shall show all billing determinants, e.g. KW, KWh, fuel adjustment, power factor adjustment.

(8) The basis of the rate proposed in an initial tariff schedule and an explanation of how the proposed rate was derived;

(9) The schedule of rates and rate adjustments over the life of the contract for small and independent power producer contracts.

(10) A summary statement of all costs (whether fully distributed, incremental or other) computations involved in arriving at the derivation of the level of the rate in sufficient detail to justify the rate, shall be submitted with the filing;

(11) A comparison of the proposed rate with other rates of the filing utility or regulated entity for similar generation service or wholesale for resale electric power services, as applicable.

(12) A copy of relevant power purchase agreements, including detailed terms of service.

b. The required documentation, in support of a change to an existing tariff schedule, is as follows:

(1) Summary of tariff proposal with historical trend of the rate;

(2) Justification of tariff changes proposal;

(3) Detailed methodology of arriving at the proposed tariff;

(4) List of person(s) likely to be affected by the changes in the tariff;

(i) The current relationship with the person(s);

(ii) The relationship that will emerge after the proposed change.

(5) A copy of the draft notice announcing the change in the tariff.

(6) Audited annual accounts for the last consecutive three years, or in the case of a new plant the forecasts for the next three years;

(7) Provisional accounts for the current year at the time of submission, or estimates for new plants;

(8) Comparative statement of present and future financial position resulting from changes in tariff, as applicable;

(9) Details of financial impact if the proposal is not approved;

- (10) Financial forecast for the next year at the time of filing of the tariff proposal;
 - (11) A planned outage report and three year history of unplanned outages;
 - (12) Any other information which the applicant considers could be useful for evaluating the proposal, including detailed terms of service.
- c. All accounting codes utilized in the application for an initial rate or change in existing tariff rate schedule shall be consistent with the Commission's uniform system of accounts, as and when published.
 - d. All application filings should provide five copies in printed form and a copy in an electronic format, preferably Microsoft Word, Excel, and Access.
 - e. Commission may seek clarification or new information relevant to the proposal after submission of the proposal.

6. ACCEPTANCE AND PROCESSING OF APPLICATION:

- a. Acceptance of Application.
 - (1) The Staff of the Commission will have thirty days from the receipt of the application by the Commission Secretary to review and identify any flaws in the application, and any additional information that the Commission may require, in evaluating the application.
 - (2) The Staff shall establish a data request deadline, not to exceed two weeks, within which the applicant will provide the supplemental information.
 - (3) Upon receipt of the required information, the Staff will prepare an entry for acceptance by the Commission, at a regularly scheduled Commission meeting, accepting the application for consideration. That acceptance date becomes the official receipt date for the application.
 - (4) The fact that the Commission accepts a tariff schedule or any part thereof for filing shall not constitute approval by the Commission of such tariff schedule or part thereof.
 - (5) The Commission shall not be required to entertain or accept any application until such supporting supplemental data is furnished.
 - (6) The Commission shall not pass an order rejecting the application without giving the applicant an opportunity of being heard or making a written representation.
 - (7) If the Commission accepts the application, it may give such orders and directions for the service of notices as it deems appropriate to –
 - (a) all persons affected by, or interested in, the application who in the opinion of the Commission are likely to be affected or interested; and
 - (b) persons, who, by reason of their calling or expertise, may be of assistance to the Commission in arriving at a just and informed determination on the application.
- b. Publication and Service of Notice.
 - (1). A notice issued on the directions of the Commission may be served on the party concerned, as the Commission may direct, and the Commission may direct the service to be effected through any one or more of the following modes of service, namely:

(i) by hand delivery through a messenger;

(ii) by registered post acknowledgment due; or

(iii) by publication in one English language and one Bangla language national daily newspaper, and by advertisement in the electronic media in cases where the Commission is satisfied that it is not reasonably practicable to serve notices in any other manner.

(2) Every notice or process required to be served on, or delivered to, any person may be sent to the person at the address furnished by him for service, or at the place where the person or his agent ordinarily resides or conducts business or personally works for gain. When a person is to be served during the course of the proceedings and such person has authorized in writing an agent or representative to represent him in the proceedings, such agent or representative shall be considered duly authorized to accept service of a notice and process on behalf of the person concerned.

(3) The Commission will issue notice of filing to the public by publication in one English language and one Bangla language national daily newspaper or on the Commission's website.

c. Processing of Application:

(1) The processing of a tariff application shall begin when the application is officially accepted by the Commission and registered with the Secretary of the Commission. A date stamp shall be put on first page of the Application. An appropriate receipt for the application fee shall be prepared and provided to the Applicant.

(2) All paperwork pertaining to a tariff application shall be maintained by the Commission in a separate case file for each applicant. The Commission shall maintain a registration log of all orders issued and this information, including Commission's resolutions, shall be available to the public for review by any interested parties, with exception of the information defined as confidential according to Commission Regulations or written order. Copies of the application, Commission order, and all written testimony and transcripts of oral testimony given in a hearing shall also be filed in this case.

7. EVALUATION OF THE APPLICATION:

a. The Commission shall evaluate the respective application once it has been accepted. The application shall be evaluated in accordance with published Commission tariff methodology.

b. The Commission may perform investigations to collect necessary information, and generally take any measure or action it considers necessary to decide whether or not to approve such an application.

8. REJECTION OF APPLICATION:

a. The Commission may reject an application, after a hearing, for any reasons that include, but are not limited to, the following:

(1) The enclosed documents to the application do not comply with the requirements of this tariff regulation and/or the applicant has not filed supplemental information pursuant to a request for data from Commission Staff within the required filing deadline, or the application violates other applicable laws of Bangladesh;

(2) The submitted documents contain materially incorrect information;

(3) The applicant does not have a right to request the tariff change under the Act, this Tariff Regulation and any other Regulations issued by the Commission.

b. The reason for an application rejection by the Commission shall be recorded in writing and provided to the applicant within thirty (30) days of the Commission's order.

9. INTERVENTION, OBJECTION AND HEARING:

a. The Commission shall, within 60 days of official acceptance of the application, schedule a public hearing at which all parties to the case may present testimony and be cross examined concerning the proposed tariff application. The public hearing shall be in accordance with the Commissions Public Hearing Regulation.

b. The Staff of the Commission will be required to provide written testimony, and be available for cross examination at the public hearing explaining its analysis of the application and its recommendations for Commission action. Copies of the written testimony will be made available to registered parties to the case, at least one week before the date of the hearing. Similarly, all other parties in addition to the Staff shall provide copies, to all other registered parties and to the Staff, of any written testimony that they wish to file in the case, at least one week before the hearing.

c. Any person seeking to intervene in a rate proceeding or objecting to the tariff application may present his/her motion to intervene and objection by sending a signed original and four (4) copies to the Secretary of the Commission within fifteen (15) days of publication of notice of acceptance of a tariff application. The motion to intervene and objection must clearly state the name and address of the person seeking intervention and objecting to the application, and the factual grounds for intervention and objection. The objection shall be deemed filed only when it is actually received by the Commission and is accompanied by the required filing fee, which will be fixed by the Commission from time to time. Filing an objection in and of itself does not make a person a party to the proceeding. In order to become a party to a tariff proceeding, a person must file a motion to intervene.

d. The Commission, after review of the motion to intervene, may accept persons as a party to the case. The intervening party's participation in the proceeding will be in accordance with the terms and provisions of the Commission's Public Hearing Regulation.

e. In the event of the Commission's denial of a motion to intervene, the moving person shall have the right to a motion's hearing, to provide additional bases in support of his motion to intervene in the proceeding. The motion hearing shall be conducted in accordance with the terms and provisions of the Commission's Public Hearing Regulation.

