

# DRAFT INVITING OBJECTIONS, SUGGESTIONS AND COMMENTS

## Part-III

### Laws, Regulations and Rules passed thereunder

## Jammu and Kashmir State Electricity Regulatory Commission

### Notification

No.: /JKSERC/2010

Jammu Dated: \_\_\_\_\_

In exercise of the powers conferred under Section 36 read with Section 8 (1) (c ) of the Jammu and Kashmir State Electricity Regulatory Commission Act and all powers enabling it in this behalf, Jammu and Kashmir State Electricity Regulatory Commission hereby makes the following Regulations, namely:-

### CHAPTER – 1

#### PRELIMINARY

1. Short Title, Commencement and interpretation:-
  - (i) This Regulation may be called Jammu and Kashmir State Electricity Regulatory Commission (Terms and Condition for Determination of Transmission Tariff) Regulation 2010.
  - (ii) These shall come into force on the date of their publication in the Government Gazette.
2. **SCOPE AND EXTEND OF APPLICATION** – (i) The Regulation shall apply to a person or a utility or a company what so ever engaged in the business of Intra-State Transmission of Electricity, within the territory of the State of Jammu and Kashmir.

This Regulation shall not apply to:

- a) The Tariff of Transmission Lines owned or controlled by the Central Government.
- b) The Tariff of Transmission Companies other than owned or controlled by the Central Government as specified in clause (a) if such transmission companies enter into or other wise have composite schemes for transmission of electricity sale / use in more than one State.
- c) Where tariff has been determined through transparent process of bidding in accordance with the guide lines issued by the Central Government, the Commission shall adopt such tariff in accordance with provision of the Act.

- d) The Regulation shall come into force on the date of to publication in the Government Gazette.

### **3. DEFINITIONS:**

3. (i) In this Regulation, unless the context otherwise requires.
- a) “Act” means the Jammu and Kashmir State Electricity Act 2010.
  - b) “Aggregate Revenue Requirement” (ARR) means the revenue required to meet the cost pertaining to licensee for financial year, which would be permitted to be recovered through Tariff and charges by the Commission.
  - c) “Base Year” means the financial year immediately preceding first year of the control period.
  - d) “Commission” means the Jammu and Kashmir State Electricity Regulatory Commission .
  - e) “CERC” means Central Electricity Regulatory Commission.
  - f) “CEA” means Central Electricity Authority referred to in Section 70 of the Electricity Act 2003 ( Central Electricity Act 36 of 2003).
  - g) “Consumer / User Contribution” means any contribution made by those using or intending to use Transmission network of a licensee. Any grant received by licensee would also be treated as consumers / users contribution.
  - h) “Control period” means a multi year period fixed by Commission from time to time under multi year tariff frame work.
  - i) “ERC” means the Expected Revenue Charges from a licensee as permitted to recover pursuant to the terms of its licensee.
  - j) “Financial Year” means the period commencing on 1<sup>st</sup> April of a calendar year and ending on 31<sup>st</sup> March of the immediately following calendar year.
  - k) “Grid Code” means the Jammu and Kashmir State Electricity Regulatory Commission (Grid Code) Regulation 2007.
  - l) “Licensee” means granted under Section 8 (2d) of the Act to transmit electricity with in the State.
  - m) “Conduct of Business Regulation” means the Jammu and Kashmir State Electricity Regulatory Commission (Conduct of Business) Regulation in force from time to time.
  - n) “Non Tariff Income” means income relating to the licensed business other than from (i) Tariff for Transmission and (ii) Income from other Licensed Business.
  - o) “Open Access Agreement” means an agreement entered into by an Open Access customer with transmission and distribution licensees, generators, traders, consumers and others as applicable to him.
  - p) “Open Access Customer” means a consumer permitted by the Commission to receive supply of electricity from a person other than Distribution Licensee of his area of supply and expression include any business of licensees who have availed or intend to avail of open access.
  - q) “State” means the State of Jammu and Kashmir.
  - r) “SLDC” means State Load Despatch Centre already functioning in the State of Jammu and Kashmir as an apex body to ensure integrated operation of power systems in the State.
  - s) “Tariff” means a schedule of standard prices or charges for specified services which are applicable to all such specified services.
  - t) “Transmission Business” means the business of transmitting electricity within the State.

