

# KERALA STATE ELECTRICITY REGULATORY COMMISSION

## NOTIFICATION

No. / /KERC-2005/

Dated, Thiruvananthapuram , 2005.

### TERMS AND CONDITIONS FOR DETERMINATION OF HYDRO GENERATION TARIFF

#### STATEMENT OF OBJECTS AND REASONS

Section 61 of the Electricity Act, 2003 (Central Act 36 of 2003) stipulates that the Appropriate Commission shall, subject to the provisions of the Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided *inter alia* by the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees and the National Electricity Policy and National Tariff Policy notified by the Central Government. Subsection (1) (d) of Section 62 of the Electricity Act, 2003 stipulates that the Appropriate Commission shall determine the tariff for retail sale of electricity in accordance with the provisions of the Act. The Regulations hereunder have been framed in pursuance of the above provisions of the Act.

#### REGULATIONS

In accordance with Section 61 read with Section 181 of the Electricity Act, 2003 (Central Act 36 of 2003), the Kerala State Electricity Regulatory Commission hereby makes the following Regulations, namely.-

#### CHAPTER I

#### GENERAL

**1. Short title and commencement.**-(1)These Regulations may be called the Kerala State Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2005.

(2) These Regulations extend to the whole of the State of Kerala.

(3) These shall come into force on the date of their publication in the official Gazette, and unless reviewed earlier or extended by the Commission, shall remain in force for a period of 5 years

**2. Scope and extent of application.**-(1)Where tariff has been determined through transparent process of bidding in accordance with the

guidelines issued by the Central Government, the Commission shall adopt such tariff in accordance with the provisions of the Electricity Act, 2003

(2) These regulations shall apply in all other cases where tariff for the hydro generating stations located in Kerala State is to be determined by the Commission based on capital cost, except Small Hydro Power Stations with installed capacity up to 25 MW and those covered under clauses (a) and (b) of sub-section (1) of section 79 of the Electricity Act, 2003

**3. Definitions.**-(1) Unless the context otherwise requires for the purpose of this chapter,

(i) 'Act' means the Electricity Act, 2003;

(ii) 'Additional Capitalisation' means the capital expenditure actually incurred after the date of commercial operation of the station and admitted by the Commission after prudence check subject to provisions of regulation 6;

(iii) 'Authority ' means Central Electricity Authority referred to in Section 70 of the Act;

(iv) 'Auxiliary Energy Consumption' in relation to a period means the quantum of energy consumed by auxiliary equipment of the generating station, and shall be expressed as a percentage of the sum of gross energy generated at generator terminals of all the units of the generating station;

(v) 'Beneficiary' in relation to a generating station means the person buying power generated at such a generating station on payment of annual capacity charges;

(vi) 'Capacity Index' means the average of the daily capacity indices over one year;

(vii) 'Commission' means the Kerala State Electricity Regulatory Commission referred to in Section 82 of the Act;

(viii) 'Cut off Date' means the date of first financial year closing after one year of the date of commercial operation of the generating station;

(ix) 'Date of Commercial Operation' or 'COD' in relation to a unit means the date declared by the generator after demonstrating the Maximum Continuous Rating (MCR) or Installed Capacity (IC) through a successful trial run, after notice to the beneficiaries, and in relation to the

generating station the date of commercial operation means the date of commercial operation of the last unit of the generating station;

(x) 'Daily Capacity Index' means the declared capacity expressed as a percentage of the maximum available capacity for the day and shall be mathematically expressed as hereunder:

$$\text{Daily Capacity Index} = \frac{\text{Declared Capacity (MW)}}{\text{Maximum Available Capacity (MW)}} \times 100$$

Daily capacity index shall be limited to 100%.

(xi) 'Declared Capacity' or 'DC'

(a) For run-of-river power station with pondage and storage-type power stations, declared capacity means the ex-bus capacity in MW expected to be available from the generating station over the peaking hours of next day, as declared by the generator, taking into account the availability of water, optimum use of water and availability of machines and for this purpose, the peaking hours shall not be less than 3 hours within 24 hour period, and

(b) In case of purely run-of-river power stations, declared capacity means the ex-bus capacity in MW expected to be available from the generating station during the next day, as declared by the generating station, taking into account the availability of water, optimum use of water and availability of machines;

(xii) 'Deemed Generation ' means the energy, which a generating station was capable of generating but could not generate due to the conditions of grid or power system, beyond the control of generating station resulting in spillage of water;

(xiii) 'Design Energy' means the quantum of energy which could be generated in a 90% dependable year with 95% installed capacity of the generating station;

(xiv) 'Existing Generating Station' means a generating station declared under commercial operation from a date prior to the date this regulation come into effect;

(xv) 'Infirm Power' means electricity generated prior to commercial operation of the unit of a generating station;

(xvi) 'Installed Capacity' or 'IC' means the summation of the name plate capacities of the units in the generating station or the capacity of the

generating station (reckoned at the generator terminals) as approved by the Commission from time to time;

(xvii) 'Maximum Available Capacity' means the following:

(a) Run-of-river power station with pondage and storage type power stations

The maximum capacity in MW, the generating station can generate with all units running, under the prevailing conditions of water levels and flows, over the peaking hours of next day,

#### Explanation

The peaking hours for this purpose shall not be less than 3 hours within a 24 hours period.