10. CONTACTS WITH APPLICANT:

Consistent with the Commission's Public Hearing Regulation, from the time the application for consideration of an initial tariff or a change to an existing tariff is officially accepted by the Commission, until the Commission has made a decision in writing and sent it to the Applicant, all contacts with the Applicant shall be in writing through the Secretary of the Commission, or his designated representative. All contact with the Applicant shall relate only to matters of clarification and additional information, to be provided in writing by the Applicant to the Commission. Any other communications will be considered prohibited and grounds for dismissal of the proceeding or rejection of the application.

11. DECISION OF THE COMMISSION:

a. The Commission shall decide an application within 90 days after its official acceptance and issue a written determination or order, signed or initialed by each Member.

b. All Commission determinations and orders are final.

c. Notwithstanding a Commission's final order, a party, within thirty (30) days of the final determination, may petition the Commission for reconsideration. Such petition and the Commission's actions associated therewith are subject to the provisions of the Commission's Hearing Regulation.

d. Copies of all orders, determinations and decisions made or issued by the Commission, shall be certified under the signature of the Secretary and the seal of the Commission, and shall be made available to any person on payment of such fees as the Commission may, from time to time, determine. Copies of all such orders, determinations and decisions shall be available on the Commission's website or at the principal office at Dhaka for public inspection free of cost.

12. TERM OF TARIFF:

a. The tariff shall become effective pursuant to the date specified in the order issued by the Commission.

b. The tariff determined by the Commission shall remain in effect until such time as the Licensee shall file for a revision of the tariff, a materially affected party files or the Commission itself initiates a case, suo moto, for revision of the tariff. In the latter case the burden of proof lies with the affected party to show that the current tariff is improper.

c. In no case shall consideration of a new tariff application be considered within twelve (12) months of the effective date of that initial tariff or rate. The exception would be if an applicant can materially demonstrate that he will endure extreme and undue hardship in absence of revision. The burden of proof of extreme and undue hardship lies with the applicant, and the Commission will not normally consider such a requirement in variance with the Act.

13. NOTIFICATION TO CUSTOMERS OF INITIAL TARIFF OR CHANGE IN TARIFF:

a. The applicant shall send a customer notice, to each of its customers; indicating either the Commission determined initial tariff; or the Commission approved revised tariff as evidenced by a copy of the original tariff, and the subsequent revised tariff. The notification shall be sent not later than two weeks after the Commission's decision, and not less than seven days prior to the effective date.

b. The applicant shall publish a notice in at least two widely circulated national daily newspapers, one in English and one in Bangla, showing therein the original tariff, and the respective changes. This notification shall be published not later than seven days prior to the date the tariff will be effective.

By the order of the Commission

Ghulam Rahman
Chairman

ELECTRIC GENERATION TARIFF METHODOLOGY

1. INTRODUCTION

1.1. The purpose of this generation tariff methodology is to establish a standard which will be utilized by a licensee in calculating rates as part of tariffs. By having a regular methodology, a licensee can predetermine the likely outcome of an application for a change in tariffs. Similarly, customers and other interested party will have confidence, in the Commission's examination of the tariffs, that the systems are standardized in a professional manner. Such standardization provides the Commission staff with a reliable basis for examining a tariff application.

1.2. Each licensee shall have published tariff instructions, available to all parties, listing the rates for service, any fixed charges, and appropriate terms and conditions for providing service, termination of service, late payment charges, dispute resolution processes, etc.

1.3. Each generation licensee shall have signed agreements between and among all parties purchasing electricity.

1.4. Every customer of a licensee shall receive a detailed bill each month..

1.5. Each generation unit shall have a two part tariff rate. One part will consist of the fuel cost involved in the generation of the electricity, and the other part will recover the plant's revenue requirement.

1.6. A customer's invoice or bill will indicate the fuel charge and the service charge for the month's consumption.

Fuel Charge = Fuel Cost Recovery Rate x Customer's Consumption

Service Rate Charge = Service Rate x Customer's Consumption

1.7. The customer's total charge will be the sum of these two amounts.

1.8. In order to encourage investment in the electric generation sector, the Government may solicit participation by independent power producers or small power producers consistent with its published policies for the respective groups. These solicitations constitute special contractual arrangements. To encourage investment, these contracts usually guarantee fixed rates or rate level adjustments over an extended period. The regulatory derivation and recovery of these rates from consumers is discussed in Section 5 of this methodology.

2. FUEL COST RECOVERY TARIFF RATE

2.1. The purpose of the fuel cost recovery rate is to pass through to the customers the actual costs of generation of electricity, in direct response to changes in the market prices of fuel. The licensee will earn no profit or return on these costs. As fuel market prices change, the rates for fuel recovery will change on a semi-annual basis.

2.2. The fuel cost recovery rate shall be expressed on a taka per kilowatt-hour basis.

2.3. The numerator of the fuel component shall be equal to the includable acquisition and delivery costs of fuel for the generation of electricity. The denominator shall equal the corresponding number of includable net kilowatt-hours generated and sold.

2.4. Includable acquisition and delivery costs of fuel are as follows:

2.4.1. This amount shall include the cost of fuel used in the generation of electricity.

2.4.1.1. In the case of natural gas, this will include the cost of natural gas, as charged by the natural gas supplier, as delivered through the plant meter.

2.4.1.2. In the case of coal, condensate, fuel oil, or other solid or liquid fuel, it would include the costs and expenses of unloading fuel from the shipping media and handling thereof up to the point where the fuel enters the first boiler plant bunker, hopper, bucket, tank or holder of the boiler-house structure.

2.4.1.3. In the case of biomass, the Commission will deal with this on a case-by-case basis.

2.4.1.4. In the case of hydroelectric, the Commission will not consider a fuel cost recovery rate, except in circumstances in which water is pumped to a reservoir for release through the hydroelectric system, and then the Commission will deal with this on a case-by-case basis for the costs attributable to the fuel costs of operating the pumping system.

2.4.1.5. In the case of solar or wind, the Commission will not consider a fuel cost recovery rate.

2.4.1.6. If a plant uses multiple fuel types, the fuel cost will be a weighted average based upon the net BTU content delivered through the combustion process.

2.4.1.7. Records shall be maintained to show the quantity, BTU content, and cost of each type of fuel used, where applicable.

2.4.1.8. Licensees shall routinely inventory any stored fuels such as coal or fuel oil, and where purchase records list amounts that are greater than actual inventories, the records for purposes of the fuel cost recovery charge shall be reduced to reflect actual inventory amounts.

2.4.2. For accounting purposes, the sub-accounts used to support costs and expenses identified above are as follows. If included in the fuel cost recovery factor, they are not eligible to be included in the service tariff rate as an operating expense. These expenses are only included for those activities performed by generation employees, or generation licensee contract services.

2.4.2.1. Labor relating to:

2.4.2.1.1. All routine fuel analyses.

2.4.2.1.2. Unloading from shipping facility and putting in storage.

2.4.2.1.3. Moving of fuel in storage and transferring fuel from one station to another.

2.4.2.1.4. Handling from storage or shipping facility to first bunker, hopper, bucket, tank or holder of boiler-house structure.

2.4.2.1.5. Operation of mechanical equipment, such as locomotives, trucks, cars, boats, barges, cranes, etc.

2.4.2.2. Materials and Expenses relating to:

2.4.2.2.1. Operating, maintenance and depreciation expenses of licensee-owned transportation equipment used to transport fuel from the point of acquisition to the unloading point.