- u) Words or expressions used in this regulation but defined in the J&K Electricity Act Samvat 1997 or Jammu and Kashmir Electricity Duty Act 1963 and Jammu and Kashmir Supply Rules 1978, shall have meaning respectively assigned to them in those Acts/Rules.

## **CHAPTER II**

### **FILING OF ANNUAL REVENUE REQUIREMENT AND TARIFF APPLICATION**

1. Filing of expected revenue and cost services and application for determination of Tariff:- Energy Transmission licensee/utility shall file with the Commission in the formats or on forms as may be required by the Commission, a statement containing calculation for ensuing financial year of the expected aggregate revenue from charges under approved tariff and expected cost of providing services i.e., the Annual Revenue Requirements (ARR).
2. Schedule and procedure of filing ARR and Tariff application:- The Schedule and procedure of filing ARR and Tariff application shall be as per the provisions of Jammu & Kashmir State Electricity Regulatory Commission (Conduct of Business) Regulations 2005 amended upto date.

## **CHAPTER III**

### **MULTI YEAR TARIFF FRAMEWORK AND APPROACH**

#### **3. MULTI YEAR TARIFF FRAMEWORK**

3.1 MYT framework shall be based on the following elements, for calculation of ARR and ERC :

- (i) Control Period, at the commencement of which, a forecast of the ARR and ERC shall be filed by the Transmission Licensee for approval of the Commission;
- (ii) Transmission Licensee's forecast of ARR and ERC during the Control Period shall be based on reasonable assumptions related to the expected behavior of the various operational and financial variables;
- (iii) Trajectory for specific variables as may be stipulated by the Commission, where the performance of the Licensee is sought to be improved through incentives and disincentives;
- (iv) Annual Review of performance vis-à-vis the approved forecast and categorization of variations in performance into those that were caused by

- factors within the control of the Transmission Licensee (controllable factors) and those caused by factors beyond the control of the Transmission Licensee (uncontrollable factors);
- (v) Mechanism for pass through of approved gains or losses on account of uncontrollable factors;
  - (vi) Mechanism for sharing approved gains or losses arising out of controllable factors;
  - (vii) Determination of tariff for each financial year within the control period, based on the approved forecast.

### **3.2 FILING UNDER THE MYT FRAMEWORK**

Every Transmission Licensee shall file an application for approval of ARR and ERC under the MYT framework for the Control Period commencing from FY2010-11. The filing for the Control period shall be made by the licensee within a period not less than 120 days before the commencement of the Control Period. The filing shall be for the entire Control Period. The filing shall year wise details for each year of the Control Period, duly complying with the principles for determination of ARR as specified in these Regulations.

### **3.3 CONTROL PERIOD**

The first Control Period under the MYT framework shall be of a duration of 2 years commencing from FY -11. Thereafter, each Control Period shall be normally a period of 5 financial years or such other period as may be specified by the Commission from time to time.

### **3.4 CONTENTS OF MYT FILING**

3.4.1 The ERC filing under the MYT framework shall contain the following:

- a. The Operation and Maintenance (O&M) costs which include employee-related costs, repairs & maintenance costs and administrative & general costs, estimated for the Base Year and the actuals for the previous two years prior to the Base Year in complete detail, together with the forecast for each year of the Control Period based on the norms proposed by the Transmission Licensee including indexation and other appropriate mechanisms;
- b. Detailed scheme/project-wise Capital Investment Plan with a capitalisation schedule covering each year of the Control Period;
- c. A proposal for appropriate capital structure to meet the capital investment plan with details of cost of financing including interest cost on debt and return on equity.
- d. Range of Transmission losses (upper and lower) for each year of the Control Period for the purpose of incentive / penalties. The Licensee shall file a

trajectory of the loss levels in respect of losses for each of the years of the control period, backed up by proper studies to justify the loss levels indicated;

- e. Details of depreciation and capitalization schedule for each year of the Control Period;
- f. Description of external parameters proposed for indexation;
- g. Details of taxes on income;
- h. Any other relevant expenditure;
- i. Proposals for sharing of gains and losses;
- j. Proposals for efficiency parameter targets;
- k. Proposals for rewarding efficiency in performance;
- l. Any other matters considered appropriate.