(b) Purely run-of-river power stations

The maximum capacity in MW, the generating station can generate with all units running, under the prevailing conditions of water levels and flows over the next day.

(xviii) 'Operation and Maintenance Expenses' or 'O&M Expenses' means the expenditure incurred in operation and maintenance of the generating station, including part thereof, including the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

(xix) 'Original Project Cost' means the actual expenditure incurred by the generating company, as per the original scope of project up to first financial year closing after one year of the date of commercial operation of the last unit as admitted by the Commission for determination of tariff;

(xx) 'Primary Energy ' means the quantum of energy generated up to the design energy on per year basis at the generating station;

(xxi) 'Project ' means a generating station and includes the complete hydro power generating facility covering all components such as dam, intake, water conductor system, power generating station and generating units of the scheme as apportioned to power generation;

(xxii) 'Run-of-river power station' means a hydro electric power generating station which has no upstream pondage;

(xxiii) ' Run –of-river power station with pondage' means a hydro electric power generating station with sufficient pondage for meeting the diurnal variation of power demand;

(xiv) 'Storage Type power station' means a hydro electric power generating station associated with large storage capacity to enable variation of generation of power according to demand;

(xxv) 'Saleable Primary Energy' means the quantum of primary energy available for sale (ex-bus);

(xxvi) 'Secondary Energy' means the quantum of energy generated in excess of the design energy on per year basis at the generating station;

(xxvii) 'Saleable Secondary Energy' means the quantum of secondary energy available for sale (ex-bus);

(xxviii) 'Scheduled Energy' means the quantum of energy to be generated at the generating station over the 24-hour period, as scheduled by the State Load Despatch Centre;

(xxix) 'Year' means a financial year.

**4. Norms of Operation.-** The norms of operation shall be as under, namely:

(i) Normative capacity index for recovery of full capacity charges

(a) During first year of commercial operation of the generating station

- |      |   |       |
|------|---|-------|
| (i)  | Purely Run-of-river power stations                        | - 85% |
| (ii) | Storage type and Run-of-river power stations with pondage | - 80% |

(b) After first year of commercial operation of the generating station

- |      |   |       |
|------|---|-------|
| (i)  | Purely Run-of-river power stations                        | - 90% |
| (ii) | Storage type and Run-of-river power stations with pondage | - 85% |

Note

There shall be *pro rata* recovery of capacity charges in case the generating station achieves capacity index below the prescribed normative levels. At Zero capacity index, no capacity charges shall be payable to the generating station.

(ii) Auxiliary Energy Consumption:

(a) Surface hydro electric power generating stations with rotating exciters mounted on the generator shaft - 0.2% of energy generated

(b) Surface hydro electric power generating stations with static excitation system - 0.5% of energy generated

(c) Underground hydro electric power generating stations with rotating exciters mounted on the generator shaft - 0.4% of energy generated

(d) Underground hydro electric power generating stations with static excitation system - 0.7% of energy generated

(iii) Transformation losses:

From generation voltage to transmission voltage - 0.5% of energy generated.

**5. Capital Cost.-** Subject to concurrence of the Authority or prudence check by the Commission, as the case may be, the actual expenditure incurred on completion of the project shall form the basis for determination of final tariff. The final tariff shall be determined based on the admitted capital expenditure actually incurred up to the date of commercial operation of the generating station and shall include initial capital spares subject to a ceiling norm of 1.5% of the original project cost as on the cut off date.

Provided further that where the power purchase agreement entered into between the generating company and the beneficiaries provide a ceiling of actual expenditure, the capital expenditure shall not exceed such ceiling for determination of tariff.

In case of existing generating stations, the project cost admitted by the Commission prior to commencement of this regulation shall form the basis for determination of tariff.

#### Note

The 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 the purposes of determination of tariff.

**6. Additional capitalization.-**(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 ceiling specified in clause 5.
- (iv) Liabilities to meet award of arbitration or in compliance of the order or decree of a court, and
- (iv) On account of change in law.

Provided that original scope of works along with estimates of expenditure shall be submitted along with the application for provisional tariff.

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

(2) Subject to the provision of sub clause (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 in compliance of the order or decree of a court;
- (iii) On account of change in law; and
- (iv) Any additional works/service, which has become necessary for efficient and successful operation of plant but not included in the original capital cost.