2.4.2.2.2. Lease or rental costs of transportation equipment used to transport fuel from the point of acquisition to the unloading point.

2.4.2.2.3. Cost of fuel including freight, switching, demurrage and other transportation charges.

2.4.2.2.4. Excise taxes, insurance, purchasing commissions and similar items.

2.4.2.2.5. Stores expenses to extent applicable to fuel.

2.4.2.2.6. Transportation and other expenses in moving fuel in storage.

2.4.2.2.7. Tools, lubricants and other supplies.

2.4.2.2 .8. Operating supplies for mechanical equipment.

2.4.2.2.9. Residual disposal expenses less any proceeds from sale of residuals.

2.4.2.3. If included in the fuel cost recovery factor, these costs are not eligible to be included in the service tariff rate as an operating expense. These expenses are only included for those activities performed by generation employees, or generation licensee contract services.

2.5. In computing this, the licensee will use the actual fuel costs and actual net generation to the best of its ability.

Where:

Actual Fuel Cost = Taka.

Net Generation = KWH

Fuel Recovery Rate = Taka/KWH

2.6. Semi-annually, licensees will file, noting any imbalances in the fuel recovery rate, with the Commission a statistical report which shows the actual net generation, actual fuel cost, estimated fuel costs utilized, fuel amounts billed, actual fuel amounts received, monthly revenue differences, and cumulative imbalances. The reports shall be filed September 1st of each year for the preceding January through June, and March 1st for the preceding July through December. The Commission shall review these reports, and direct such action as the Commission deems appropriate.

2.7. In order to maintain stability in electric fuel costs for consumers, this methodology has provided for fuel costs adjustments to only occur twice per year. However, if the generation fuel costs change dramatically within a six-month period, it is in the best interests of all parties to provide for interim or emergency fuel cost adjustments. This lessens the rate shock to consumers of significant changes between the semiannual periods, and it reduces the burden of carrying costs for the licensee. During any semiannual period, a licensee may apply for one interim adjustment, when fuel costs increase by 20% or more above the rate computed for the period on the normal semiannual basis. It is the BERC's prerogative to reject the increase. In its order, it will specify the basis for rejection. If approved, the licensee will recalculate and adjust billing of fuel cost rate the change for the remaining portion of the semiannual period.

3. SERVICE TARIFF RATE

3.1. Summary

3.1.1. The Service Tariff Rate is intended to establish tariff rates which provide the least cost to consumers, and also provide the opportunity for the licensee to earn sufficient revenues to cover all of its operating expense, provide for continuing improvement of its operating system, and attract capital for investment.

3.1.2. The first element is establishing a test year. This is a standardized period. The applicant for a tariff rate compiles his data on the basis of this period. The Commission's analysis and decision is based upon the foundation of data produced for the test year.

3.1.2.1. Test Year

3.1.2.1.1. The test year is a twelve month period for which complete data is available. Using this twelve months accumulation of data, the Commission staff will review the financial and economic analysis that supports the rate and tariff application to see if it is reasonable. The Commission hereby defines the test year, for the tariff rate case applications placed before it, as the most recent fiscal year ending on 30 June. In the case of a generation system with no operating history, then the best estimate for a fiscal year will be considered by the Commission.

3.2. Revenue Requirement

3.2.1. Summary

3.2.1.1. The revenue requirement is the amount of revenue that represents a licensee's capital and operational costs. Essentially this is the cost of providing service to the customers. The Commission establishes it on the basis of the data provided by the applicant. This revenue target is the amount that the Commission believes the licensee should receive in the course of its operations. Establishing this target does not guarantee that the licensee will earn this amount, but only that it has the opportunity to earn this amount. Its ability to achieve this target, or even exceed it, is a function of the licensee's own management of its operations.

Total Annual Revenue Requirement = Return on Rate Base + Total Costs

3.2.2. Rate Base or Qualifying Assets

3.2.2.1. Summary

3.2.2.1.1. The rate base and the operating and maintenance expenses are the two significant cost factors in the design of Tariff Rates.

3.2.2.1.2. The rate base is the foundation used by the Commission in establishing the licensee's profit or return. The rate base is used to fundamentally develop a return on assets. However, the assets are qualified. The value established for Tariff Rate design purposes is the net book value of the assets (purchase minus depreciation), plus construction (capital) work in progress, and plus regulatory working capital. The return to be included in the revenue requirement is a percentage rate which is multiplied times the taka value of the rate base.

Rate Base = Used and Useful Assets + Approved Construction Work In Progress + Working Capital

Return on Rate Base = Rate Base x Rate of Return

3.2.2.2. Used and Useful Assets

3.2.2.2.1. In making application for a tariff rate or a change in the tariff's terms and conditions, the electric generation licensee must file a schedule which shows the original acquisition cost of the asset, the accumulated depreciation, the net asset value after reduction for accumulated depreciation, and the amount of the current depreciation to be included in the Tariff Rate application for the test year.

3.2.2.2.2. Generally, these assets must be used and useful for serving the licensee's customers. For example, if the licensee owned some other extraneous business such

as a ready made goods factory, the RMG assets would not be considered as part of the rate base for calculating the licensee's return.

3.2.2.2.3. The asset accounts considered for a generation licensee are broken into three categories – intangible plant, production plant, and general plant.

3.2.2.2.3.1. In summary, intangible plant would consist of organization, franchises and consents, and miscellaneous intangible plant.

3.2.2.2.3.2. Production plant would include land and land rights, structures and improvements, accessory electric equipment, and miscellaneous power plant equipment. Steam production plants would additionally include boiler plant equipment, engines and engine driven generators, and turbo generator units. Hydroelectric plant would further include reservoirs, dams and waterways; water wheels, turbines and generators; and roads, railroads, and bridges. Solar thermal production units would as well include concentrating collectors, solar radiation monitoring equipment, engines and engine driven generators, and turbo generator units. Solar photovoltaic production units would include the photovoltaic panels, mounting racks, solar radiation monitoring equipment, balance of system equipment, and energy storage devices. Wind production units would include the wind-powered generators, towers, wind monitoring equipment, and balance of system equipment. Other production would further include fuel holders, producers and accessories, prime movers, and generators.

3.2.2.2.3.3. General plant would include land and land rights; structures and improvements; office furniture and equipment; transportation equipment; stores equipment; tools, shop and garage equipment; laboratory equipment; power operated equipment; communication equipment; miscellaneous equipment; and other tangible property.

3.2.2.2.4. New assets shall be included in the asset valuation for establishing tariff rates, when they become used and useful, and the value shall be at the original cost – except as discussed below for Construction (Capital) Work In Progress assets. If a project, such as a hydroelectric project, or a steam station, is designed to consist of two or more units, which may be placed in service at different dates, any expenditures which are common to and which will be used in the operation of the project as a whole shall be included in electric plant in service, upon the completion and the readiness for service of the first unit. The exception to the used and useful criteria would be a new generation plant being put into initial service. The Commission will accept that the asset valuation, subject to check, provided as part of the initial Tariff Rate application, as certified by the applicant is a true and accurate value of the potentially used and useful assets to be included in the rate base. At a subsequent Tariff Rate review, the Commission will exam that valuation and will adjust the licensee's Tariff Rates accordingly.