#### 3.4.2 PERSPECTIVE PLAN

1. The Transmission Licensee shall file a Perspective Plan for Commission's approval along with the MYT filing for the Control Period. The perspective plan in the first instance shall be for the period from 2010-11 to 2011-12 so as to coincide with the 11<sup>th</sup> plan period. Thereafter the perspective plan shall be for a period of every 5 years.
2. The Perspective Plan shall inter alia contain the Load Forecast and a Capital Investment Programme consistent with the requirements of the Guidelines on Load Forecast and Practice Directions in respect of investment programme as approved by the Commission from time to time.

### 3.5 THE MYT APPROACH

The MYT framework shall be based on the following approach, for calculation of ERC and ARR:

**3.5.1 Base Year:** - Values for the Base Year of the Control Period will be determined based on the audited accounts available, best estimate for the relevant years and other factors considered appropriate by the Commission, and after applying the tests for determining the controllable or uncontrollable nature of various items.

**3.5.2 Targets:** - Targets will be set for items that are deemed by the Commission as "controllable". Trajectory for specific variables may be stipulated by the Commission where the performance of the applicant is sought to be improved upon through incentives and disincentives.

3.5.3 Controllable and Uncontrollable items of ARR:- The expenditure of the Transmission Licensee considered as “controllable” and “uncontrollable” shall be as follows:

<b>Transmission Business</b>	
<b>ARR Item</b>	<b>“Controllable”/ “Uncontrollable”</b>
Operation & Maintenance expenses	Controllable
Employee Cost	Controllable
Admn. & General Expenses	Controllable
Interest & Finance Charges	Controllable
Expenses on account of Inflation	Uncontrollable
Return on Equity	Controllable
Depreciation	Controllable
Taxes on Income	Uncontrollable
Non-tariff income	Controllable

### **3.6 DISPOSAL OF APPLICATION UNDER THE MYT FRAMEWORK**

3.6.1 The Commission will process the Transmission Licensee’s filings under MYT framework in accordance business with these Regulations read with J&KSERC (Conduct of Business) Regulations 2005.

3.6.2 Based on the Transmission Licensee’ filings and objections/ suggestions from public and other stakeholders, the Commission may accept the application with such modifications and/or such conditions as may be deemed just and appropriate and issue, within 120 days of the receipt of the application, complete in all respects, an Order containing *inter alia* targets for controllable items and the approved ARR for the Control Period.

3.6.3 The Commission shall also approve the Perspective Plan with appropriate modifications as may be considered necessary for the Control Period.

### **3.7 ANNUAL REVIEW OF PERFORMANCE**

3.7.1 The Transmission Licensee shall be subject to an annual performance review during the Control Period. The Licensee shall make an application for annual performance review not less than 120 days before the close of each financial year in the Control Period. The Licensee shall provide such information as may be

- stipulated by the Commission from time to time to assess the reasons and extent of any variation in the performance from the approved forecast.
- 3.7.2 The Transmission Licensee may, as a result of additional information not previously known or available to him at the time of forecast under the MYT framework for the Control Period, apply for modification of the ARR and ERC for the remainder of the control period, as part of annual performance review.
- 3.7.3 In case the variation in expenses or income in any financial year in the control period is more than 10% of the approved expenses/income for that year, the licensee can seek readjustment of the tariff for the subsequent period.
- 3.7.4 The Commission may, as a result of additional information not previously known or available to it at the time of approval of the forecast under the MYT framework for the Control Period, either suo motu or on application made by any interested party, modify the approved forecast of ARR/ ERC and tariff for the remainder of the control period as part of the annual performance review.
- 3.7.5 The Commission shall review an application in the same manner as the original application for determination of ARR/ERC and tariff and upon completion of such review, either approve the proposed modification with such changes as it deems appropriate or reject the application for reasons to be recorded in writing.
- 3.7.6 Upon completion of annual performance review, the Commission shall pass an order recording:
- a) The approved aggregate gain or loss to the Licensee on account of uncontrollable factors and the mechanism by which the Licensee shall pass through such gains or losses.
  - b) The approved aggregate gain or loss to the Licensee on account of Controllable factors and the mechanism to share such gains or losses.
  - c) The approved modifications to the forecast for the remainder period of the Control period, if any.
  - d) The approved modification to the tariff, if any, for the remainder period of the control period.

