

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

No.L-7/145(160)/2008-CERC

Dated 2008

NOTIFICATION (DRAFT)

In exercise of the powers conferred under section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, and after previous publication, the Central Electricity Regulatory Commission hereby makes the following regulations, namely:

**CHAPTER - 1**

**PRELIMINARY**

1. **Short title and commencement.** (1) These regulations may be called the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2008.

(2) These regulations shall come into force on 1.4.2009, and unless reviewed earlier or extended by the Commission, shall remain in force for a period of 5 years from the date of commencement:

Provided that where a project, including a part thereof, has been declared under commercial operation before the date of commencement of these regulations and whose tariff has not been finally determined by the Commission till that date, tariff in respect of such project or such part thereof, as the case may be, for the period ending 31.3.2009 shall be determined in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004.

2. **Scope and extent of application.** (1) These regulations shall apply in all cases where tariff is to be determined by the Commission under section 62 of the Act read with section 79 thereof.

3. **Definitions.** - In these regulations, unless the context otherwise requires,-

(1) **'Act'** means the Electricity Act, 2003 (36 of 2003);

(2) **'actually incurred'** means the fund, i.e. the equity and/or the debt, actually deployed and paid in cash or cash equivalent, for creation or acquisition of the useful asset(s);

(3) **'additional capitalisation'** means the capital expenditure actually incurred or projected to be incurred, after the date of commercial operation of the project and admitted by the Commission after prudence check, subject to provisions of regulation 10;

(4) **'allotted transmission capacity'** means the power transfer in MW between the specified points of injection and drawal allowed to a long-term transmission customer on the inter-State transmission system under the normal circumstances and shall be sum of the generating capacities allocated to such long-term transmission customer from the inter State generating station (ISGS) and the contracted power, if any;

(5) **'auxiliary energy consumption' or 'AUX'** in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station and transformer losses within the generating station, and shall be expressed as a percentage of

the sum of gross energy generated at the generator terminals of all the units of the generating station;

(6) **'auditor'** means an auditor appointed by the generating company or the transmission licensee, as the case may be, in accordance with the provisions under section 224, 233 and 619 of the Companies Act, 1956 (1 of 1956), or any other law for the time being in force;

(7) **'beneficiary'** in relation to a generating station means the person purchasing electricity generated at such a generating station and whose tariff is determined under these regulations;

(8) **'block'** in relation to a combined cycle thermal generating station includes combustion turbine-generator, associated waste heat recovery boiler, connected steam turbine- generator and auxiliaries;

(9) **'capital cost'** means the capital cost as defined in regulation 8 of these regulations;

(10) **'Commission'** means the Central Electricity Regulatory Commission referred to in sub-section (1) of section 76 of the Act;

(11) **'contracted power'** means the power in MW which the transmission licensee has agreed or is required to transmit as per the long-term agreement between the importing and exporting utility;

(12) **'core business'** means the business of generation or transmission of electricity;

(13) **'cut off date'** means 31<sup>st</sup> March of the year following the year of commercial operation of the project, and in case the project is declared

under commercial operation in the last quarter of a year, the cut-off date shall be 31<sup>st</sup> March of the year closing after two years of the year of commercial operation;

(14) **‘date of commercial operation’ or ‘COD’** means

(a) in relation to a unit of the thermal generating station, the date declared by the generating company after demonstrating the maximum continuous rating (MCR) or the installed capacity (IC) through a successful trial run after notice to the beneficiaries, from which scheduling process as per the Indian Electricity Grid Code (IEGC) is fully implemented, and in relation to the generating station as a whole, the date of commercial operation of the last unit or block of the generating station;

(b) in relation to a unit of hydro generating station, the date declared by the generating company from which, after notice to the beneficiaries, scheduling process in accordance with the IEGC is fully implemented, and in relation to the generating station as a whole, the date declared by the generating company after demonstrating peaking capability corresponding to installed capacity of the generating station through a successful trial run, after notice to the beneficiaries:

**Note**

1. In case the hydro generating station is not able to demonstrate peaking capability corresponding to the installed capacity for the reasons of insufficient reservoir or pond level, the date of commercial operation of the last unit of the generating station shall be considered as the date of

commercial operation of the generating station as a whole, provided that it will be mandatory for such hydro generating station shall demonstrate peaking capability equivalent to installed capacity of the generating unit or the generating station as and when such reservoir /pond level is achieved.

2. Similar conditions shall be applicable for purely run-of-river hydro generating station if the unit or the generating station is declared under commercial operation during lean inflows period when the water is not sufficient for such demonstration.

(c) in relation to the transmission system, the date of charging the transmission system or part thereof to its rated voltage level or seven days after the date on which it is declared ready for charging by the transmission licensee, but is not able to be charged for the reasons not attributable to such transmission licensee, its suppliers or contractors.

Note.-Date of commercial operation shall not be a date prior to the scheduled date of commercial operation provided in the implementation agreement or the transmission service agreement or the investment approval, as the case may be, unless mutually agreed between the parties concerned.

(15) **‘declared capacity’** or **‘DC’** means

(a) in relation to a generating station, the capability to deliver ex-bus electricity in MW declared by such generating station in relation to any period of the day or whole of the day, duly taking into account the availability of fuel or water;

**Note.**

1. In case of an open cycle gas turbine generating station or a combined cycle generating station, the generating station shall declare the capacity for units and blocks on gas fuel and liquid fuel separately, and these shall be scheduled separately.

2. Total declared capacity and total scheduled generation for the generating station shall be the sum of the declared capacity and scheduled generation for gas fuel and liquid fuel for the purpose of computation of availability and Plant Load Factor respectively.

(b) in relation to a hydro generating station,

(ba) for run-of-river generating station with pondage and storage-type generating station, the ex-bus capacity in MW expected to be available from the generating station over the peaking hours of not less than 3 hours of the next day, as declared by the generating company, taking into account the availability of water, optimum use of water and availability of machines, and

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

(16) '**design energy**' means the quantum of energy which can be generated in a 90% dependable year with 95% installed capacity of the hydro generating station;

(17) '**existing generating station**' means a generating station declared under commercial operation from a date prior to 1.4.2009;

(18) '**existing project**' means the project declared under commercial operation from a date prior to 1.4.2009;

(19) '**gross calorific value**' or '**GCV**' in relation to a thermal generating station means the heat produced in kCal by complete combustion of one kilogram of solid fuel or one litre of liquid fuel or one standard cubic meter of gaseous fuel, as the case may be;

(20) '**gross station heat rate**' or '**GHR**' means the heat energy input in kCal required to generate one kWh of electrical energy at generator terminals of a thermal generating station;

(21) '**infirm power**' means electricity injected into the grid prior to the commercial operation of a unit of the generating station;

(22) '**installed capacity**' or '**IC**' means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals) as approved by the Commission from time to time;

(23) '**implementation agreement**' means the agreement, contract or memorandum of understanding, or any such covenant, entered into between the transmission licensee and the long-term transmission customer for construction of the transmission system;

(24) **'inter-State generating station' or 'ISGS'** has the meaning as assigned in the Indian Electricity Grid Code notified by the Commission;