3.2.2.2.5. For purposes of tariff rate making purposes, the Commission requires that a straight-line depreciation method will be applied for all public licensee assets. The useful or standard life of an asset shall be specified in accordance with the Bangladesh Accounting Standards and such depreciation life schedules as established by the Commission. For purposes of this regulation, straight line depreciation rates are considered acceptable over the following life of equipment and plant:

Depreciation Life

ITEM	USEFUL LIFE
Buildings	20.0 Years
Plant and Machinery	28.6 Years

Motor Vehicle	5.0 Years
Office Equipment	10.0 Years
Signboard – Billboards	4.0 Years
Furniture and Fixtures	10.0 Years

3.2.2.2.5.1. Depreciation is a process which distributes the original cost of depreciable assets, adjusted for net salvage, over the normal useful life of the property in a systematic and rational manner.

3.2.2.2.5.2. The amount of the current depreciation will be added as an expense in total costs at the current book value of the assets, and is not subject to re-evaluation based upon any subsequent revision of the asset valuation.

3.2.2.2.5.3. Additions and improvements are charged to the respective plant accounts at original cost. Upon the normal retirement of a plant asset, its original cost is charged against the accumulated depreciation reserve together with the cost of removal less salvage value. The cost of maintenance, repairs, and the replacement of minor items is charged to operating expenses as incurred.

3.2.2.3. Capital (Construction) Work In Progress

3.2.2.3.1. In most licensee tariff rates, only assets which have been placed in service are included in the rate base. However, in the electric licensee industry, the costs of construction, and often the length of time to complete construction are much in excess of those incurred in other licensee utility services. Therefore construction (capital) work in progress (CWIP) is allowed. This CWIP means that, as portions of construction are completed, the amount of expense which represents that completed portion can be included in the total rate base for calculating return on assets.

3.2.2.3.2. Electric construction (capital) work in progress shall be accumulated in a specific financial account. Fundamentally, as work orders are completed for electric plant, under construction, the total of balances for these work orders will be accumulated. Then as the plant is completed and becomes used and useful, the sub-account representing the cost of the construction project shall be deleted from the working capital accounts and the full asset value entered into the plant in service categories. If a project which is common to two or more generation plants at a production site, which may be placed in service at different dates, any expenditures which are common to and which will be used in the operation of the project as a whole shall be included in the plant in service accounts, upon the completion and the readiness for service of the first generation unit. Any expenditure, which is identified exclusively with units of property not yet in service, shall be included in this CWIP account. Records must be maintained to show separately each project.

3.2.2.4. Regulatory Working Capital

3.2.2.4.1. The last major element of rate base is regulatory working capital. In licensee tariff rate design, “regulatory working capital” has a different meaning than the term “working capital” in normal accounting. Regulatory working capital is a measure of licensee funding of daily operating expenditures and a variety of non-plant investments that are necessary to sustain the ongoing operations of the licensee. The tariff rate establishment factor of regulatory working capital is designed to identify these ongoing funding requirements, on average, over a test year. Fundamentally it is the normal operating funds of a licensee which carry it forward from month to month.

3.2.2.4.2. It is the sum of the cash working capital, fuel inventory, materials and supplies inventory, and any prepayments made.

Regulatory Working Capital = Cash Working Capital + Fuel Inventory + Materials and Supplies Inventory + Prepayments

3.2.2.4.2.1. Cash working capital

3.2.2.4.2.1.1. Cash working capital represents the licensee provided cash required for payment of operation expenses, to maintain compensating cash balances, and similar needs, between the time the expenditures are necessary to provide the services and the time collections are received for the services.

3.2.2.4.2.1.2. For a licensee, the formula calculates 1/6th (approximately 60 days) of operation and maintenance expenses for one year. For a well managed natural monopoly, this computation represents the average time and amount that the licensee must provide cash for operations before collections are received from the service. This calculation would apply for generation.

Cash Working Capital = 1/6 x (Annual Operation & Maintenance Expenses)

3.2.2.4.2.2. Fuel inventory

3.2.2.4.2.2.1. Average fuel inventory balances during the year is used. This is fuel stocked on site at the generation plant, such as coal. Fuel inventory would not be considered for natural gas or hydroelectric fueled facilities. The fuel inventory balance shall be based on test year data and computed at actual purchase prices. The fuel inventory for twelve months is divided by six to compute an average value which covers a two month period. Two months of on-site fuel inventory under ordinary circumstances should provide a sufficient supply pending transportation of replacement fuel.

Fuel Inventory = Sum of 12 Months Fuel Inventory / 6

3.2.2.4.2.3. Materials and supplies inventory

3.2.2.4.2.3.1. Materials and supplies are the licensee's inventory value for material and supplies necessary to meet daily requirements of providing service.

3.2.2.4.2.3.2. A 12-month average for the test year is used.

3.2.2.4.2.3.3. Materials and supplies should be summarized for tariff rate setting purposes into two categories - operation and maintenance, and construction.

Materials and supplies inventory = (Total of 12 Months Value Materials and Supplies) / 12

3.2.2.4.2.4. Prepayments

3.2.2.4.2.4.1. Prepayments are made in advance of the period to which they apply and include items such as prepaid rents, insurance, and taxes. The amounts normally allowed are based on the same standards outlined above for fuel inventories and M&S inventories.

3.2.2.4.2.4.2. The average monthly measurement period should encompass more than a single test year review, since certain pre-paid expenses (such as prepaid insurance) often are made for periods in excess of one year. Sum the prepaid balances over whatever the longest cycle of any individual component of the prepayment item, and then average it for the test year period. For example, if during the test year, insurance was prepaid for three

years, then divide the total by three, and for Tariff Rate purposes enter this amount for the annual prepayment amount. Divide this by twelve months to develop a monthly average value for prepayments to be included in working capital.

3.2.2.4.2.4.3. Advanced income tax is a prepayment included in regulatory working capital. Advanced Income Tax is charged at the rate of 2.5% of the invoice value of the imported item, and also paid each quarter to the Government on the basis of regularly adjusted quarterly estimates. For regulatory working capital purposes, the licensee can receive a return on a portion of the advance income tax paid. The licensee shall divide advance income tax paid during the test year by 12 months to develop an amount that is included in regulatory working capital.

$$\text{Prepayments} = \text{One Average Year of Pre-paid Items} / 12$$

Sample Regulatory Working Capital for Generation Licensee

Cash Component	2,586,360,000 Taka
One-sixth of operation and maintenance expense, excluding fuel	
Fossil Fuel Inventory (Coal)	3,580,740,000 Taka
Materials and Supplies	2,122,140,000 Taka
Prepayments	45,000,000 Taka
Total Regulatory Working Capital	8,334,240,000 Taka

3.2.3. Return on Assets

3.2.3.1. The licensee receives a return on qualifying rate base assets to supervise and manage the licensee's operations in an efficient manner.

3.2.3.2. The Return on Qualifying Assets (or Rate Base) is the amount of the return, when included in Tariff Rates, that represent the licensee's opportunity to earn income on the part of the assets, in order to provide dividends to investors, and retained earnings to the company. In the case of government owned utilities, the emphasis is upon retained earnings.

3.2.3.3. The licensee receives a return on qualifying rate base assets through tariff rates. The overall amount of the return within the tariff shall be determined according to the following basic formula:

$$\text{Amount of Return} = \text{Qualifying Rate Base Assets} \times \text{Rate of Return.}$$

Fundamentally, this is the excess in revenues above expenses that is allowed by the Commission as part of the licensee's total revenue requirements used to determine the tariff rates. This return on assets does not correspond with standard accounting concepts of corporate net profits or net income, and it has a totally different functional foundation than a forecasting tool such as the internal rate of return. The foundation of the regulatory rate of return provides for recovery of debt expense and for earnings on stock equity. The regulatory rate of return is designed to yield a reasonable rate of return on average, but it does not guarantee a fixed revenue level. The licensee may make more, or make less, revenue than approved in the rate proceeding. The licensee may retain the excess, and the Commission is not required to provide a guarantee, to the licensee, of recovery of any deficit in future Tariff Rates. A fair return should be attractive to suppliers of capital, encourage managerial efficiency, insure fairness to investors, and provide stable and predictable rate levels to customers.