## CHAPTER IV

### PRINCIPLES FOR COMPUTATION OF ARR AND TARIFF

#### 4.1 ANNUAL REVENUE REQUIREMENT

The ARR for transmission of electricity on intra-state transmission system shall comprise of the following, namely:

- (a) Operation and maintenance expenses
- (b) Interest on loan capital
- (c) Return on equity
- (d) Depreciation
- (e) Interest on working capital
- (f) Taxes on Income
- (g) Other expenses if any
  
- (h) Less: Non-tariff income and income from Other Business

#### 4.2 TARGET AVAILABILITY FOR RECOVERY OF FULL TRANSMISSION CHARGES SHALL BE AS FOLLOWS:

- (1) Target Availability for intra-state transmission availability shall be 98%.
- (2) Recovery of fixed charges below the level of target availability shall be on pro-rata basis. At Zero Availability, no transmission charges shall be payable.
- (3) Target Availability shall be calculated in accordance with the procedure specified in Appendix-1.

#### 4.3 AUXILIARY ENERGY CONSUMPTION IN THE SUB-STATION

The charges for auxiliary energy consumption in the sub-station for the purpose of air-conditioning, lighting, technical consumption, etc. shall be considered as part of transmission losses as per norms to be fixed by the Commission.

#### 4.4 TREATMENT OF LOSSES

4.41 Transaction should be charged on the basis of average losses arrived at for the transmission system. The loss framework should ensure that the loss

compensation is reasonable and linked to applicable technical loss benchmark determined by the Commission.

- 4.4.3 Transmission Losses at normative level as approved by the Commission shall be debitable to energy account of users of the transmission system.

In case the actual transmission loss exceeds the normative loss level approved by the Commission, such excess loss shall be to the account of the Transmission Licensee and the Transmission Licensee shall compensate the Users at the weighted average cost of power purchase in that Financial year.

- 4.4.4 In case the actual transmission loss is less than the approved loss level, such savings shall be shared between the Transmission Licensee and the Users in the ratio of 70:30 during the first Control Period and in the ratio as may be decided by the Commission in the subsequent Control periods.

#### **4.5 CAPITAL EXPENDITURE AND DETERMINATION OF ARR:**

- 4.5.1 Subject to prudence check by the Commission, the actual expenditure incurred on completion of the project shall form the basis for determination of ARR/tariff. The final tariff shall be determined based on the admitted capital expenditure actually incurred up to the date of commercial operation of the transmission system and shall include capitalised initial spares subject to a ceiling norm as 1.5% of original project cost.

Provided that where the implementation agreement or the transmission service agreement entered into between the Transmission Licensee and the long-term transmission customers provides a ceiling of actual expenditure, the capital expenditure shall not exceed such ceiling for determination of tariff.

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

Note: While allowing the cost, the Commission would ensure that these are reasonable and to achieve these objectives, requires benchmark on capital cost would evolved by Commission.

4.5.2 In the case of existing projects, the project cost admitted by the Commission prior to issue of these Regulations shall form basis for determination of ARR/Tariff.

#### **4.6 ADDITIONAL CAPITALISATION:**

4.6.1 The following capital expenditure within the original scope of work actually incurred after the date of commercial operation and up to the cut off date may be admitted by the Commission, subject to prudence check:

- (i) Deferred liabilities;
- (ii) Works deferred for execution;
- (iii) Procurement of initial capital spares in the original scope of works subject to the ceiling norm specified ;
- (iv) Liabilities to meet award of arbitration or compliance of the order or decree of a court; and
- (v) On account of change in law.

Provided further that a list of the deferred liabilities and works deferred for execution shall be submitted along with the application for tariff after the date of commercial operation of the transmission system.

Note: Cut off date means the date of first financial year closing after one year of the date of commercial operation of the transmission system.

4.6.2 Subject to the provisions of clause 3.6.3 of this regulation, the capital expenditure of the following nature actually incurred after the cut off date may be admitted by the Commission, subject to prudence check:

- (i) Deferred liabilities relating to works/services within the original scope of work;
- (ii) Liabilities to meet award of arbitration or compliance of the order or decree of a court;

- (iii) On account of change in law; and
- (iv) Any additional works/services, which have become necessary for efficient and successful operation of the project, but not included in the original project cost.

4.6.3 Any expenditure on minor items/assets bought after the cut off date like tools and tackles, personal computers, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, fans, T.V., washing machine, heat-convectors, mattresses, carpets, etc shall not be considered for additional capitalization for determination of tariff after issue of these Regulations.

Note: The list of items is illustrative and not exhaustive.