(25) **'long-term transmission customer'** means a person having a long-term lien over an inter-State transmission system by virtue of paying transmission charges;

(26) **'maximum continuous rating' or 'MCR'** in relation to a unit of the thermal generating station means the maximum continuous output at the generator terminals, guaranteed by the manufacturer at rated parameters, and in relation to a unit or block of a combined cycle thermal generating station means the maximum continuous output at the generator terminals, guaranteed by the manufacturer with water or steam injection (if applicable) and corrected to 50 Hz grid frequency and specified site conditions;

(27) **'normative annual plant availability factor' or 'NAPAF'** in relation to a generating station means the availability factor as specified in regulation 26 for thermal generating station and in regulation 27 for hydro generating station;

(28) **'operation and maintenance expenses' or 'O&M expenses'** means the expenditure incurred on operation and maintenance of the project, including part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

(29) **'original project cost'** means the actual expenditure incurred by the generating company or the transmission licensee, as the case may be, within the original scope of the project up to the cut off date as admitted by the Commission;



(30) '**plant availability factor (PAF)**' in relation to a generating station for any period means the average of the daily average declared capacities (DCs) for all the days during that period expressed as a percentage of the installed capacity of the generating station reduced by the normative auxiliary energy consumption in MW.

(31) '**project**' means a generating station or the transmission system, as the case may be, and in case of a hydro generating station includes all components of generating facility such as, dam, intake, water conductor system, power generating station and generating units of the scheme, as apportioned to power generation.

(32) '**run-of-river power station**' means a hydro generating station which has no upstream pondage;

(33) '**run -of-river power station with pondage**' means a hydro generating station with sufficient pondage for meeting the diurnal variation of power demand;

(34) '**rated voltage**' means the manufacturer's design voltage at which the transmission system is designed to operate or such lower voltage at which the transmission line is charged, for the time being, in consultation with long-term transmission customers;

(35) '**scheduled generation**' or '**SG**' at any time or for any period or time-block means schedule of generation in MW ex-bus, given by the Regional Load Despatch Centre;

**Note**

For the open cycle gas turbine generating station or a combined cycle generating station if the average frequency for any time-block, is below 49.52 Hz but not below 49.02 Hz and the scheduled generation is more than 98.5% of the declared capacity, the scheduled generation shall be deemed to have been reduced to 98.5% of the declared capacity, and if the average frequency for any time-block is below 49.02 Hz and the scheduled generation is more than 96.5% of the declared capacity, the scheduled generation shall be deemed to have been reduced to 96.5% of the declared capacity.

(36) '**scheduled energy**' means the quantum of energy scheduled by the Regional Load Despatch Centre to be generated at the hydro generating station over the 24-hour period;

(37) '**small gas turbine power generating station**' means and includes open cycle gas turbine/combined cycle generating stations with gas turbines in the capacity range of 50 MW or below;

(38) '**storage type power station**' means a hydro generating station associated with large storage capacity to enable variation of generation of electricity according to demand;

(39) '**transmission service agreement**' means the agreement, contract, memorandum of understanding, or any such covenant, entered into between the transmission licensee and the long-term transmission customer(s) for the operational phase of the transmission system;

(40) **'transmission system'** means a line or a group of line with or without associated sub-station, and includes equipment associated with transmission lines and sub-stations;

(41) **'Transmission System Availability Factor'** means availability of the transmission system as certified by the Member Secretary of the Regional Power Committee in accordance with Appendix VI;

(42) **'Unit'** in relation to a thermal generating station other than combined cycle thermal generating station means steam generator, turbine-generator and auxiliaries, or in relation to a combined cycle thermal generating station, means turbine-generator and auxiliaries; and in relation to a hydro generating station means turbine-generator and its auxiliaries;

(43) **'year'** means a financial year.

(44) The words and expressions used in these regulations and not defined herein but defined in the Act shall have the meaning assigned to them under the Act.

## CHAPTER - 2

### PROCEDURE FOR TARIFF DETERMINATION

4. **Tariff determination.** (1) Tariff in respect of a generating station may be determined stage-wise or unit-wise or for the whole of the generating station, and tariff for the transmission system may be determined line-wise or sub-station-wise or system-wise;

(2) For the purpose of determination of tariff, the capital cost of the project may be broken up into stages and distinct units, transmission lines and sub-systems forming part of the project, if required:

Provided that where the stage-wise, unit-wise, line-wise or sub-station-wise break up of the capital cost of the project is not available and in case of on-going projects, the common facilities shall be apportioned on the basis of the installed capacity of the units, line length and number of bays:

Provided further that in relation to multi-purpose hydro schemes, with irrigation, flood control and power components, the capital cost chargeable to the power component of the scheme only shall be considered for determination of tariff.

5. **Application for determination of tariff.** (1) The generating company or the transmission licensee, as the case may be, may make an application for determination of tariff in accordance with Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulations, 2004, as amended from time to time or any statutory re-enactment thereof, in respect of the units of the generating station or the lines or sub-stations of the

transmission system, completed or projected to be completed within six months from the date of application.

(2) The generating company or the transmission licensee, as the case may be shall make an application as per Appendix I to these regulations, for determination of tariff based on capital expenditure actually incurred duly certified by the auditors or projected to be incurred up to the date of commercial operation and additional capital expenditure actually incurred duly certified by the auditors or projected to be incurred during the tariff period of the generating station or the transmission system:

Provided that in case of an existing project, the application shall be based on admitted capital cost including any additional capitalization already admitted up to 31.3.2008 and estimated additional capital expenditure for the year 2008-09 and for the respective years of the tariff period 2009-14:

Provided further that application shall contain details of underlying assumptions for projected capital cost and additional capital expenditure, where applicable.

(3) Tariff shall remain in force for the entire tariff period.

## 6. **Truing up of Capital Expenditure and Tariff.**

(1) The Commission shall carry out truing up exercise during the terminal year of the tariff period, that is during 2013-14, with respect to the capital expenditure including additional capital expenditure actually incurred up to 31.3.2013 and revised estimated additional capital expenditure for 2013-14, as admitted by the Commission after prudence check:

Provided that the generating company or the transmission licensee, as the case may be, may in its discretion make also an application before the Commission one more time prior to 2013-14 for a revision of tariff.

(2) The generating company or the transmission licensee, as the case may be, shall make an application, as per Appendix I to these regulations, for carrying out truing up exercise in respect of the generating station or the units thereof or the transmission system or the lines or sub-stations thereof by 31.10.2013;

(3) The generating company or the transmission licensee, as the case may be, shall submit for the purpose of truing up, details of capital expenditure and additional capital expenditure actually incurred for the period of 1.4.2008 to 31.3.2013, duly audited and certified by the auditors and revised estimated additional capital expenditure for 2013-14;

(4) Truing up of the capital expenditure and additional capital expenditure actually incurred during 2013-14 shall be carried out in the tariff period commencing on 1.4.2014;

(5) Where the tariff recovered exceeds the tariff approved by the Commission under these regulations after the truing up exercise, the generating company or the transmission licensee, as the case may be, shall refund to the beneficiaries or the long-term transmission customer, as the case may be, the excess amount so recovered along with simple interest at the rate equal to short-term Prime Lending Rate of State Bank of India as on 1st April of the respective year.