3.2.3.4. The qualifying assets of the licensee include the net book value of the used and useful assets, plus the regulatory working capital, which is required to provide the services. In addition, generation licensees may include completed work orders for major construction (capital) work in progress.

Net Book Value = Used and Useful Original Assets Value – Accumulated Depreciation

Qualifying Assets = Net Book Value of Assets + Regulatory Working Capital + Construction (Capital) Work In Progress (Generation)

3.2.3.5. Tariff Rate of Return

The tariff rate of return shall be approved by the Commission, in the process of consideration of tariff applications, according to the criteria stipulated in this regulation.

The licensee rate of return on qualifying assets shall be calculated as the weighted average cost of capital in accordance with the following formula:

Rate of Return = $\frac{(\text{Equity Capital} \times \text{Equity Rate}) + (\text{Debt Capital} \times \text{Debt Rate})}{(\text{Equity Capital} + \text{Debt Capital})}$

3.2.3.5.1. Return on Equity

3.2.3.5.1.1. The return on equity represents investors' expectations of the returns of an investment of comparable risks elsewhere in that country.

3.2.3.5.1.2. The Commission's preference in determining the return on equity is a form of a capital asset pricing model (CAPM.). It assumes that the cost of equity is the sum of a risk-free rate of return, plus a return to compensate investors for market risk.

This is commonly termed a Beta. A Beta represents the extent with which a stock's return moves with overall market returns. A licensee stock's historical returns are compared to the returns of the market and a measure of risk determined.

3.2.3.5.1.3. It is the responsibility of the licensee applying for a tariff rate change to recommend a rate of return on equity, and provide adequate support to justify that Tariff Rate. The Commission upon review will determine that tariff rate pursuant to a Commission staff analysis and the review of all evidence in the public hearing.

3.2.3.5.1.4. Other methods for determining a return on equity are the discounted cash flow, risk premium approach, and comparable earnings approach.

3.2.3.5.1.4.1. The discounted cash flow assumes that the price of a stock is the present value of the income to be received from it in the future. The difficulty in utilizing this method is trying to assign a value to investor expectations. If the licensee stock is not publicly traded, or newly traded, it becomes a very subjective decision.

3.2.3.5.1.4.2. The risk premium method is also common. It assumes that equity has a required rate of return higher than debt. The cost of equity is the long-term cost of debt, plus a risk premium. The determination of the risk premium is again based upon historical stock records.

3.2.3.5.1.4.3. The comparable earnings approach takes a sample group of other licensees and develops a composite rate of equity return to be

proposed for the licensee. Again records of similar tariff rate proceedings and the results are required.

3.2.3.5.1.5. The Commission will consider Tariff applications with all of these approaches, but prefers a method similar to the CAPM, with a risk free rate of return plus an additional factor for market risk. The burden of proof with regard to establishing these Tariff Rates remains with the licensee.

3.2.3.5.1.6. In the case of licensees, which are wholly owned by the government, the cost of capital would equal the government's cost of capital. For purposes of tariff rate development, the most recent treasury bill auction rate, pursuant to a central bank auction, for two-year Bangladesh treasury bills shall be utilized. Absent a qualified and approved recommendation by the generation licensee the Commission will only accept the most recent treasury bill auction rate for two year notes that has occurred during the fiscal test year. If no auction has occurred during the test year, then the rate that existed at the last such auction prior to the test year will be utilized.

3.2.3.5.1.7. It is the responsibility of the generation licensee applying for a tariff rate change to recommend a rate of return on equity, and provide adequate support to justify that rate. The Commission upon review will determine that rate pursuant to Commission staff analysis and the review of all evidence in the public hearing.

3.2.3.5.2. Return on Debt

$$D\% = \frac{[(\text{Long Term Debt} \times \text{Debt Rate}) + (\text{Preferred Stock Amount} \times \text{Dividend Rate})]}{[(\text{Long Term Debt} + \text{Preferred Stock Amount})]}$$

Where $D\% = \text{Debt Rate}$

3.2.3.5.2.1. If there are multiple long term debt instruments at different interest rates, or multiple issuances of preferred stock at different dividend rates exist, then a similar weighted cost calculation would be performed for each category.

3.2.3.5.2.2. In terms of long term debt rate, the utilities that are wholly owned government entities shall use the loan rate applied by the government of Bangladesh, even if the loan funds derive from donor loans at a lower rate.

3.2.3.5.2.3. For a government owned enterprise, which does not pay a preferred stock dividend, the return on debt calculation defaults to an average of the long term debt, unless at some future date the government establishes the licensee as an independent joint stock company and the government receives a preferred stock dividend.

Example for government owned licensee:

For the government owned generation licensee, then the formula listed above for the debt rate becomes:

$$D\% = \frac{[(\text{Long Term Debt} \times \text{Debt Rate})]}{[(\text{Long Term Debt})]}$$

Since the licensee will have long term debt rates at different levels, a weighted average of all the loans will produce the debt rate. For example:

$$D\% = \frac{(21,000,000,000 \times 0.05) + (8,000,000 \times 0.0765) + (2,000,000,000 \times 0.08)}{(21,000,000,000 + 8,000,000 + 2,000,000,000)} \\ = 0.0657$$

where the 21,000,000,000 is the total of all loan amounts at 5% interest rate; 8,000,000 total at 7.65%; and 2,000,000,000 total at 8%.

The result is a weighted debt rate of 6.57%.

3.2.3.5.2.4. The loan amounts used in this calculation should represent the outstanding balance (or unpaid balance) of the loan – not the original loan amount.

3.2.3.5.2 .5. The applicant licensee must provide a long term debt summary, which indicates the original amount of the long term debt by source, amount, and date; the accumulated principal reduction; the time period during the test year wherein the loan was applicable; the interest rate; the amount of interest paid during the test year; the amount of principal paid during the test year; and the amount of interest paid during the preceding fiscal year.

3.2.3.5 .3. Overall Tariff Rate of Return

3.2.3.5 .3.1. The fundamental formula for computing the Tariff Rate of return, as shown in the generic section of this regulation, would be applicable for an independently owned or a government owned generation company:

$$\text{Tariff Rate of Return} = \frac{[(\text{Equity Capital} \times E\%) + (\text{Debt Capital} \times D\%)]}{[(\text{Equity Capital} + \text{Debt Capital})]}$$

3.2.3.5 .3.2. As an example for a government owned generation licensee, the following sample calculation would apply:

$$\text{Tariff Rate of Return} = \frac{[(4,000,000,000 \times 0.0670) + (23,008,000,000 \times 0.0657)]}{(4,000,000,000 + 23,008,000,000)} = 0.0659$$

Thus the rate of return to be applied to the asset base is 6.59%, which represents this licensee's weighted cost of capital.

3.2.3.5 .3.3. This rate of return should provide the licensee with the opportunity to earn a return on the investment in the company, which is reasonable based upon its obligations for long term debts and its ability to raise capital.

3.2.3.5.3.4. The BERC retains the right to adjust the calculated rate of return approved for the generation licensee based upon the reliability of Licensee's plant or plants.