**Note 1:** Any expenditure admitted on account of committed liabilities within the original scope of work and the expenditure deferred on techno-economic grounds but falling within the original scope of work shall be serviced on normative debt-equity ratio specified in these Regulations.

**Note 2:** Any expenditure on replacement of old assets shall be considered after writing off the entire value of the original assets from the original capital cost.

**Note 3:** Any expenditure admitted by the Commission for determination of tariff on account of new works not in the original scope of work shall be serviced on normative debt-equity ratio specified in these Regulations.

**Note 4:** Any expenditure admitted by the Commission for determination of tariff on renovation and modernization and life extension shall be serviced on normative debt-equity ratio specified in these Regulations after writing off the original amount of the replaced assets from the original capital cost.

#### **4.7 DEBT-EQUITY RATIO:**

4.7.1 For financing of future capital cost of projects, a Debt: Equity ratio of 70:30 should be adopted. The Licensee would be free to have higher quantum of equity investments. The equity in excess of this norm shall be treated as loans advanced at the weighted average rate of interest and for a weighted average tenor of the long term debt component of the project after ascertaining the reasonableness of the interest rates and taking into account the effect of debt restructuring done, if any. In case of equity below the normative level, the actual equity would be used for determination of Return on Equity in tariff computations.

4.7.2 Debt including its tenure shall be structured with a view to reduce the tariff. Savings in cost on account of subsequent restructuring of debt shall be allowed to

be shared between the Licensee and the beneficiaries in the ratio of 70:30 during the first Control Period and in such proportion as may be decided by the Commission in the subsequent Control periods.

#### **4.8 INTEREST ON LOAN CAPITAL**

4.8.1 Interest on loan capital shall be computed loan wise on the loans arrived at in the manner indicated in sub clause 3.7 above.

4.8.2 The loan outstanding as on 01.04.2007 shall be worked out as the gross loan minus cumulative repayment as admitted by the Commission up to 31.03.2007. The repayment for the period FY08 to FY10 shall be worked out on normative basis.

4.8.3 In case any moratorium period is availed of by the Transmission Licensee, depreciation provided for in the tariff during the years of moratorium shall be treated as repayment during those years and interest on loan capital shall be calculated accordingly.

4.8.4 Foreign exchange variation risk, if any, shall not be a pass through. In the case of projects where tariff has not been determined on the basis of competitive bids, appropriate costs of hedging and swapping to take care of foreign exchange variation will be allowed for debt obtained in foreign currencies.

#### **4.9 DEPRECIATION**

4.9.1 Depreciation shall be computed in the following manner, namely:

- (i) The value base for the purpose of depreciation shall be the historical cost of the asset.
- (ii) Depreciation shall be calculated annually based on straight-line method over the useful life of the asset and at the rates prescribed in Appendix-2 to these Regulations.
- (iii) The residual life of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the historical capital cost of the asset. Land is not a depreciable asset and its cost shall be excluded from the capital cost while computing 90% of the historical cost of the asset.

- 4.9.2 Depreciation shall be chargeable from the first year of operation. In case of operation of the asset for part of the year, depreciation shall be charged on *pro rata* basis.
- 4.9.3 The above said rate of depreciation shall be applicable both for the purpose of tariff as well as accounting.
- 4.9.4 The Commission may consider allowing ‘advance against depreciation’ to the extent of difference between the amount of depreciation computed and the debt repayment for the financial year.
- 4.9.5 Benefit of reduced tariff after the assets have been fully depreciated shall remain available to the consumers.

#### **4.10 RETURN ON EQUITY**

Return on equity shall be computed on the equity base determined in accordance with clause 3.7 above and shall be @ 14% per annum.

For the purpose of return on equity, any cash resources available to the Licensee from its share premium account or from its internal resources that are used to fund the equity commitments of the project under consideration shall be treated as equity subject to limitation contained in clause 3.7above.

#### **4.11 OPERATION AND MAINTENANCE EXPENSES**

- 4.11.1 In the case of existing Transmission Licensee, the Licensee in its filings shall submit the consolidated O&M expenses for the Base Year of the Control Period and for the two years preceding the Base Year. The O&M expenses for the Base Year shall be determined based on the latest audited accounts, best estimates of Licensee of the actual O&M expenses for relevant years and other factors considered relevant. The O&M expenses for the Base Year, if required, will be used for projecting the expenses for each year of the control period. The Licensee shall also propose determination of the admissible O&M expenses on the basis of per ckt-km of lines and per bay of substation for the base year and appropriate Inflation Factor Norms for operation and maintenance expenses for the first control period.