(3) Any expenditure incurred on acquiring minor items/assets like tools and tackles, personal computers, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, fans, T.V, washing machine, heat-convector, mattresses, carpets, etc brought after the cut off date shall not be considered for additional capitalization for determination of tariff. The said items are illustrated and may include any other similar item.

(4) Impact of additional capitalisation in tariff revision may be considered by the Commission each year in a tariff period, including revision of tariff after the cut off date.

#### 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 in the normative debt-equity ratio specified in clause 8.

#### Note 2

Any expenditure on replacement of old assets shall be considered after writing off the gross value of the original assets from the original capital cost, except such items as are listed in sub clause (3) of this regulation.

#### 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 in the normative debt-equity ratio specified in clause 8.

#### Note 4

Any expenditure admitted on renovation and modernization and life extension shall be serviced on normative debt-equity ratio specified in regulation 36 after writing off the original amount of the replaced assets from the original capital cost.

**7. Sale of Infirm Power.-** Any revenue earned by the generating company from sale of infirm power, shall be taken as reduction in capital cost and shall not be treated as revenue. The rate for infirm power shall be same as the primary energy rate of the generating station.

**8. Debt-Equity Ratio.-** (1) In case of all generating stations, debt-equity ratio as on the date of commercial operation shall be 70:30 for determination of tariff. Where equity employed is more than 30%, the amount of equity for determination of tariff shall be limited to 30% and the balance amount shall be considered as the normative loan.

Provided that in case actual equity employed is less than 30%, the actual debt and equity shall be considered for determination of tariff.

(2) The debt and equity amounts arrived at in accordance with clause (1) shall be used for calculating interest on loan, return on equity, Advance Against Depreciation and Foreign Exchange Rate Variation.

**9. Computation of Annual Charges.**- The two-part tariff for sale of electricity from a hydro power generating station shall comprise of recovery of annual capacity charge and primary energy charges:

- (i) Capacity Charge: The capacity charge shall be computed in accordance with the following formula:

$$\text{Capacity Charge} = (\text{Annual Fixed Charge} - \text{Primary Energy Charge})$$

Note

Recovery through Primary energy charge shall not be more than Annual Fixed Charge.

- (ii) Annual Fixed Charge: Annual Fixed Charge shall consist of:
- (a) Interest on loan capital;
  - (b) Depreciation, including Advance Against Depreciation;
  - (c) Return on equity;
  - (d) Operation and maintenance expenses including insurance;  
and
  - (e) Interest on working capital.

**10. Computation of Annual Fixed Charge.**- The annual fixed charges shall be computed on the following basis:

- (i) Interest on loan capital
- (a) Interest on loan capital shall be computed loan wise on the loans arrived at in the manner indicated in regulation 8.
  - (b) The loan outstanding as on 1<sup>st</sup> April 2005 shall be worked out as the gross loan as per regulation 8 minus cumulative repayment as admitted by the Commission up to 31<sup>st</sup> March. The repayment for the period 2005-10 shall be worked out on a normative basis.
  - (c) The generating company shall make every effort to swap the loan as long as it results in net benefit to the beneficiaries. The costs associated with such swapping shall be borne by the beneficiaries.
  - (d) The changes to the loan terms and conditions shall be reflected from the date of such swapping and benefit passed on to the beneficiaries.

(e) In case of any dispute, any of the parties may approach the Commission with proper application. However, the beneficiaries shall not withhold any payment as ordered by the Commission to the generating company during pendency of any dispute relating to swapping of loan.

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

(g) The generating company shall not make any profit on account of swapping of loan and interest on loan.

(ii) Depreciation, including Advance Against Depreciation

(a) Depreciation

For the purpose of tariff, 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 I to these regulations.

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. The historical capital cost of the asset shall include additional capitalisation on account of Foreign Exchange Rate Variation up to 31<sup>st</sup> March as already allowed by the Central Government/Commission.

(iii) On repayment of entire loan, the remaining depreciable value shall be spread over the balance useful life of the asset.

(iv) 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.

(b) Advance Against Depreciation

In addition to allowable depreciation, the generating company shall be entitled to Advance Against Depreciation, computed in the manner given hereunder:

AAD = Loan repayment amount as per regulation 10(i) subject to a ceiling of 1/10<sup>th</sup> of loan amount as per regulation 36 minus depreciation as per schedule

Provided that Advance Against Depreciation shall be permitted only if the cumulative repayment up to a particular year exceeds the cumulative depreciation up to that year;

Provided further that Advance Against Depreciation in a year shall be restricted to the extent of difference between cumulative repayment and cumulative depreciation up to that year.

(iii) Return on Equity

Return on equity shall be computed on the equity base determined in accordance with clause 8 and shall be @ 14% per annum for the time being.