3.2.4. Total Costs

3.2.4.1. Summary

3.2.4.1.1. Total Costs are the sum of costs associated with the operation and maintenance (O&M) of the licensee's system, the straight-line depreciation costs of used and useful assets used for distribution for the Tariff Rate year, taxes, and any other necessary costs related to the operation of the licensee's system.

$$\text{Total Costs} = \text{O\&M Costs} + \text{Depreciation} + \text{Income \& Other Taxes}$$

3.2.4.1.2. Costs should be formulated in accordance with Bangladesh Accounting Standard and the Uniform System of Accounts published by the Commission.

3.2.4.1.3. Calculations of costs for each tariff application shall be based on the analysis of twelve months of actual data.

3.2.4.1.4. In the case of all other electric licensees, to the extent that uniform charges are established, separate accounting may be required.

3.2.4.1.5. For the purpose of tariff calculation, all costs shall be detailed as much as possible in order to allow proper controls by the Commission.

3.2.4.1.6. The taxes included as part of the cost of service include all applicable taxes. They are added as an expense.

3.2.4.2. Operation and Maintenance Expenses or Costs

3.2.4.2.1. O & M costs are the expenses incurred in a business arising from or directly related to producing the service as well as the costs of maintaining the system in service.

3.2.4.2.2. Expenses included in the Fuel Cost Recovery Tariff Rate cannot be included in operation and maintenance expenses for the development of the service Tariff Rate.

3.2.4.2.3. O&M expenses for generation licensees are broken into the major categories of production or generation expenses, customer accounts, sales, and administrative and general expense. Customer accounts and sales expenses play a minor role in the cost factors of an electric generation licensee. The BERC reserves the right to limit the amount of operation and maintenance expenses included for recovery from sales based upon standards for minimum plant factor and operational reliability, which will be established under a separate regulation.

3.2.4.2.3.1. Generation expenses are first categorized by the type of production system – for example, steam, hydroelectric, solar, wind, and other, then they are broken into two major categories – operations and maintenance.

3.2.4.2.3.1.1. In terms of operations expenses, common to all production systems will be operation supervision and engineering; electric expenses; rents; miscellaneous; purchased power; system control and load dispatching; and other. Steam operation expenses would include fuel, steam expenses, steam from other sources, and steam transferred. Hydroelectric could include water for power, and hydraulic expenses. Solar thermal would include the additional elements the same as steam, with the exception of fuel. Photovoltaic plants have only the common operations expenses. Wind plants have additionally tower maintenance, and wind generator maintenance. Other power generation would include fuel, and generation expenses.

3.2.4.2.3.1.2. Maintenance expenses commonly include maintenance supervision and engineering; maintenance of structures; and miscellaneous production plant. Steam operation maintenance would add maintenance of boiler plants and maintenance of electric plant. Hydroelectric would provide for in addition the maintenance of reservoirs, dams, and waterways; and maintenance of electric plant. Solar thermal would include the additional expenses identified for steam plants. Solar photovoltaic plants would have only additional maintenance expenses related to rack maintenance. Wind plants have maintenance related to towers and wind electric generators. Other plants would have maintenance of generating and electric plants.

3.2.4.2.3.2. Customer Accounts Expenses are considered operations expenses only. They include supervision, customer records and collection; uncollectible accounts; and miscellaneous customer accounts expenses.

3.2.4.2.3.3. Sales Expenses are considered operations expenses only. They include supervision, selling, advertising, and miscellaneous sales expenses.

3.2.4.2.3.4. Administrative and General Expenses are broken into operation and maintenance expenses, with the bulk of the expenses being operation based. Operation expenses include administrative and general salaries; office supplies and expenses; administrative expenses transferred; outside services; property insurance; injuries and damages; employee pensions and benefits; franchise requirements; regulatory Commission license fees; duplicate charges; miscellaneous general expenses; and rents. Maintenance expenses include only maintenance of general plant. Expenses included in the Fuel Cost Recovery Tariff Rate cannot be included in administration and general expenses for the development of the service Recovery Rate.

3.2.4.2.4. Given that Bangladesh licensees have dollar denominated, or other international currency denominated, loans from international banking institutions such as the Asian Development Bank, a licensee incurs revenue loss as a result of the devaluation of the Taka in comparison to the U.S. dollar or another international denominated currency, to the extent that revenues used to repay the loans are obtained from the local economy. Although debt related, this exchange loss should be treated as an expense, which should be computed based upon the current exchange rate at the end of the fiscal year minus the exchange rate at the beginning of the fiscal year multiplied times the dollar amount of loan repaid during the fiscal year. This will be included as an administrative and general expense. The exchange rate difference of materials and equipment which has already entered the generation company's possession cannot be reassessed and an exchange tariff rate fluctuation calculated for that material or equipment can not be considered for tariff rate development purposes. For example, a breaker is purchased on the international market for \$1000, at the then current exchange rate of 50 Taka per dollar, the equivalent Bangladesh currency price would be 50,000 Taka. The generation company has the breaker in stock now. As a result of a recent exchange rate fluctuation, which has raised the rate to 60 Taka, the licensee cannot include the exchange difference of 10,000 taka as a cost of service expense for the material already on hand.

3.2.4.3. Depreciation

3.2.4.3.1. The amount of depreciation included as a cost is the total annual depreciation for all used and useful assets for the test year.

3.2.4.3.2. The amount of the current depreciation will be added as an expense in total costs at the current book value of the assets, and is not subject to re-evaluation based upon any subsequent revision of the asset valuation.

3.2.4.3.3. The depreciation is returned to the natural monopoly, as part of the cash flow, along with the return on assets.

Cash Flow = Return on Assets + Depreciation

3.2.4.4. Income and Other Taxes

3.2.4.4.1. A licensee's taxes are an expense that should be recoverable as a business cost in providing regulated service.

3.2.4.4.2. Three taxes directly affect a generator licensee's operations in Bangladesh – value added tax (VAT), land tax, and income tax.

To the extent that licensee makes payroll or invoice deductions from employee or contractor payments, for payment to the government, these are not included in the licensee's cost of service for Tariff Rate design purposes. To the extent that the licensee provides matching payments to these deductions above the amount collected, then these are booked as an expense as part of the cost of service. If the licensee makes any other tax payments not already discussed in this methodology

that has a direct result on the generation of electricity, then these are booked as an expense as part of the cost of service.

3.2.4.4.2.1. VAT is only collected at the distribution level and not collected on sales by the generation licensee to transmission or distribution licensees.

If the licensee pays VAT on any item it purchases, it is included in the book cost of that asset or item as part of the acquisition cost of the item for Tariff Rate design purposes.

3.2.4.4.2.2. Land tax is not directly affected by the amount of generation and generally is booked as a miscellaneous cost.

3.2.4.4.2.3. Income tax is charged as follows: for company which is not publicly traded the rate is 40%; and a publicly traded company has a rate of 30%.

3.2.4.4.2.3.1. The amount of income tax to be included as a cost expense for Tariff Rate design during the test year is the actual amount of income tax paid to the Bangladesh government as booked for the test year.

3.2.4.4.2.3.2. At the time of importing materials to Bangladesh, the licensee pays a VAT, a Customs Duty, and Advanced Income Tax. Advanced Income Tax is charged at the rate of 2.5% of the invoice value of the imported item.