(6) Where the tariff recovered is less than the tariff approved by the Commission under these regulations after the truing up exercise, the generating company or the transmission licensee, as the case may be, shall recover from the beneficiaries or the long-term transmission customer, as the

case may be, the under-recovered amount along with simple interest at the rate equal to the short-term Prime Lending Rate of State Bank of India as on 1st April of the respective year.

(7) The amount under-recovered or over-recovered, along with simple interest at the rate equal to the short-term Prime Lending Rate of State Bank of India as on 1st April of the respective year, shall be recovered or paid by the generating company or the transmission licensee, as the case may be, in six equal monthly installments starting within three months from the date of the tariff order issued by the Commission after the truing up exercise.

## CHAPTER – 3

### GENERAL PROVISIONS FOR TARIFF DETERMINATION

7. **Components of Tariff.** (1) Tariff for supply of electricity from a thermal generating station shall comprise two parts, namely, fixed charge and energy charge.

(2) Tariff for supply of electricity from a hydro generating station shall comprise capacity charge and energy charge to be derived in the manner as provided in clause (3) of regulation 21 and clause (2) of regulation 22, from the fixed charge consisting of the components as provided in clause (3) of this regulation,

(3) The fixed charge shall consist of the following components –

- (a) Return on equity;
- (b) Interest on loan capital;
- (c) Depreciation;
- (d) Interest on working capital;
- (e) Operation and maintenance expenses:

Provided that in case of coal or lignite based thermal generating stations expenses on normative secondary fuel oil consumption during the year and in case of lignite based thermal generating stations using CFBC technology, expenses on normative lime stone consumption during the year shall be included in the fixed charge.

(4) The energy charge shall cover

- (a) Fuel cost, in case of thermal generating station, and
- (b) Normative annual energy charge (NAEC) in case of hydro generating station.



(5) Tariff for transmission of electricity on inter-State transmission system shall comprise fixed charge consisting of the components as provided in clause (3) of this regulation.

8. **Capital Cost.** (1) Capital cost for a project shall include:

(a) the expenditure actually incurred or projected to be incurred, including interest during construction and financing charges, up to date of commercial operation of the project, as admitted by the Commission;

(b) capitalised initial spares subject to the ceiling norms provided in regulation 9; and

(c) additional capital expenditure determined under regulation 10:

Provided that the assets forming part of the project, but not in use shall be taken out of the capital cost.

(2) Subject to prudence check by the Commission, the capital cost shall form the basis for determination of tariff:

Provided that in case of thermal generating station and transmission system, prudence check of capital cost may be carried out based on the benchmark norms to be published separately by the Commission from time to time:

Provided further that in cases where benchmark norms have not been published, prudence check may include scrutiny of the reasonableness of the capital expenditure, financing plan, interest during construction, use of efficient technology, cost over-run and time over-

run, and such other matters as may be considered appropriate by the Commission for determination of tariff:

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

Provided also that the capital cost in case of such hydro generating station shall include:

- (a) cost of approved rehabilitation and resettlement (R&R) plan of the project in conformity with National R&R Policy and R&R package as approved; and
- (b) cost of project developer's 10% contribution towards Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) project in the affected area:

Provided also that where the power purchase agreement entered into between the generating company and the beneficiaries or the implementation agreement and the transmission service agreement entered into between the transmission licensee and the long-term transmission customers, as the case may be, provide for ceiling of actual expenditure, the capital expenditure admitted by the Commission shall take into consideration such ceiling for determination of tariff:

Provided also that in case of the existing projects, the capital cost admitted by the Commission prior to 1.4.2009 and the additional capital expenditure actually incurred duly certified by the auditors or projected

to be incurred upto 31.3.2009, as may be admitted by the Commission, shall form the basis for determination of tariff.

9. **Initial Spares.** Initial spares shall be capitalised as a percentage of the original project cost, subject to following ceiling norms:

(i)	Coal-based/lignite-fired thermal generating stations	-	2.5%
(ii)	Gas Turbine/Combined Cycle thermal generating stations	-	4.0%
(iii)	Hydro generating stations	-	1.5%
(iv)	Transmission system		
	(a) Transmission line	-	0.75%
	(b) Transmission Sub-station	-	2.5%
	(c) Series Compensation devices and HVDC Station	-	3.5%

Provided that where the benchmark norms for initial spares have been published as part of the benchmark norms for capital cost under first proviso to clause (2) of regulation 8, such norms shall apply to the exclusion of the norms specified herein.

10. **Additional Capitalisation.** (1) The following capital expenditure within the original scope of work actually incurred or projected to be 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 within the original scope of work, subject to the provisions of regulation 9;

- (iv) Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and
- (v) On account of change in law:

Provided that the details included in the original scope of work along with estimates of expenditure, deferred liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.

(2) The capital expenditure of the following nature actually incurred after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:

- (i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;
- (ii) On account of change in law; and
- (iii) Deferred works relating to ash pond or ash handling system in the original scope of work.

11. **Renovation and Modernisation.** (1) The generating company or the transmission licensee, as the case may be, for meeting the expenditure on renovation and modernization (R&M) for the purpose of extension of life beyond the useful life of the generating station or a unit thereof or the transmission system, shall make an application before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost including foreign exchange component, if any, consent of beneficiaries and any other information considered to be relevant by the generating company or the transmission licensee:

Provided that in case of thermal generating station, the generating company, may, in its discretion, avail of a 'special allowance' as per the norms provided in clause (4) of this regulation, as compensation for meeting the requirement of expenses including renovation and modernisation beyond the useful life of the generating station or a unit thereof, and in such an event revision of the capital cost shall not be considered:

Provided further that the option once exercised shall be final and shall not be allowed to be changed.

Provided also that such option shall not be available for a generating station for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations.

(2) Where the generating company or the transmission licensee, as the case may be, makes an application for approval of R&M proposal, the approval shall be granted after due consideration of reasonableness of the cost estimates, financing plan, schedule of completion, interest during construction, use of efficient technology, cost-benefit analysis, and such other factors as may be considered relevant by the Commission.

(3) Any expenditure actually incurred or projected to be incurred as admitted by the Commission after prudence check based on the estimates of renovation and modernization expenditure and life extension, and after writing off the original amount of the replaced assets and deducting the accumulated depreciation already recovered from the original project cost, shall form the basis for determination of tariff.

(4) A generating company on opting for alternative option in clause (1) of this regulation shall be allowed special allowance @ Rs. 5 lakh/MW/year during

the tariff period 2009-14, unit-wise from the respective date of the completion of useful life with reference to the COD of respective units of a generating station:

12. **Sale of Infirm Power.** Infirm power shall be accounted as Unscheduled Interchange (UI) and paid for from the regional / State UI pool account at the applicable frequency-linked UI rate:

Provided that any revenue earned by the generating company from sale of infirm power shall be applied for reduction in capital cost.