4.11.2 The O&M cost per ckt-km of lines and per substation bay for the Base Year of second and subsequent Control Periods shall be determined on the basis of actual O&M cost of lines and substations to be filed separately by the Licensee.

#### **4.12 INTEREST ON WORKING CAPITAL**

4.12.1 Working capital shall cover:

- (a) Operation and maintenance expenses for one month;
- (b) Maintenance spares at 1% of the historical cost of assets at the beginning of the year and
- (c) Receivables equivalent to two months of transmission charges calculated on target availability level.

4.12.2 Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1<sup>st</sup> April of the year. The interest on working capital shall be payable on normative basis notwithstanding that the Transmission Licensee has not taken working capital loan from any outside agency.

4.12.3 In the case of new Transmission Licensee undertaking intra-state transmission projects, the norm of operation and maintenance expenses per ckt-km and per bay shall be as under:-

Norms for O&M expenses per ckt-km and per bay

<b>Particulars</b>	<b>2010-11</b>	<b>2011-12</b>
O&M Expenses (Rs. In lakh per ckt-km)	0.288	0.300
O&M Expenses (Rs. In lakh per per bay)	35.54	36.96

#### **4.13 TAXES ON INCOME**

4.13.1 Taxes on Income, if any, on the income stream of the licensed business of the Transmission Licensee shall be treated as an expense and shall be recoverable through ARR/tariff.

4.13.2 Tax on any income stream other than the transmission business shall not constitute a pass through component in tariff and tax on such other income shall be payable by the Transmission Licensee.



3. Till such time the transmission charges are determined on KW basis, the transmission charges may be continued to be determined by the Commission on per kWh basis.

4.15.2 Each Transmission User (including the Distribution Licensees) shall have to execute an agreement in terms of the Open Access Regulation duly mentioning, inter alia, contracted capacity with the Licensee. Variations in revenue recovery over approved revenue requirement on account of variations in transmission usage will be adjusted in the subsequent year.

#### **4.16 PAYMENT OF TRANSMISSION CHARGES:**

Full annual transmission charges shall be recoverable at the target availability stipulated in Regulation 3.02. Payment of transmission charges below the target availability shall be on *pro rata* basis. The transmission charges shall be calculated on monthly basis.

#### **4.17 INCENTIVE:**

- (1) The transmission licensee shall be entitled to incentive on achieving annual availability beyond the target availability as per regulation 3.2, in accordance with the following formula:

$$\text{Incentive} = \text{Annual Transmission Charges} \times [\text{Annual availability achieved} - \text{Target Availability}] / \text{Target Availability};$$

Provided that no incentive shall be payable above the availability of 99.75%.

- (2) 50% of the Incentive shall be shared by the long-term customers in the ratio of their average allotted transmission capacity for the year.

#### **4.18 REBATE:**

For payment of bills of transmission charges through letter of credit on presentation, a rebate of 2% shall be allowed. Where payments are made subsequently through opening of letter of credit or otherwise, but within a period of one month of presentation of bills by the Transmission Licensee, a rebate of 1% shall be allowed.

#### **4.19 LATE PAYMENT SURCHARGE:**

In case the payment of bills of transmission charges by the beneficiary (s) is delayed beyond a period of 1 month from the date of billing a late payment surcharge at the rate of 1.25% per month shall be levied by the Transmission Licensee.

## **CHAPTER - V**

### **MISCELLANEOUS**

#### **5.1 POWER TO AMEND**

Commission may, at any time add, vary, alter, modify, delete or amend any provisions of these Regulations.

#### **5.2 POWER TO REMOVE DIFFICULTIES**

If any difficulty arises in giving affect to any of the provisions, the Commission may, by general or specific order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.

5.3 Nothing in these Regulations shall bar the Commission from adopting, in conformity with the provisions of the Act, a procedure, at variance with any of the provisions of these Regulations, if the Commission, in view of the special circumstances of a matter or class of matters and for reasons to be recorded in writing, deems it necessary or expedient for dealing with such a matter or class of matters.

**BY ORDER OF THE COMMISSION**

**Secretary**

**Procedure for calculation of Transmission System Availability**

i) Availability shall be calculated and declared separately for each voltage level.