3.2.4.4.3. For imported materials, the VAT and Customs Duty charged are a part of the acquisition cost of the asset or material, and should be included when booking the asset or material as part of its acquisition value. For example, some item has a value of 100 Taka, and incurs a 10 Taka customs duty and VAT charge upon import. For tariff rate design purposes, the total value listed in accounting records for the asset value or material cost of the item is 110 Taka. That will be used for purposes of depreciation and for computing a return on assets.

3.2.4.4.4. In addition to the advance income tax collected on import of materials, the licensee will pay estimated advance income tax to the Government on a quarterly basis. The licensee will make an estimate of taxes for the fiscal year. The licensee has an obligation to pay in advance payments at least 75% of the estimated taxes. Each quarter, the licensee then adjusts the estimate for the new quarter based upon actual revenues and tax liability for the past quarter. At the end of the fiscal year, the income tax payable is netted against the advanced income tax, paid via quarterly payments as well as per the advance income tax collected upon import of materials, and the net payable income tax is submitted to the government. If the accumulated advance income tax exceeds the amount of income tax owed to the government for that fiscal year, then no additional income tax is paid, and any surplus advance income tax is carried forward on the books into the next fiscal period. Advanced income tax is a prepayment and a portion should be included in regulatory working capital.

3.2.5. Recommended Total Annual Revenue Requirement

3.2.5.1. As indicated in the beginning of this section, the recommended revenue requirement would be the sum of the proposed return on rate base plus the total operating expenses which includes the current year depreciation, and taxes for the test year.

Recommended Annual Revenue Requirement = Proposed Return on Rate Base + Operating Expenses

3.2.5.2. This amount is compared to the current operating revenues to determine the amount of the increase that will need to be obtained to allow the generation licensee to receive the revenue requirement.

3.2.6. Total Current Operating Revenues

3.2.6.1. The total current operating revenues would be the sum of generation service revenues, income from other services rendered, any interest income, and any miscellaneous income.

Total Current Operating Revenues = Generation + Other Service + Interest + Miscellaneous

3.2.7. Proposed Revenue Increase

3.2.7.1. The proposed revenue increase is the difference between the current revenues and the recommended operating revenue requirement. This difference is the amount of revenue that rates would need to be increased to provide the licensee with the opportunity to achieve the recommended rate of return and receive sufficient funds to cover operating expenses.

Proposed Revenue Increase = Recommended Operating Revenues - Current Revenues

3.2.7.2. This proposed revenue increase is going to be subject to income tax. If this proposed increase is directly added to current revenues, then the licensee after implementing the increase would not receive the recommended operating revenues. Future revenues would be reduced by the amount of the increased taxes. To insure the licensee receives the revenues recommended, the amount of the increase is "grossed up". Essentially, the increase is enlarged to allow for the increased taxation. A revenue conversion factor is developed which is multiplied times the increase.

3.2.7.2.1. The revenue conversion factor is calculated by computing a formula. The formula is the number "1", divided by the number "1" minus the effective income tax rate.

Revenue Conversion Factor = 1/(1- Income Tax Rate)

3.2.7.2.2. Once the conversion factor has been developed, the amount of the increase is multiplied times the proposed revenue increase to develop a recommended revenue increase.

Recommended Revenue Increase = Proposed Revenue Increase * Revenue Conversion Factor

3.2.8. Total Recommended Revenue Requirement

3.2.8.1. The total recommended revenue requirement is the sum of the current revenues plus the recommended revenue increase.

Recommended Revenue Requirement = Total Current Revenues + Recommended Revenue Increase

3.3. Generation Service Tariff Rate

3.3.1. The generation service tariff rate is simply computed by dividing the recommended revenue requirement by the annual net generation by the plant in kilowatt hours for the test year.

Generation Service Tariff Rate = Recommended Revenue Requirement/Net Generation

4. OVERALL TARIFF RATE

4.1. The overall amount charged a generation customer will be the sum of the fuel cost recovery rate multiplied by the consumption and the generation service tariff rate multiplied times the consumption . All bills for customers will separately list the fuel cost and the service charges.

Overall Amount Charged Customer = (Fuel Cost Recovery Rate * KWH Delivered to Transmission) + (Service Tariff Rate * KWH Delivered to Transmission)

4.2. As generation services evolve in Bangladesh, the BEREC will address changes on a case by case basis and amend this methodology as needed.

5. POWER PURCHASE AGREEMENTS FOR INDEPENDENT AND SMALL POWER PRODUCERS.

5.1. The Government of Bangladesh solicits, selects, and contracts with Independent Power Producers (IPP) and Small Power Producers (SPP) under the terms and conditions of its policy as published. The Government, or such government designee, may agree, of its own authority, to a contract rate with the IPP or SPP, based on encouraging investment.

5.2. The BEREC in the performance of its mandate, under the BEREC Act, to insure a balance of economic interests among the licensees and the consumers, must establish and adopt a methodology, which allows for the recovery of IPP/SPP rates from consumers. The BEREC methodology and review of rates may provide for full recovery of these rates from consumers, or only a part of the rate. The BEREC's approval of only a part of the rate for recovery from consumers does not prevent the execution of the government contract. The non-recoverable portions of the rates are the responsibility of the contracting agency to provide from other financial resources.

5.3. The conventional approach described in sections one through four of this methodology provide for flexibility on a semiannual basis fuel cost adjustment, and on an annual basis the adjustment of the cost of providing the generation service. Thus, conventionally operated government-owned and investor-owned licensees have economic and financial regulatory systems, which are highly responsible to change in the energy sector. The tariffs derived through the IPP/SPP process are somewhat rigid with predetermined assumptions concerning funding costs and other fixed costs, which might otherwise change over the life of the IPP/SPP contract period. From a policy perspective, the power purchase agreement (PPA) is normally designed to protect the financial integrity and viability of the project once financial close is achieved. From a regulatory perspective, the rate charged to consumers must be the economic least cost, while still maintaining the economic viability of the generation licensee. Conventional licensees under the normal regulatory methodology should not subsidize the generation costs of IPP/SPP generation facilities; and all licensees, both IPP/SPP and conventional, should have equal access to transmission facilities, generation energy supplies, and economic dispatch.

5.4. In a regulatory analysis of the IPP/SPP licensee rates, the BEREC will examine the rate based on energy and capacity charges, which parallel the fuel cost rate and service rate structures discussed for the conventionally regulated generation licensee.

5.5. Energy Charges

5.5.1. The specifications for includable costs, and sub-accounts as described in sections 2.4.1 and 2.4.2, are included by reference in the determination of energy charges.

5.5.2. The fuel cost is the significant factor in the energy charge. As part of the PPA, the IIP/SPP licensee must specify a heat rate for the proposed plant. This heat rate must remain fixed throughout the term of the power purchase agreement. In calculating the fuel cost per kilowatt hour to be passed through to consumers, the fuel cost in Taka per BTU is multiplied times the heat rate, which is specified in BTU per KWH, as shown in the formula below:

$$\text{Fuel Rate} = \text{Fuel Cost (Taka/BTU)} \times \text{Heat Rate (BTU/KWH)}$$

In making initial application for a fuel rate, the licensee shall identify the heat rate used in the power purchase agreement and provide supporting engineering data to justify the rate. For regulatory purposes, the BERC reserves the right to reject the heat rate if not adequately supported and use a standard heat rate for the development of fuel rates if the licensee's proposed heat rate is significantly different from the norms. Once adopted the heat rate will remain the same throughout the life of the contract.

5.5.3. The contract terms for payment of the IPP/SPP by the purchaser of electricity will remain in accordance with the power purchase contract terms. The recovery by the purchaser of fuel costs from consumers will be in accordance with section 2 of this methodology.