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

Explanation

The premium raised by the generating company while issuing share capital and investment of internal resources created out of free reserve of the existing generating station, if any, for the funding of the project, shall also be reckoned as paid up capital for the purpose of computing return on equity, provided such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station and forms part of the approved financial package.

(iv) Operation and Maintenance expenses

(a) The operation and maintenance expenses including insurance, for the existing generating stations which have been in operation shall be derived on the basis of actual operation and maintenance expenses for the years 2001-2003 to 2005-06, based on the audited balance sheets, excluding abnormal operation and maintenance expenses, if any, after prudence check by the Commission.

The average of such normalised operation and maintenance expenses after prudence check, for the years 2000-2001 to 2004-05 considered as operation and maintenance expenses for the year 2002-03 shall be escalated at the rate of 4% per annum to arrive at operation and maintenance expenses for the base year 2004-05.

The base operation and maintenance expenses for the year 2004-05 shall be escalated further at the rate of 4% per annum to arrive at permissible operation and maintenance expenses for the relevant year of tariff period.

(b) In case of the hydro electric generating stations, which have not been in existence for a period of five years, the operation and maintenance expenses shall be fixed at 1.5% of the capital cost as admitted by the Commission and shall be escalated at the rate of 4% per annum from the subsequent year to arrive at operation and maintenance expenses for the base year 2005-06. The base operation and maintenance expenses shall be further escalated at the rate of 4% per annum to arrive at permissible operation and maintenance expenses for the relevant year.

(c) In case of the hydro electric generating stations declared under commercial operation on or after the date of commencement of this regulation, the base operation and maintenance expenses shall be fixed at 1.5% of the actual capital cost as admitted by the Commission, in the year of commissioning and shall be subject to an annual escalation of 4% per annum for the subsequent years till 31.3.2008.

(v) Interest on Working Capital

(a) Working Capital shall cover:

- (i) Operation and Maintenance expenses for one month;
- (ii) Maintenance spares @ 1% of the historical cost escalated @ 4% per annum from the date of commercial operation; and
- (iii) Receivables equivalent to two months of fixed charges for sale of electricity, calculated on normative capacity index.

(b) Rate of interest on working capital shall be the short-term Prime Lending Rate of State Bank of India as on 1.4.2005 or on 1<sup>st</sup> April of the year in which the generating unit/station is declared under commercial operation, whichever is later. The interest on working capital shall be payable on normative basis

notwithstanding that the generating company has not taken working capital loan from any outside agency.

**11. Primary and Secondary Energy Charges.**-(1) Primary energy charge shall be worked out on the basis of paise per kWh rate on ex-bus energy scheduled to be sent out from the hydro electric power generating station.

(2) Rate of primary energy for all hydro electric power generating stations, except for pumped storage generating stations, shall be equal to the lowest variable charges of the Central thermal power generating station in the Southern region. The primary energy charge shall be computed based on the primary energy rate and saleable energy of the station.

Provided that in case the primary energy charge recoverable by applying the above primary energy rate exceeds the Annual Fixed Charge of a generating station, the primary energy rate for such generating station shall be calculated by the following formula:

$$\text{Primary energy rate} = \frac{\text{Annual Fixed Charge}}{\text{Saleable Primary Energy}}$$

(3) Primary Energy Charge = Saleable Primary Energy x Primary Energy Rate

Secondary Energy Rate shall be equal to Primary Energy Rate.  
Secondary Energy Charge = Saleable Secondary Energy x Secondary Energy Rate.

**12. Incentive.**- (1) Incentive shall be payable in case of all the generating stations, including in case of new generating stations in the first year of operation, when the capacity index (CI) exceeds 90% for purely run-of-river power generating stations and 85% for run-of-river power station with pondage or storage type power generating stations and incentive shall accrue up to a maximum capacity index of 100%.

(2) Annual incentive shall be payable to the generating company in accordance with the following formula:

$$\text{Incentive} = 0.65 \times \text{Annual Fixed Charge} \times (CI_A - CI_N)/100$$

(If incentive is negative, it shall be set to zero.)

Where,  $CI_A$  is the Capacity Index achieved and  $CI_N$  is the normative capacity index whose values are 90% for purely run of the river hydro stations and 85% for pondage/storage type hydro generating stations.

(3) The incentives on account of capacity index and payment for secondary energy shall be payable on monthly basis, subject to cumulative adjustment in each month of the financial year, separately in respect of each item, and final adjustment shall be made at the end of the financial year.

(4) The total incentive payment calculated on annual basis shall be shared by the beneficiaries based on the allocated capacity.