13. **Debt-Equity Ratio.** (1) For a project , if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff.

(2) In case of the generating station and transmission system declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2009 shall be considered.

(3) Any expenditure actually incurred or projected to be incurred on or after 1.4.2009 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.

14. **Foreign Exchange Rate Variation.** (1) The generating company or the transmission licensee, as the case may be, may hedge foreign exchange exposure in respect of the interest on foreign currency loan and repayment of foreign loan acquired for the station in part or full, as per their judgment considering the market behavior.

(2) Every generating company and transmission licensee shall recover the cost of hedging of foreign exchange rate variation corresponding to the normative foreign debt, in the relevant year on year-to-year basis as expense in the period in which it arises and extra rupee liability corresponding to such foreign exchange rate variation shall not be allowed against the hedged foreign debt.

(3) To the extent the generating company or the transmission licensee is not able to hedge the foreign exchange exposure, the extra rupee liability towards interest payment and loan repayment corresponding to the normative foreign currency loan in the relevant year shall be permissible provided it is not attributable to the generating company or the transmission licensee or its suppliers or contractors.

(4) Every generating company and the transmission licensee shall recover the cost of hedging and foreign exchange rate variation on year-to-year basis as income or expense in the period in which it arises.

## CHAPTER- 4

### COMPUTATION OF TARIFF AND OTHER CHARGES

#### *Computation of Fixed Charges*

15. **Return on Equity**. Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 13 @ 14% per annum:

Provided that for the purpose of this regulation, the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

**Explanation:** The premium, if any raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, 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 a generating station or the transmission system.

16. **Interest on loan capital**. (1) The loans arrived at in the manner indicated in regulation 13 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2009 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2009 from the gross normative loan.

(3) The repayment for the respective year of the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that year:



Provided that if on 1.4.2009, the cumulative depreciation recovered is more than the cumulative normative loan repayment, the repayment for the first year of the tariff period shall be deemed to be equal to the depreciation allowed by the Commission for that year plus the difference between the cumulative depreciation recovered and cumulative normative loan repayment as on 1.4.2009.

(4) The repayment of loan shall be considered from the first year of commercial operation of the project corresponding to the annual depreciation allowed, notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio applicable to the generating station or the transmission system, as the case may be:

Provided that if the generating station or the transmission system, as the case may be, does not have actual loan for a particular year, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net benefit to the beneficiaries, and the costs associated with such re-financing

shall be borne by the beneficiaries and the net benefit shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may approach the Commission with proper application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof:

Provided that the beneficiaries or the long-term transmission customer shall not withhold any payment to the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.

17. **Depreciation.** (1) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.

(2) The residual value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.

(3) Land shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing 90% of the capital cost of the asset.

(4) Depreciation shall be calculated annually, over the useful life of the asset and at the rates specified in the table below:

Table

Sl No	Description of Asset	Useful Life (in years)	Rate for first 15 years (%)	Rate for remaining life (%)
1.	Thermal generating station	25	4.67	2
2.	AC and DC sub-station	25	4.67	2
3.	Hydro generating station	35	4.67	1
4.	Transmission line	35	4.67	1

Provided that in case of the existing projects already in operation prior to 1.4.2009, depreciation shall be recovered in the following manner, namely-

- (a) For generating station and transmission system which are in operation for less than 15 years, the difference between the cumulative depreciation recovered and the cumulative depreciation arrived at by applying the depreciation rates specified in this regulation corresponding to 15 years, shall be spread over the period up to 15 years, and thereafter the depreciation shall be recovered at the rates specified for the remaining useful life after 15 years.
- (b) For the project in operation for more than 15 years, the balance depreciation to be recovered shall be spread over the remaining useful life.
- (5) Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on *pro rata* basis.

18. **Interest on Working Capital. (1)** The working capital shall cover :

(a) Coal-based/lignite-based thermal generating stations

(i) Cost of coal or lignite for 1½ months for pit-head generating stations and two months for non-pit-head generating stations, for generation corresponding to the target availability;

(ii) Cost of secondary fuel oil for two months for generation corresponding to the target availability:

Provided that in case of use of more than one secondary fuel oil, cost of fuel oil stock shall be provided for the main secondary fuel oil.

(iii) Maintenance spares @ 20% of O&M expenses specified in regulation 19.

(iv) Receivables equivalent to forty five days of fixed and energy charges for sale of electricity calculated on the target availability.

(b) Open cycle Gas Turbine/Combined Cycle thermal generating stations

(i) Fuel cost for one month corresponding to the target availability duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;

(ii) Liquid fuel stock for ½ month, and in case of use of more than one liquid fuel, cost of main liquid fuel.

(iii) Maintenance spares @ 30% of O&M expenses specified in regulation 19.

(iv) Receivables equivalent to forty five days of fixed and energy charges for sale of electricity calculated on target availability.

(c) in case of hydro generating station and transmission system:

(i) Receivables equivalent to forty five days of fixed and energy charges for sale of electricity calculated on target availability.

(ii) Maintenance spares @ 15% of O&M expenses specified in regulation 19.

(2) The cost of fuel in cases covered under sub-clauses (a) and (b) of clause (1) shall be based on the landed cost incurred (taking into account normative transit and handling losses) by the generating company and gross calorific value of the fuel as per actual for the preceding three months and no fuel price escalation shall be provided during the tariff period.

(3) 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 1.4.2009 or on 1<sup>st</sup> April of the year in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

(4) 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.

19. **Operation and Maintenance Expenses.** Normative operation and maintenance expenses shall be as follows, namely:

(a) Coal-based generating stations other than the generating stations referred to at clause (b)

(Rs. in lakh/MW)

Year	200/210/250 MW sets	300/330/350 MW sets	500 MW sets	600 MW and above sets
2009-10	15.70	14.00	12.50	11.50
2010-11	16.51	14.72	13.15	12.09
2011-12	17.37	15.49	13.83	12.72
2012-13	18.26	16.29	14.54	13.38
2013-14	19.21	17.13	15.29	14.07

**Note**

For the generating stations having combination of 200/210/250 MW sets and 500 MW and above set, the weighted average value for operation and maintenance expenses shall be adopted.