5.5.4. Currently as specified in section 2.4 of this methodology, a portion of fuel related variable operating and maintenance costs are included in the standard methodology for the development of the fuel cost recovery rate. The IPP/SPP licensee must identify, quantify, and justify the variable O&M related to fuel costs that are beyond the amounts currently included. The BERC will review this analysis and determine if these costs are reasonable.

5.6. Capacity Charge

5.6.1. The licensee shall prepare a cost analysis of a proposed generation plant based upon the same characteristics as the plant proposed under the IPP/SPP Power Purchase Agreement in accordance with section 3 of this methodology. The operating costs will be reduced by the amount of variable O&M that the applicant wishes to include in the energy charge. The applicant will then project the cost estimates over the same period as the power purchase contract, using an appropriate discount rate. The applicant must support the selection of the discount rate in its application. To the extent that any assumptions are made concerning inflation, debt interest, currency exchange, etc. and used in the calculation of the contractual capacity payment, these same assumptions should be applied to the costs computed in the section 3 analysis. The table must be computed through the procedures outlined in section 3.2.5.1.

5.6.2. In the table that is generated in 5.6.1, an additional row will be added. For each year of the contract, the amount computed in section 3.2.5.1, will be divided by twelve to produce an average monthly revenue requirement. That amount is then divided by the result of multiplying the capacity of the plant times the estimated average availability factor as specified in the power purchase agreement, to produce a monthly capacity charge in Taka per Kilowatt Hour. The table will then average this capacity charge over the life of the contract.

Annual Revenue Requirement / 12 = Monthly Revenue Requirement

Monthly Revenue Requirement / (Capacity * Availability) = Monthly Capacity Charge Conventional

5.6.3. The applicant will then average the expected capacity payments specified in agreement over the life of the power purchase agreement.

5.6.4. If the applicant's power purchase average capacity payment equals or is less than the amount computed in 5.6.2., then the BERC in its judgment can allow for the pass through of the contract rate to consumers. If the contract capacity rate is higher than the amount computed in 5.6.2, the BERC in its judgment may disallow recovery of a portion of the contract rate for recovery from consumers. The BERC will consider justification for higher recovery based upon any evidence that the applicant provides at the hearing.

ANNEX A

Sample Generation Fuel Cost Recovery Rate Calculation

This example assumes natural gas delivered to the generation site. In the long term the licensee recovers the actual fuel costs, reflecting variations in market prices, and the customers receive stable commodity rates for a six month period.

Step 1. The Actual Fuel Costs are determined.

Actual Costs

	<u>MCM</u>	<u>Unit Price</u>	<u>Gas Cost</u>	<u>Acquisition/Delivery Costs</u>	<u>Total Cost</u>
January	408,016,827	2.6		0	1,060,843,750
Taka					
February	407,016,000	2.6		0	1,058,241,600
March	409,017,654	2.6		0	1,063,445,900
April	408,000,000	2.6		0	1,060,800,000
May	408,033,654	2.7		0	1,101,690,865
June	408,016,827	2.7		0	1,101,645,433
Total Actual Six Month Cost					6,446,667,548

Step 2. The Actual Net Generation is determined.

Electric Generation for the six months in KWH 4,150,000,000

Step 3. The Actual Fuel Cost is divided by net generation to determine the actual average fuel cost for the period.

Actual Fuel Rate 1.55341
Taka/KWH

Step 4. During this current period a fuel rate was charged based upon the previous six month period. In this example, the price of natural gas was increased in the current period.

Actual Revenues Received With Fuel Cost Recovery @ 1.53375 Taka/KWH 6,365,062,500

Sep 5. The difference in revenues is computed and divided by the net generation during the current period.

Actual Revenues minus Actual Costs (81,605,048)

Difference Divided by Generation in KWH 0.019663 Taka/KWH

Step 6. If the difference is negative, then the new fuel rate for the next period is the sum of the actual fuel rate computed in step 3 plus the difference; and if the difference is positive, then the fuel rate for the next period is the actual fuel rate minus the difference. In this example, the difference is negative so the actual fuel rate is increased by the amount of the difference. The resulting rate is amount to be charged during the following six month period as fuel charge.

Difference Added to Actual Fuel Cost 1.573073 Taka/KWH

ANNEX B

Sample Generation Service Tariff Rate Calculation

A simple summary table of the calculation of a generation service tariff rate follows. This provides an executive summary of how the methodology produces the final recommendation. More detailed information will follow, which provides the input elements for the factors used in this sample table.

Tariff Calculation

The following is a sample calculation of a small generation power plant, which is fueled by natural gas.

OPERATING INCOME SUMMARY

(All amounts in Taka)

		System Total
1. Rate Base		
Current Assets	100,000,000,000	
Less Accumulated Depreciation	600,000,000	
Net Current Assets	99,400,000,000	
CWIP	9,000,000,000	
Regulatory Working Capital	8,000,000,000	
Total Rate Base		116,400,000,000
2. Rate of Return		.07
3. Return on Rate Base (Line 1 x line 2)		8,148,000,000
4. Operating Expenses		
a. Operation & Maintenance	1,000,000,000	
b. Depreciation Expense	250,000,000	
c. Taxes	450,000,000	
5. Total Operating Expenses (Sum 4a, b, c)		1,700,000,000
6. Recommended Operating Revenue (Sum of line 3 plus line 5)		9,848,000,000
7. Current Operating Revenue		
Generation Sales	7,540,000,000	
Other Operating Revenue	0	
8. Total Current Operating Revenue		7,540,000,000
9. Revenue Increase (Line 6 minus line 8)		2,308,000,000
10. Revenue Conversion Factor		1.67
11. Adjusted Revenue Increase (Multiply line 9 by line 10)		3,854,360,000
12. Total Revenue Requirement (Sum of line 8 plus line 11)		11,394,360,000
13. Net Generation		8.3 x 10⁹ KWH
14. Generation Service Rate (Line 12 divided by line 13)		1.373 Taka/KWH

ANNEX C

GENERATION TARIFF METHODOLOGY FORMULA SUMMARY

A just and reasonable electricity generation tariff rate is calculated using the following summary. For details in applying these formulas, please review the text of the methodology.

EQUATION	RATE	AMOUNT
TR = FCRR + STR		
FCRR = FC/NG		
STR = ARR/NG		
ARR = RRB + TC		
RRB = RB*TRR		
TC = TOM + DEP + IOT		
RB = (UUA – TAD) + CWIP + RWC		
TRR = [(EC*RROE) + (DC*RROD)] / (EC + DC)		
RWC = CWC + FI + MSI + PP		

WHERE:

TR	is Overall Tariff Rate.
FCRR	is Fuel Cost Recovery Rate.
FC	is actual Fuel Cost.
NG	is Net Generation.
STR	is Service Tariff Rate.
ARR	is Annual Revenue Requirement.
RRB	is Return on Rate Base.
TC	is Total Cost.
RB	is Rate Base.
TRR	is Total Rate of Return.
TOM	is Total Operation and Maintenance Expense.
DEP	is test year Depreciation.
IOT	is Income and Other Taxes.
UUA	is Used and Useful Assets.
TAD	is Total Accumulated Depreciation.
CWIP	is Construction (Capital) Work In Progress.
RWC	is Regulatory Working Capital.
EC	is Equity Capital.
RROE	is Rate of Return On Equity.
DC	is Debt Capital.
RROD	is Rate of Return On Debt.
CWC	is Cash Working Capital.
FI	is Fuel Inventory.
MSI	is Materials and Supply Inventory.
PP	is Pre-Payments.