(5) Incentive for completion of hydroelectric power generating stations ahead of schedule

In case of commissioning of a hydro electric power generating station or part thereof ahead of schedule, as set out in the first approval of the State or the techno-economic clearance of the Authority, as applicable, the generating station shall become eligible for incentive for an amount equal to *pro rata* reduction in interest during construction, achieved on commissioning ahead of the schedule. The incentive shall be recovered through tariff in twelve equal monthly installments during the first year of operation of the generating station. In case of delay in commissioning as set out in the first approval of the State or the techno-economic clearance of the Authority, as applicable, interest during construction for the period of delay shall not be allowed to be capitalised for determination of tariff, unless the delay is on account of natural calamities or geological surprises.

**13. Deemed Generation.**- (1) In case of reduced generation due to the reasons beyond the control of generating company or on account of non-availability of transmission licensee's transmission lines or on receipt of backing down instructions from the state Load Despatch Centre resulting in spillage of water, the energy charges on account of such spillage shall be payable to the generating company. Apportionment of energy charges for such spillage among the beneficiaries shall be in proportion of their shares in saleable capacity of the generating station.

(2) Energy charges on the above account shall not be admissible if the energy generated during the year is equal to or more than the design energy.

**14. *Unscheduled Interchange (UI)***.- (1) Variation between actual generation or actual drawal and scheduled generation or scheduled drawal shall be accounted for through Unscheduled Interchange (UI) charges. UI for a generating station shall be equal to its actual generation minus its scheduled generation. UI for a beneficiary shall be equal to its total actual drawal minus its total scheduled drawal. UI shall be worked out for each 15-minute time block. Charges for all UI transactions shall be based on average frequency of the time block and the following rates shall apply with effect from the date specified by the Commission for implementation of ABT in the State:

Average frequency of time block (Hz)		UI Rate (Paise per kWh)
Below	Not below	
----	50.50	0.0
50.50	50.48	6.0
50.48	50.46	12.0
-----	-----	-----
-----	-----	-----
49.84	49.82	204.0
49.82	49.80	210.0
49.80	49.78	219.0
49.78	49.76	228.0
-----	-----	-----
----	-----	-----
49.04	49.02	561.0
49.02	-----	570.0

Note

The above average frequency range and UI rates are subject to change through a separate notification by the Commission as a consequence of the Orders of the Central Electricity Regulatory Commission.

(2) (i) Any generation up to 105% of declared capacity in any time block of 15 minutes and averaging up to 101% of the average declared capacity over a day shall not be construed as gaming, and generator shall be entitled to UI charges for such excess generation above the scheduled generation (SG).

(ii) For any generation beyond the prescribed limits, the State Load Despatch Centre shall investigate so as to ensure that there is no gaming, and if gaming is found by the State Load Despatch Centre, the corresponding UI charges due to the generating station on account of

such extra generation shall be reduced to zero and the amount shall be adjusted in UI account of beneficiaries, in the ratio of their capacity share in the generating station.

(iii) This provision shall be applicable with effect from the date specified by the Commission for implementation of ABT in the State.

**15. Rebate.-** For payment of bills of capacity charge and energy charge through the letter of credit on presentation, a rebate of 2% shall be allowed. If the payments are made by a mode other than through the letter of credit but within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.

Provided further that the generating company may approach the Commission, for default in payments for necessary relief including proposal for regulation of supply to the concerned beneficiary, associated with alternative sale potential of such regulated power.

**16. Late Payment Surcharge:** In case the payment of bills of capacity charge and energy charge by the beneficiary (ies) 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 generating company.

**17. Scheduling.-** Read with the provisions of the Indian Electricity Grid Code/State Electricity Grid Code, the methodology of scheduling and calculating capacity index shall be as under:

(i) The generator shall make an advance declaration of capacity of its generating station. The declaration shall be for that capacity which can be actually made available for a period of time not less than 3 hours within a 24 hours period for pondage and storage type of stations and for the entire day for purely run-of-river type stations.

(ii) The generator shall intimate the declared capacity (MW), for the next day, either as one figure for the whole day or different figures for different periods of the day along with maximum available capacity (MW) and total energy (MWh) ex-bus to the State Load Despatch Centre.

The declaration should also include limitation on generation during specific time periods, if any, on account of restriction(s) on water use due to irrigation, drinking water, industrial, environmental considerations etc.

(iii) While making or revising his declaration of capability, the generator shall ensure that the declared capacity during peak hours is not less than that during other hours. However, exception to this rule shall be

allowed in case of tripping/re-synchronisation of units as a result of forced outage of units.

(iv) Generation scheduling shall be done in accordance with the operating procedure, as stipulated in the Indian Electricity Grid Code/State Electricity Grid Code.

(v) Based on the declaration of the State generator, the State Load Despatch Centre shall communicate their shares to the beneficiaries out of which they shall give their requisitions.