(b) Talcher Thermal Power Station(TPS), Tanda TPS, Badarpur TPS of NTPC and Chandrapur TPS and Durgapur TPS of DVC

(Rs. in lakh/MW)

Year	Talcher TPS	Tanda and Chandrapur TPS	Badarpur and Durgapur TPS
2009-10	28.50	24.00	27.00
2010-11	28.50	25.24	27.00
2011-12	28.50	26.55	27.00
2012-13	28.50	27.92	27.00
2013-14	28.50	29.36	27.00

(c) Open Cycle Gas Turbine/Combined Cycle generating stations

(Rs. in lakh/MW)

Year	Gas Turbine/ Combined Cycle generating stations other than small gas turbine power generating stations	Small gas turbine power generating stations	Agartala GPS
(1)	(2)	(3)	(4)
2009-10	12.78	16.20	24.71
2010-11	13.44	17.03	25.99
2011-12	14.13	17.91	27.34
2012-13	14.86	18.84	28.75
2013-14	12.78	16.20	24.71

(d) Lignite-fired generating stations

(Rs. in lakh/MW)

Year	200/210/250 MW sets	125 MW sets	TPS-I of NLC
2009-10	15.70	24.00	21.50
2010-11	16.51	25.24	22.61
2011-12	17.37	26.55	23.78
2012-13	18.26	27.92	25.01
2013-14	19.21	29.36	26.30

(e) In case of coal-based/lignite-fired thermal generating station a separate compensation allowance unit wise shall be admissible to meet expenses on new assets of capital nature including in the nature of minor assets, in the following manner:

Years of operation	Compensation Allowance (Rs lakh/MW)
0-10	Nil
11-15	0.15
16-20	0.35
21-25	0.65

(f) Hydro generating station

(i) Operation and maintenance expenses including insurance, for the existing generating stations which have been in operation

for 5 years or more in the base year of 2008-09, shall be derived on the basis of actual operation and maintenance expenses for the years 2003-04 to 2007-08, based on the audited balance sheets, excluding abnormal operation and maintenance expenses, if any, after prudence check by the Commission.

(ii) The average of the normalised operation and maintenance expenses after prudence check, for the years 2003-04 to 2007-08, considered as operation and maintenance expenses for the year 2005-06 shall be escalated at the rate of 5.17% per annum to arrive at operation and maintenance expenses for the base year 2008-09:

Provided that operation and maintenance expenses for the base year 2008-09 shall be further rationalized considering 45% increase in employee cost on account of pay revision to arrive at the base operation and maintenance expenses for the year 2008-09.

(iii) The base operation and maintenance expenses for the year 2008-09 shall be escalated further at the rate of 5.17% per annum to arrive at permissible operation and maintenance expenses for the relevant years.

(iv) In case of the hydro generating stations, which have not been in commercial operation for a period of five years as on 1.4.2009, operation and maintenance expenses shall be fixed at 1.5% of the capital cost up to cut-off date (excluding cost of rehabilitation & resettlement works) as admitted by the Commission and shall be escalated at the rate of 5.17% per annum



from the subsequent year to arrive at operation and maintenance expenses for the base year 2008-09:

Provided that the base operation and maintenance expenses shall be further escalated at the rate of 5.17% per annum to arrive at permissible operation and maintenance expenses for the relevant years.

(v) In case of the hydro generating stations declared under commercial operation on or after 1.4.2009, the base operating and maintenance expenses shall be fixed at 1.5% of the capital cost up to cut off date (excluding cost of rehabilitation and resettlement works) as admitted by the Commission, and shall be subject to an annual escalation of 5.17% per annum for the subsequent years.

(g) Transmission system

(i) Norms for operation and maintenance expenses per km and per bay shall be as under:

<b>Norm</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>
<b>For Line (Rs in lakh /km)</b>					
HVDC line	0.534	0.562	0.591	0.621	0.653
765 kV	0.550	0.578	0.608	0.640	0.673
400 kV S/C	0.486	0.511	0.538	0.565	0.595
400 kV D/C	0.518	0.545	0.573	0.603	0.634
220 kV S/C	0.453	0.476	0.501	0.527	0.554
220 kV D/C	0.470	0.494	0.520	0.547	0.575
132 kV S/C	0.446	0.469	0.493	0.519	0.546
132 kV D/C	0.460	0.484	0.509	0.535	0.563
<b>For Bay (Rs in lakh/bay)</b>					
765 kV bay	35.46	37.29	39.22	41.25	43.38
400 kV bay	24.73	26.01	27.35	28.77	30.25
220 kV bay	22.27	23.42	24.63	25.91	27.25

132 kV bay	21.76	22.88	24.07	25.31	26.62
<b>For HVDC Station Rs in lakh per 100 MW*</b>	46.2	48.6	51.1	53.7	56.5
* For HVDC Back-To-Back, two HVDC stations will be counted at same location					

(ii) The total allowable operation and maintenance expenses for the transmission system shall be calculated by multiplying the number of bays and kms of line length with the applicable norms for the operation and maintenance expenses per bay and per km respectively.

20. **Expenses on secondary fuel oil consumption and lime stone consumption.** (1) Expenses on secondary fuel oil in Rupees shall be computed corresponding to normative specific fuel oil consumption (SFC) specified in regulation 26, in accordance with the following formula:

$$= \text{SFC}_n \times \text{LPSF} \times \text{NAPAF} \times 24 \times \text{NDY} \times \text{IC} \times 10$$

**Where,**

SFC<sub>n</sub> – Normative Specific Fuel Oil consumption in ml/kWh

LPSF – Weighted Average Landed Price of Secondary Fuel in Rs./ml

NAPAF – Normative Annual Plant Availability Factor in percentage

NDY – Number of days in a year

(2) The landed cost incurred by the generating company and gross calorific value of secondary fuel oil shall be taken based on actuals of the latest procurement price for the generating station:

Provided that any variation shall be adjusted on year-to-year basis in accordance with the fuel price adjustment (FPA) formula given at Appendix-II for coal-based/lignite-based generating stations.

(3) Expenses relating to lime stone consumption shall be computed corresponding to normative lime stone consumption ( $LC_n$ ) in Rs. as specified in regulation 26, as per the following formula:

$$= LC_n \times LPL \times NPAF \times 24 \times NDY \times IC \times 10$$

**Where,**

$LC_n$  – Normative lime stone consumption in kg/kWh

LPL – Weighted Average Landed Price of Lime stone in Rs./Kg

NPAF – Normative Annual Plant Availability Factor in percentage

NDY – Number of days in a year

(4) The landed cost of lime stone incurred by the generating company shall be taken based on actuals of the latest procurement price for the generating station:

Provided that any variation shall be adjusted on year-to-year basis in accordance with the fuel price adjustment (FPA) formula given at Appendix-III for lignite-based generating stations using CFBC technology.

21. **Recovery of fixed charge.** (1) The fixed charge for a project shall be computed on annual basis and recovered on monthly basis based on the norms of operation as provided in Chapter 5 of these regulations:

Provided that the annual fixed charge for transmission system shall be called the annual transmission charge.

(2) The fixed charge (inclusive of incentive) payable to a thermal generating station for a calendar month shall be calculated in accordance with the following formulae :

- (i) For generating stations in commercial operation for less than ten (10) complete years:

$$(AFC \times NDM / NDY) \times (0.5 + 0.5 \times PAFM / NAPAF) \text{ (in Rs.)}$$

Provided that in case the plant availability factor achieved during a year (PAFY) is less than 70%, the total fixed charge for the year shall be restricted to

$$AFC \times (0.5 + 35 / NAPAF) \times (PAFY / 70) \text{ (in Rs.)}$$

- (ii) For generating stations in commercial operation for ten (10) complete years or more:

$$(AFC \times NDM / NDY) \times (PAFM / NAPAF) \text{ (in Rs.)}$$

Where,

AFC = Annual fixed charge computed for the year, in Rupees.

NDM = Number of days in the month

NDY = Number of days in the year

PAFY = Plant availability factor achieved during a year, in percent.