The transmission system availability shall be declared as per the formula mentioned below. The transmission elements shall be grouped into following categories for the purpose of calculation of availability of Transmission Systems:

- (a) AC transmission lines: Each circuit of AC transmission line shall be considered as one element.
- (b) Inter-Connecting Transformers (ICTs): Each ICT bank (three single phase transformer together) shall form one element.
- (c) Static VAR Compensator (SVC): SVC along with SVC transformer shall form one element. However, 50% credit to inductive and 50% to capacitive rating shall be given.
- (d) Switched Bus Reactor: Each switched Bus Reactor shall be considered as one element.

ii) The Availability of Transmission system shall be calculated as under:

% System Availability for the system

$$= \frac{o \times AV_o + p \times AV_p + q \times AV_q + r \times AV_r}{o + p + q + r} \times 100$$

Where

o is Total number AC lines

AV<sub>o</sub> is Availability of o number of AC lines.

p is the Total number of switched bus reactors.

AV<sub>p</sub> is Availability of p number of switched bus reactors.

q is Total number of ICTs.

AV<sub>q</sub> is Availability of q number of ICTs.

r is Total number of SVCs.

AV<sub>r</sub> is Availability of r number of SVCs.

(iii) The weightage factor for each category of transmission elements shall be as

Under:

- (a) For each circuit of AC line – Surge Impedance Loading for Uncompensated line (SIL) multiplied by Circuit Km. (SIL rating for

various voltage level and conductor configuration shall be as per the procedure adopted for power system analysis)

- (b) For each ICT bank – The rated MVA capacity.
- (c) For SVC – The rated MVAR capacity (inductive & capacitive).
- (d) For switched Bus reactor – The rated MVAR capacity.
- (iv) The availability for each category of transmission elements shall be calculated based on the weightage factor, total hours under consideration and non-available hours for each element of that category. The formulae for calculation of Availability of each category of the Transmission elements are as Enclosure-I.
- (v) The transmission elements under outage due to following reasons not attributable to the Transmission Licensee shall be deemed to be available:
  - (a) Shut down of transmission elements availed by other agency/agencies for maintenance or construction of their transmission system.
  - (b) Manual tripping of line due to over voltage and manual tripping of switched bus reactor as per the directions of RLDC / SLDC.
- (vi) Outage time of transmission elements for the following contingencies shall be excluded from the total time of the element under period of consideration.
  - (a) Outage of elements due to acts of God and force majeure events beyond the control of the Transmission Licensee.
  - (b) Outage caused by grid incident/disturbance not attributable to the Transmission Licensee, e.g. faults in substation or bays owned by other agency causing outage of the Transmission Licensee’s elements, tripping of lines, ICTs, etc. due to grid disturbance. However, if the element is not restored on receipt of direction from SLDC while normalizing the system following grid incident/disturbance within reasonable time, the element will be considered not available for whole period of outage and outage time shall be attributable to the Transmission Licensee.

**Enclosure - 1**

AVo (Availability of o no. of AC lines) =

$$\frac{\sum_{i=1}^o (W_i(T_i - T_{NAi}) / T_i)}{\sum_{i=1}^o W_i}$$

AVq (Availability of q no. of ICTs) =

$$\frac{\sum_{k=1}^q (W_k(T_k - T_{NAk}) / T_k)}{\sum_{k=1}^q W_k}$$

K=1

k=1

AVr (Availability of r no. of SVCs) =

$$\left( \sum_{m=1}^r 0.5 (W_{lm} (T_{lm} - TNA/m) / T_{lm}) + \sum_{m=1}^r 0.5 (W_{cm} (TC_m - TNA/C_m) / TC_m) \right) + \left( \sum_{m=1}^r 0.5 (W_{lm}) + \sum_{m=1}^r 0.5 (W_{cm}) \right)$$

AVs (Availability of S.No. of switched reactor =

$$\sum_{N=1}^s (W_n (T_n - TNA_n) / T_n) / \sum_{n=1}^s W_n$$

Where  $W_i$  = Weightage factor or  $i^{th}$  transmission line

$W_k$  = weighted factor  $k^{th}$  ICT

$W_{lm}$  &  $W_{cm}$  = Weightage factors for inductive & capacitive operation of  $m^{th}$  SVC