The beneficiaries, while making requisition, shall also keep in their consideration the availability from Central Sector Generating Stations already communicated to them by Regional Load Despatch Centre through State Load Despatch Centre, Co-generators, Mini/Micro Hydels and other sources etc.

(vi) Based on the requisitions given by the beneficiaries and taking into account technical limitations on varying the generation, availability from Central Sector Generating Stations as finalized by Regional Load Despatch Centre and also taking into account transmission system constraints, if any, the State Load Despatch Centre shall prepare the economically optimal generation schedules and drawal schedules and communicate the same to the generators and the beneficiaries.

The State Load Despatch Centre shall also formulate the procedure for meeting contingencies both in the long run and in the short run (Daily scheduling).

(vii) The scheduled generation and actual generation shall be ex-bus at the generating station. For beneficiaries, the scheduled and actual net drawals shall be at their respective receiving points.

(viii) For calculating the net drawal schedules of beneficiaries, the transmission losses shall be apportioned to their drawal schedule for the time being. However, a refinement may be specified by the Commission in future, depending upon the preparedness of the State Load Despatch Centre.

(ix) In case of forced outage of a unit, the State Load Despatch Centre shall revise the schedules on the basis of revised declared capability. The revised declared capability and the revised schedules shall become effective from the 4th time block, counting the time block in which the revision is advised by the generator to be the first one.

(x) In the event of bottleneck in evacuation of power due to any constraint, outage, failure or limitation in the transmission system, associated switchyard and sub-stations owned by the State Transmission Utility or any other transmission licensee involved in intra-state transmission (as certified by the State Load Despatch Centre) necessitating reduction in generation, the State Load Despatch Centre shall revise the schedules which shall become effective from the 4th time block, counting the time block in which the bottleneck in evacuation of power has taken place to be the first one. Also, during the first, second and third time blocks of such an event, the scheduled generation of the generating station shall be deemed to have been revised to be equal to actual generation, and the scheduled drawals of the beneficiaries shall be deemed to have been revised to be equal to their actual drawals.

(xi) In case of any grid disturbance, scheduled generation of all the generating stations and scheduled drawal of all the beneficiaries shall be deemed to have been revised to be equal to their actual generation/drawal for all the time blocks affected by the grid disturbance. Certification of grid disturbance and its duration shall be done by the State Load Despatch Centre.

(xii) Revision of declared capability by the generator(s) and requisition by beneficiary(ies) for the remaining period of the day shall also be permitted with advance notice. Revised schedules/declared capability in such cases shall become effective from the 6th time block, counting the time block in which the request for revision has been received in the State Load Despatch Centre to be the first one.

(xiii) If, at any point of time, the State Load Despatch Centre observes that there is need for revision of the schedules in the interest of better system operation, it may do so on its own and in such cases, the revised schedules shall become effective from the 4th time block, counting the time block in which the revised schedule is issued by the State Load Despatch Centre to be the first one.

(xiv) Generation schedules and drawal schedules issued/revised by the State Load Despatch Centre shall become effective from designated time block irrespective of communication success.

(xv) For any revision of scheduled generation, including post facto deemed revision; there shall be a corresponding revision of scheduled drawals of the beneficiaries.

(xvi) A procedure for recording the communication regarding changes to schedules duly taking into account the time factor shall be evolved by the State Transmission Utility.

(xvii) Purely run-of-river power stations

Since variation of generation in such stations may lead to spillage, these shall be treated as must run stations. The maximum available capacity, duly taking into account the over load capability, must be equal to or greater than that required to make full use of the available water.

(xviii) Run-of-river power station with pondage and storage type power stations

These hydro stations are designed to operate during peak hours to meet system peak demand. Maximum available capacity of the station declared for the day shall be equal to the installed capacity including overload capability, minus auxiliary consumption and transformation losses, corrected for the reservoir level. The State Load Despatch Centres shall ensure that generation schedules of such type of stations are prepared and the stations dispatched for optimum utilization of available hydro energy except in the event of specific system requirements/constraints.

Note

This provision shall be applicable with effect from the date these Regulations come into force.

**18. Demonstration of Declared Capability.**-(1)The generating company may be required to demonstrate the declared capacity of its generating station as and when asked by the State Load Despatch Centre. In the event of the generating company failing to demonstrate the declared capacity, within the tolerance as specified by the State Load Despatch Center, the capacity charges due to the generating station shall be reduced as a measure of penalty.

(2) The quantum of penalty for the first mis-declaration for any duration or block in a day shall be the charges corresponding to two days fixed charges. For the second mis-declaration the penalty shall be equivalent to fixed charges for four days and for subsequent mis-declarations, the penalty shall be multiplied in the geometrical progression.

(3) The operating logbooks of the generating station shall be available for review by the State Load Despatch Center. These books shall keep record of machine operation and maintenance, reservoir level and spillway gate operation.