NAPAF = Normative annual plant availability factor in percentage

PAFM = Plant availability factor achieved during the month, in percent:

The PAFM and PAFY shall be computed in accordance with the following formula:

$$\text{PAFM or PAFY} = \frac{10000 \times \sum_{i=1}^N \text{DC}_i}{\{ N \times \text{IC} \times (100 - \text{AUX}_n) \}}\%$$

Where,

IC = Installed Capacity (in MW) of the generating station,

DC<sub>i</sub> = Average declared capacity (in MW) for the i<sup>th</sup> day of the Period i.e. month or the year as the case may be,

N = Number of days during the period i.e. month or the year as the case may be,

AUX<sub>n</sub> = Normative Auxiliary Energy Consumption in percentage

Provided that in a situation of shortage of main fuel in a thermal generating station, the generating company may declare ex-bus capacity which can be delivered at least for eight (8) hours during the day, along with total energy availability (in ex-bus MWh) for the day, clearly specifying the MW and MWh out of these which can only be generated by firing a supplementary fuel, if any.

Provided further that in all such cases, the maximum MW scheduled (based on beneficiaries' requisitions) shall be taken as the DC for the day.

Note: DC and IC shall exclude the capacity of generating units not declared under commercial operation. Further, DC shall be as certified by the nodal load dispatch centre after the day is over.

Provided that the tariff structure as provided in this regulation may be adopted by the Department of Atomic Energy, Government of India for the nuclear generating stations by specifying annual fixed charge (AFC), normative annual plant availability factor (NAPAF), installed capacity (IC), auxiliary power consumption and energy charge rate (ECR) for such stations.

(3) In case of the hydro generating station the capacity charge (inclusive of incentive) payable for a calendar month shall be

$$(AFC \times CCAF \times NDM / NDY) \times (PAFM / NAPAF) \text{ (in Rs.)}$$

Where,

CCAF = Capacity charge apportioning factor being the proportion of AFC which is to be recovered through capacity charge and shall be as provided in regulation 27:

Provided that during the period between the date of commercial operation of the first unit of the generating station and the date of commercial operation of the generating station, the capacity charge shall be worked out based on the latest estimate of the completion cost for the generating station.

(4) In case of the transmission system, the transmission charge (inclusive of incentive) payable for a calendar month shall be

$$(ATC \times NDM / NDY) \times (TSAFM / NATSAF) \text{ (inRs.)}$$

Where

ATC = Annual Transmission Charge in Rupees

TSAFM = Transmission System Availability Factor for a month in %

NATSAF = Normative Annual Transmission System Availability Factor in %, as specified in regulation 28.

## ***Computation and Recovery of Energy Charge***

### 22. (1) **Thermal generating station**

(a) Energy charge shall cover main fuel cost and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the energy charge rate of the month (with fuel price adjustment).

(b) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

(i) For coal and lignite based stations

$$\text{ECR} = (\text{GHR} - \text{SFC}_n \times \text{CVSF}) \times \text{LPPF} \times 100 / \{\text{CVPF} \times (100 - \text{AUX}_n)\}$$

(ii) For gas and liquid fuel based stations

$$\text{ECR} = \text{GHR} \times \text{LPPF} \times 100 / \{\text{CVPF} \times (100 - \text{AUX}_n)\}$$

Where,

ECR = Energy charge rate, in Rupees per kWh sent out.

GHR = Gross station heat rate, in kcal per kWh.

SFC<sub>n</sub> = Specific fuel oil consumption, in ml/kWh

CVSF = Calorific value of secondary fuel, in kCal/ml

LPPF = Landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable.

CVPF = Gross calorific value of primary fuel, in kCal per kg, per litre or per standard cubic metre as applicable.

(c) Energy charge for the month shall be worked out on the basis of ex-bus energy scheduled to be sent out from the generating station in accordance with the following formula:

Monthly Energy Charge (Rs) =

Energy Charge Rate in Rs/kWh X Scheduled Energy (ex-bus) for the month in kWh corresponding to scheduled generation.

(d) Adjustment of energy charge rate (ECR) on account of variation in price and calorific value of fuels

(i) Initially, landed cost incurred by the generating company and gross calorific value (GCV) of coal or lignite or gas or liquid fuel (taking into account normative transit and handling losses) shall be taken based on actuals of the preceding three months and thereafter any variation in GCV and landed cost shall be adjusted on month-to-month basis based on the Fuel Price Adjustment (FPA) formula given at Appendix-IV for coal or lignite based generating stations and at Appendix-V for gas based combined cycle generating stations.

(ii) No separate application need be made before the Commission for adjustment of fuel price.

(c) **Landed Cost of Coal.** The landed cost of coal shall include price of coal corresponding to the grade and quality of coal inclusive of royalty, taxes and duties as applicable, transportation cost by rail/road or any other means, and, for the purpose of computation of energy charges, shall be arrived at after considering normative transit and handling



losses as percentage of the quantity of coal dispatched by the coal supply company during the month as given below:

Pit head generating stations : 0.2%

Non-Pit head generating stations : 0.6%

(2) **In case of hydro generating station.-** (a) Energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiaries, excluding free energy, if any, during the calendar month ex power plant basis, at the computed energy charge rate.

(b) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula :

$$ECR = AFC \times (1 - CCAF) \times 10 / \{ADE \times (100 - AUX) \times (100 - FEHS)\}$$

Where,

ADE = Annual design energy specified for the hydro generating station, in MWh

FEHS = Free energy for home State, in percent and shall be taken as 12%:

Provided that in cases where the site of a hydro project is awarded to a developer (not being a State controlled or owned company), by a State Government by following a two stage transparent process of bidding, the 'free energy' shall be taken as 13% and energy corresponding to 100 units of electricity to be provided free of cost every month to every

project affected family for a period of 10 years from the date of commissioning of the station:

The energy charge payable during the month shall be calculated in the following manner:

Energy charge (Rs./kWh) = ECR x scheduled energy in MWh for the month x (1-FEHS(%))

Provided that during the period between the date of commercial operation of the first unit of the generating station and the date of commercial operation of the generating station as a whole, the energy charge shall be worked out based on the latest estimate of the completion cost for the generating station.

### ***Other Charges***

#### **23. Incentive.**

- (1) In case of the thermal generating station, incentive shall form part of the recovered fixed charge.
- (2) In case of hydro generating station, incentive shall form part of the recovered capacity charge and energy charge.
- (3) In case of transmission system incentive shall form part of the recovered transmission charge.

**24. Unscheduled Interchange(UI) Charges.** (1) All variations between actual net injection and scheduled net injection for generating stations, and all variations between actual net drawal and scheduled net drawal for beneficiaries shall be treated as their respective Unscheduled Interchanges (UI). All

Unscheduled Interchanges shall be governed by the relevant regulations specified from time to time by the Commission.

(2) Actual net interchange of every inter-State entity shall be metered on its periphery through special energy meters (SEMs) installed by the Central Transmission Utility (CTU), and computed in MWh for each 15-minute time block by the concerned Regional Load Dispatch Centre (RLDC).