$W_n$  = Weighted average factor for  $n^{th}$  bus reactor

$T_i, T_k, T_{lm}, TC_m, T_n$  – The hours of  $i^{th}$  AC line,  $k^{th}$  ICT,  $m^{th}$  SVC

(Inductive Operation), SVC (Capacitive Operation) &  $n^{th}$  Switched Bus Reactor during the period under consideration (excluding time period for outages not attributable to Transmission Licensee)

$TNA_i, TNA_k, TNAL_m, TNAC_m, TNA_n$  – The non-availability hours (excluding the time period for putages not attributable to Transmission Licensee) for

$i^{th}$  AC line,  $k^{th}$

ICT,  $m^{th}$  SVC (Inductive Operation),  $m^{th}$  SVC (Capacitive Operation) &  $n^{th}$  Reactor.

## Depreciation Schedule

Description of Assets	Useful Life of the Assets (years)	Rate (Calculated with Reference to 90%)	
	<b>1</b>	<b>2</b>	<b>3=1*2</b>
A. Land owned under full title	Infinity	---	
B. Land held under lease:			
(a) for investment in land.	The period of lease or the period remaining unexpired on the assignment of lease.	-----	
(b) for cost of clearing site	The period of lease remaining unexpired at the date of clearing the site.	-----	
C. Assets:			
Purchased new :			
(a) Plant and machinery in generating including plant foundations.			
(i) Hydro-electric	35	2.57	90
(ii) Steam-electric NHRS & Waste Heat Recovery Boilers/Plants	25	3.60	90
(iii) Diesel-electric & gas plant	15	6.00	90
(b) Cooling towers and circulating water systems	25	3.60	90
(c) Hydraulic works forming Part of hydro-electric system including:-			
(i) Dams, Spilways weirs, canals reinforced concrete Flumes & syphons	50	1.80	90
(ii) Reinforced concrete pipelines and surge tanks, steel pipelines, sluice gates, steel surge (tanks) hydraulic, control valves and other hydraulic works.	35	2.57	90
(d) Building & civil engineering works of a Permanent character, not mentioned above:-			
(i) Offices & showrooms	50	1.80	90
(ii) Containing thermo- electric generating plant	25	3.60	90
(iii) Containing hydro- electric generating plant	35	2.57	90
(iv) Temporary erection such as wooden structures	5	18.00	90
(v) Roads other than kutchha roads	50	1.80	90
(vi) Others	50	1.80	90

(e) Transformers, transformer (Kiosk) sub-station equipment & other fixed apparatus (including plant foundations):			
(i) Transformers (including foundations) having a rating of 100 kilo volt amperes and over	25	3.60	90
(ii) Others	25	3.60	90
(f) Switchgear, including cable connections	25	3.60	90
(g) Lightning arrestors:			
(i) Station type	25	3.60	90
(ii) Pole type	15	6.00	90
(iii) Synchronous condenser	35	2.57	90
(h) Batteries:	5	18.00	90
(i) Underground Cable Including joint boxes and disconnected boxes	35	2.57	90
(ii) Cable duct system	50	1.80	90
(I) Overhead lines including supports:			
(i) Lines on fabricated steel supports operating at nominal voltages higher than 66 KV	35	2.57	90
(ii) Lines on steel supports operating at nominal voltages higher than 13.2 Kilo volts but not exceeding 66 Kilo volts	25	3.60	90
(iii) Lines on steel or reinforced concrete supports	25	3.60	90
(iv) Lines on treated wood supports	25	3.60	90
(j) Meters	15	6.00	90
(k) Self propelled vehicles	5	18.00	90
(l) Air conditioning plants:			
(i) Static	15	6.00	90
(ii) Portable	5	18.00	90
(m) (i) Office furniture and fittings	15	6.00	90
(ii) Office equipments:	15	6.00	90
(iii) Internal wiring including fittings and apparatus	15	6.00	90
(iv) Street light fittings	15	6.00	90
(o) Apparatus let on hire:			
(i) Other than motors	5	18.00	90
(ii) Motors	15	6.00	90
(p) Communication equipment:			
(i) Radio and higher frequency carrier system	15	6.00	90
(ii) Telephone lines and telephones	15	6.00	90
(q) Assets purchased second hand and assets not otherwise provided for in the schedule	Such reasonable period as the competent Government determines in each case having regard to the nature, age and condition of the assets at the time of its acquisition by the owner.		