Note

This provision shall be applicable with effect from the date specified by the Commission for implementation of ABT in the State.

**19. Metering and Accounting.-** Metering arrangements, including installation, testing and operation and maintenance of meters and collection, transportation and processing of data required for accounting of energy exchanges and average frequency on 15 minute time block basis shall be organised by the State Transmission Utility in consultation with State Load Despatch Centre. All concerned entities (in whose premises the special energy meters are installed), shall fully cooperate with the State Transmission Utility/State Load Despatch Centre and extend the necessary assistance by taking weekly meter readings and transmitting them to the State Load Despatch Centre. The State Load Dispatch Centre, on the basis of processed data of meters along with data relating to declared capability and schedules etc., shall issue the State Accounts for energy on monthly basis as well as UI charges on weekly basis. UI accounting procedures shall be governed by the orders of the Central Commission.

Note

This provision shall be applicable with effect from the date these Regulations come into force except for UI that shall come into force from such date specified by the Commission for implementation of ABT in the State.

**20. Billing and Payment of Capacity Charges.-** Billing and payment of capacity charges shall be done on a monthly basis in the following manner:

- (i) Each beneficiary shall pay the capacity charges in proportion to its percentage share in total saleable capacity of the generating station. Saleable capacity shall mean total capacity minus free capacity to home state(s) in case of IPP, if any.

Note 1

Allocation of total capacity of State sector generating stations is made by State Government from time to time.

Note 2

The beneficiaries may propose surrendering part of their allocated capacity. In such cases, depending upon the technical feasibility of power transfer and specific agreements reached by the generating company with other beneficiaries within/outside the region for such transfers, the shares of the beneficiaries may be re-allocated by the State Government for a specific period. When such re-allocations are made, the beneficiaries who surrender the share shall not be liable to pay capacity charges for the surrendered share. The capacity charges for the capacity surrendered and reallocated as above shall be paid by the beneficiaries to whom the surrendered capacity is allocated. Except

for the period of reallocation of capacity as above, the beneficiaries of the generating station shall continue to pay the full fixed charges as per allocated capacity shares.

(ii) The beneficiaries shall have full freedom for negotiating any transaction for utilisation of their capacity shares. In such cases, the beneficiary having allocation in the capacity of the generating station shall be liable for full payment of capacity charges and energy charges (including that for sale of power under the transaction negotiated by him) corresponding to his total allocation and schedule respectively.

(iii) If any capacity remains un-requisitioned during day-to-day operation, the State Load Despatch Centre shall advise all beneficiaries in the State and the other States/Regional Load Despatch Centres so that such capacity may be requisitioned through bilateral arrangements either with the concerned generating company or the concerned beneficiary(ies) under intimation to the State Load Despatch Centre.

The information regarding un-requisitioned capacity shall also be made available by the State Load Despatch Centres through their respective websites.

(iv) The capacity charges shall be paid by the beneficiary(ies) including those outside the state/region to the generating company every month in accordance with the following formulae and in proportion to their respective shares in the concerned generating station:

$$\begin{aligned}
 ACC_1 &= AFC - (SPE_1 + DE_{2nd\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_2 &= AFC - (SPE_2 + DE_{3rd\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_3 &= AFC - (SPE_3 + DE_{4th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_4 &= AFC - (SPE_4 + DE_{5th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_5 &= AFC - (SPE_5 + DE_{6th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_6 &= AFC - (SPE_6 + DE_{7th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_7 &= AFC - (SPE_7 + DE_{8th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_8 &= AFC - (SPE_8 + DE_{9th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_9 &= AFC - (SPE_9 + DE_{10th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_{10} &= AFC - (SPE_{10} + DE_{11th\ to\ 12th\ months}) * Primary\ Energy\ Rate \\
 ACC_{11} &= AFC - (SPE_{11} + DE_{12th\ month}) * Primary\ Energy\ Rate \\
 ACC_{12} &= (AFC - SPE_{12}) * Primary\ Energy\ Rate
 \end{aligned}$$

Where,

AFC = Annual Fixed Charges

ACC<sub>1</sub>, ACC<sub>2</sub>, ACC<sub>3</sub>, ACC<sub>4</sub>, ACC<sub>5</sub>, ACC<sub>6</sub>, ACC<sub>7</sub>, ACC<sub>8</sub>, ACC<sub>9</sub>, ACC<sub>10</sub>, ACC<sub>11</sub> and ACC<sub>12</sub> are the amount of Annual Capacity Charge for the

cumulative period up to the end of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> months respectively.