## CHAPTER - 5

### NORMS OF OPERATION

25. Recovery of fixed charge, energy charge and incentive by the generating company and the transmission licensee shall be based on the achievement of the operational norms specified in this Chapter.

#### ***Norms of operation for thermal generating station***

26. The norms of operation as given hereunder shall apply to thermal generating station:

(i) **Normative Annual Plant Availability Factor (NAPAF) for recovery of fixed charge and for Incentive**

- (a) All thermal generating stations, except those covered under clauses (b), (c), (d), (e) & (f) - 85%
- (b) Thermal generating stations of NTPC Ltd

Talcher TPS	82%
Tanda TPS	82%
Badarpur TPS	82%

- (c) Thermal generating stations of Neyveli Lignite Corporation Ltd

TPS-I	72%
TPS-II Stage-I & II	75%
TPS-I (Expansion)	80%

- (d) Thermal generating stations of Damodar Valley Corporation (DVC):

Bokaro TPS	75%
Chandrapura TPS	60%
Durgapur TPS	74%

(e) Assam Gas Based Station of NEEPCO :

Assam GPS	70%
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(f) Lignite-based generating stations using Circulatory Fluidized Bed Combustion (CFBC) Technology – 80%

**(ii) Gross Station Heat Rate**

(a) Coal-based thermal generating stations, other than those covered under clauses (b) and (c) below

<b>200/210/250 MW Sets</b>	<b>300/330/500 MW Sets (Sub-critical)</b>	<b>600/660 MW Set (Supercritical)</b>
2450 KCal/kWh	2400 kCal/kWh	2350 kCal/kWh

**Note 1**

In respect of 200/210 MW/250 MW units, declared under commercial operation on or before 31.3.2009, gross station heat rate shall be 2500 kCal/kWh.

**Note 2**

In respect of 500 MW and above units where the boiler feed pumps are electrically operated, the gross station heat rate shall be 40 kCal/kWh lower than the gross station heat rate specified above.

**Note 3**

For the generating stations having combination of 200/210/250 MW sets and 500 MW and above sets, the normative gross station heat rate shall be the weighted average gross station heat rate.

(b) Thermal generating stations of NTPC Ltd.:

Badarpur TPS	2825 kCal/kWh
Talcher TPS	2975 kCal/kWh
Tanda TPS	2850 kCal/kWh

- (c) Thermal generating stations of Damodar Valley Corporation (DVC):

Bokaro TPS	2770 kCal/kWh
Chandrapura TPS	3100 kCal/kWh
Durgapur TPS	2820 kCal/kWh

- (d) Lignite-based thermal generating stations

(1) For lignite-based thermal generating stations, except for TPS-I, TPS-I(Expansion) and TPS-II (Stage I & II) of Neyveli Lignite Corporation Ltd, the gross station heat rates specified under sub-clause (a) above for coal-based thermal generating stations shall be corrected, using multiplying factors as given below:

(i) For lignite having 50% moisture: 1.10

(ii) For lignite having 40% moisture: 1.07

(iii) For lignite having 30% moisture: 1.04

(iv) For other values of moisture content, multiplying factor shall be pro-rated for moisture content between 30-40 and 40-50 depending upon the rated values of multiplying factor for the respective range given under sub-clauses (i) to (iii) above.

- (2) Coal-based/lignite based generating stations using CFBC technology – 2550 kCal/kWh:

Provided that in case of lignite-fired generating stations the gross station heat rate shall be corrected using multiplying factors as given above at d(1).

(3) TPS-I, TPS-I(Expansion) and TPS-II (Stage I & II) of Neveli Lignite Corporation Ltd

TPS-I                      4000 kCal/kWh  
 TPS-II                     2900 kCal/kWh  
 TPS-I(Expansion) 2750 kCal/kWh

(e) Open Cycle Gas Turbine/Combined Cycle generating stations

(i) Existing generating stations of NTPC Ltd

Name of generating station	Combined cycle (kCal/kWh)	Open cycle (kCal/kWh)
Gandhar GPS	2000	2900
Kawas GPS	2075	3010
Anta GPS	2075	3010
Dadri GPS	2075	3010
Auraiya GPS	2100	3045
Faridabad GPS	2000	2900
Kayamkulam GPS	2000	2900

(ii) Generating stations other than those specified in clause (e) (i) above

	<b>Advanced Class Machines</b>	<b>E/EA/EC/E2 Class Machines</b>
Open cycle	2685 kCal/kWh	2830 kCal/kWh
Combined cycle	1850 kCal/kWh	1950 kCal/kWh

(iii) Small Gas Turbine Power Generating Stations

(a) Assam Gas Based Power Station, Kathalguri:

Open Cycle -- 3440 kCal/kWh  
 Combined Cycle -- 2400 kCal/kWh

(b) Agartala Gas Based Power Station,  
 Ramachandranagar:

Open Cycle -- 3500 kCal/kWh

(c) Generating stations other than (a) and (b) above:

	<b>With Natural Gas</b>	<b>With Liquid Fuel</b>
Open cycle	3125 kCal/kWh	1.02 x 3125 kCal/kWh
Combined cycle	2030 kCal/kWh	1.02 x 2030 kCal/kWh

**(iii) Specific fuel oil consumption**

- (a) Coal-based generating stations : 1.0 ml/kWh  
 (b) (i) Lignite-fired generating stations including stations based on CFBC technology except TPS-I : 2.0 ml/kWh  
 (ii) TPS-I : 3.5 ml/kWh  
 (c) Coal-based generating stations of DVC

Bokaro TPS	2.0 ml/kWh
Chandrapura TPS	3.0 ml/kWh
Durgapur TPS	3.0 ml/kWh

**(iv) Auxiliary Energy Consumption**

- (a) Coal-based generating stations:



		<b>With cooling tower</b>	<b>Without cooling Tower</b>
(i)	200 MW series	8.5%	8.0%
(ii)	300/330/350 MW series	7.5%	7%
(iii)	500 MW & above		
	Steam driven boiler feed pumps	7.0%	6.5%
	Electrically driven boiler feed pumps	8.5%	8.0%
(iii)	Talcher Thermal Power Station	10.5%	
(iv)	Tanda Thermal Power Station	12.0%	
(v)	Badarpur Thermal Power Station		9.5%
(vi)	Bokaro Thermal Power Station	10.25%	
(vii)	Chandrapura Thermal Power Station	11.50%	
(viii)	Durgapur Thermal Power Station	10.50%	

(b) Gas Turbine/Combined Cycle generating stations:

- |      |                |      |
|------|----------------|------|
| (i)  | Combined cycle | 3.0% |
| (ii) | Open cycle     | 1.0% |

(c) Lignite-fired thermal generating stations:

- (i) All generating stations with 200 MW sets and above:

The auxiliary energy consumption norms shall be 0.5 percentage point more than the auxiliary energy consumption norms of coal-based generating stations at (iv) (a) (i), (ii) & (iii) above.