SPE<sub>1</sub>, SPE<sub>2</sub>, SPE<sub>3</sub>,..... SPE<sub>12</sub> are the ex-bus scheduled primary energy values up to 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> .....12<sup>th</sup> months of the year respectively.

$$CC1 = ACC_1 \times \frac{DE1}{DE}$$

$$CC2 = ACC_2 \times \frac{DE2}{DE}$$

$$CC3 = ACC_3 \times \frac{DE3}{DE}$$

$$CC4 = ACC_4 \times \frac{DE4}{DE}$$

$$CC5 = ACC_5 \times \frac{DE5}{DE}$$

$$CC6 = ACC_6 \times \frac{DE6}{DE}$$

$$CC7 = ACC_7 \times \frac{DE7}{DE}$$

$$CC8 = ACC_8 \times \frac{DE8}{DE}$$

$$CC9 = ACC_9 \times \frac{DE9}{DE}$$

$$CC10 = ACC_{10} \times \frac{DE10}{DE}$$

$$CC11 = ACC_{11} \times \frac{DE11}{DE}$$

$$CC12 = ACC_{12} \times \frac{DE12}{DE}$$

Where,

CC1, CC2, CC3,.....CC12 is the monthly capacity charge up to 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> .....12<sup>th</sup> months of the year respectively.

DE = Annual Design Energy

DE1, DE2, DE3, .....DE12 are the ex-bus design energy values up to 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> .....12<sup>th</sup> months of the year respectively.

Total capacity charges payable to the generator for the:

$$1^{st} \text{ month} = (CC1)$$

$$2^{nd} \text{ month} = (CC2 - CC1)$$

$$3^{rd} \text{ month} = (CC3 - CC2)$$

$$4^{th} \text{ month} = (CC4 - CC3)$$

$$5^{th} \text{ month} = (CC5 - CC4)$$

$$\begin{aligned}
6^{\text{th}} \text{ month} &= (\text{CC6} - \text{CC5}) \\
7^{\text{th}} \text{ month} &= (\text{CC7} - \text{CC6}) \\
8^{\text{th}} \text{ month} &= (\text{CC8} - \text{CC7}) \\
9^{\text{th}} \text{ month} &= (\text{CC9} - \text{CC8}) \\
10^{\text{th}} \text{ month} &= (\text{CC10} - \text{CC9}) \\
11^{\text{th}} \text{ month} &= (\text{CC11} - \text{CC10}) \\
12^{\text{th}} \text{ month} &= (\text{CC12} - \text{CC11})
\end{aligned}$$

and, each beneficiary having firm allocation in capacity of the generating station shall pay for the :

$$\begin{aligned}
1^{\text{st}} \text{ month} &= [\text{CC1} \times \text{WB1}] / 100 \\
2^{\text{nd}} \text{ month} &= [\text{CC2} \times \text{WB2} - \text{CC1} \times \text{WB1}] / 100 \\
3^{\text{rd}} \text{ month} &= (\text{CC3} \times \text{WB3} - \text{CC2} \times \text{WB2}) / 100 \\
4^{\text{th}} \text{ month} &= (\text{CC4} \times \text{WB4} - \text{CC3} \times \text{WB3}) / 100 \\
5^{\text{th}} \text{ month} &= (\text{CC5} \times \text{WB5} - \text{CC4} \times \text{WB4}) / 100 \\
6^{\text{th}} \text{ month} &= (\text{CC6} \times \text{WB6} - \text{CC5} \times \text{WB5}) / 100 \\
7^{\text{th}} \text{ month} &= (\text{CC7} \times \text{WB7} - \text{CC6} \times \text{WB6}) / 100 \\
8^{\text{th}} \text{ month} &= (\text{CC8} \times \text{WB8} - \text{CC7} \times \text{WB7}) / 100 \\
9^{\text{th}} \text{ month} &= (\text{CC9} \times \text{WB9} - \text{CC8} \times \text{WB8}) / 100 \\
10^{\text{th}} \text{ month} &= (\text{CC10} \times \text{WB10} - \text{CC9} \times \text{WB9}) / 100 \\
11^{\text{th}} \text{ month} &= (\text{CC11} \times \text{WB11} - \text{CC10} \times \text{WB10}) / 100 \\
12^{\text{th}} \text{ month} &= (\text{CC12} \times \text{WB12} - \text{CC11} \times \text{WB11}) / 100
\end{aligned}$$

Where,

And, WB1, WB2, WB3, WB4, WB5, WB6, WB7, WB8, WB9, WB10, WB11 and WB12 are the weighted average of percentage allocated capacity share of the beneficiary during the cumulative period up to 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> month respectively.

(v) The Generating Company shall submit data of cost, expenditure and operation in the month of September & March of the each year.

## Appendix I

### Depreciation Schedule

Description of Assets	Useful Life(yrs)	Rate (Calculate d w.r.t. 90%)	3=1*2
	1	2	
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 the 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 Stations 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 kutchra 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 condensor	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 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 vols	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
	5	18.00	90

(ii) Portable			
(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.