(ii) Generating stations up to 125 MW sets using CFBC technology: 12%

(iii) TPS-I and TPS-II Stage-I&II of Neyveli Lignite Corporation Ltd.:

TPS-I	12.0%
TPS-II	10.0%

(v) Lime stone consumption for lignite-based generating station using CFBC technology: 0.05 kg/kWh.

***Norms of operation for hydro generating stations***

27. **(1)** The norms of operation for hydro generating station shall be as under, namely:

(i) **Normative Annual Plant Availability Factor (NAPAF) and Capacity Charge Apportioning Factor (CCAF) for recovery of capacity charges**

Station-wise NAPAF and CCAF shall be as follows-

<b>Station</b>	<b>Type of Plant</b>	<b>Plant Capacity (MW)</b>	<b>NAPAF</b>	<b>CCAF</b>
<b>NHPC</b>				
Chamera -I	Pondage	540	90%	50%
Biarasiul	Pondage	180	85%	50%
Loktak	Storgae	90	90%	50%
Chamera-II	Pondage	300	90%	50%
Rangit	Pondage	60	85%	50%
Dhauliganga	Pondage	280	85%	50%
Teesta-V	Pondage	510	85%	50%
Dulhasti	Pondage	390	90%	70%
Salal	ROR	690	60%	50%

Uri	ROR	480	60%	50%
Tanakpur	ROR	94.2	55%	50%
<b>NHDC</b>				
Indirasagar	Storage	1000	85%	50%
Omkareshwar	Storage	520	90%	50%
<b>THDC</b>				
Tehri Stg-I	Storage	1000	77%	70%
<b>SJVNL</b>				
NathpaJhakri	Pondage	1500	82%	50%
<b>NEEPCO</b>				
Kopili Stg - I	Storage	200	80%	50%
Khandong I & II	Storage	75	80%	50%
Doyang	Storage	75	80%	50%
Ranganadi	Pondage	405	85%	50%
<b>DVC</b>				
Panchet	Storage	80	80%	50%
Tilaiya	Storage	4	80%	50%
Maithon	Storage	63.2	80%	50%

**Note:**

The NAPAF and CCAF of Khandong I & II are specified by treating them as single generating station.

(ii) **Auxiliary Energy Consumption :**

- (a) Surface hydro generating stations
  - (i) with rotating exciters mounted on the generator shaft - 0.2% of energy generated
  - (ii) with static excitation system - 0.5% of energy generated
- (b) Underground hydro generating stations
  - (i) with rotating exciters mounted on the generator shaft - 0.4% of energy generated

(ii) with static excitation system - 0.7% of energy generated

(iii) **Transformation losses**

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

***Norms of operation for transmission system***

**28. Normative Annual transmission system availability factor (NATSAF)**

for recovery of full transmission charges shall be as under:

- |     |   |   |     |
|-----|---|---|-----|
| (1) | AC system   | : | 98% |
| (2) | HVDC bi-pole links and HVDC back-to-back Stations | : | 95% |

**29. Auxiliary Energy Consumption in the sub-station.**

(a) AC System

The charges for auxiliary energy consumption in the AC sub-station for the purpose of air-conditioning, lighting and consumption in other equipment shall be borne by the transmission licensee and are included in the normative operation and maintenance expenses.

(b) HVDC sub-station

For auxiliary energy consumption in HVDC sub-stations, the Central Government may allocate an appropriate share from one or more ISGS . The charges for such power shall be borne by the transmission licensee and are included in the normative operation and maintenance expenses.

## CHAPTER - 6

### **SCHEDULING, ACCOUNTING AND BILLING**

30. **Scheduling**. The methodology for scheduling and dispatch for the generating station shall be as specified in the Indian Electricity Grid Code, as amended from time to time.

31. **Metering and Accounting**. The provisions of the Indian Electricity Grid Code, as amended from time to time shall be applicable.

32. **Billing and Payment of fixed or capacity charge**. (1) Bills shall be raised for fixed or capacity charge on monthly basis by the respective generating companies and the transmission licensees as per these Regulations, and applicable payments shall be made by the beneficiaries or the long-term transmission customers directly to the generating companies.

(2) Payment of the fixed or capacity charge shall be shared by the beneficiaries of the generating station as per their percentage shares for the month (inclusive of any allocation out of the unallocated capacity) in the installed capacity in case of thermal generating stations, and in proportion to their shares (inclusive of any allocation out of the unallocated capacity) in the saleable capacity (to be determined after adjusting capacity corresponding to free energy to home State as per clause (2) of regulation 22) in case of hydro generating stations.

#### **Note 1**

Shares / allocations of each beneficiary in the total capacity of Central sector generating stations shall be as determined by the Central Government, inclusive of any allocations out of the unallocated capacity. The shares shall be applied in percentages of station capacity and shall normally remain constant during a month. Based on the decision of the

Central Government the changes in allocation shall be communicated by the Member-Secretary, Regional Power Committee in advance, at least three days prior to beginning of a calendar month, except in case of an emergency calling for an urgent change in allocations out of unallocated capacity. The total capacity share of any beneficiary would be sum of its capacity share plus allocation out of the unallocated portion. In the absence of any specific allocation of unallocated power by the Central Government, the unallocated power shall be added to the allocated shares in the same proportion as the allocated shares.

**Note 2**

The beneficiaries may propose surrendering part of their allocated firm share to other States within / outside the region. In such cases, depending upon the technical feasibility of power transfer and specific agreements reached by the generating company with other States within/ outside the region for such transfers, the shares of the beneficiaries may be prospectively re-allocated by the Central Government for a specific period from the beginning of a calendar month. 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 State(s) 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 capacity charges as per allocated capacity shares. Any such reallocation shall be communicated to all concerned by the Member Secretary, Regional Power Committee in advance, at least three days prior to such reallocation taking effect.

(3) The monthly energy account issued by Member-Secretary of the Regional Power Committee shall include allotted transmission capacities of long-term transmission customers.

33. **Sharing of transmission charge.** (1) If a transmission system has been created for a particular long-term transmission customer including dedicated transmission line(s) for a generating station, transmission charges for such transmission system shall be payable by that long-term transmission customer or the generating company, as the case may be.

(2) For intra-regional transmission system declared under commercial operation prior to 1.4.2008, the monthly transmission charges shall be pooled for sharing by long-term transmission customers in accordance with the following formula:

Transmission Charges for intra-regional system payable for a month by a long-term transmission customer of that transmission system

$$= \left( \sum_{i=1}^n \left[ \frac{TC_i}{12} \right] \right) \times \frac{CL}{SCL}$$

Where  $TC_i$  = Annual Transmission Charges for the  $i^{th}$  project in the region computed in accordance with these regulations.

$n$  = Number of projects in the region

$CL$  = Allotted Transmission Capacity to the long-term transmission customer

$SCL$  = Sum of the Allotted Transmission Capacities to all the long-term transmission customers of the regional transmission system.

(3) The transmission system declared under commercial operation on or after 1.4.2008 may be segregated into Part-1 and Part-2, if required, in

accordance with the decision taken in the Standing Committee for Transmission Planning constituted by Central Electricity Authority. The transmission charge for Part-1 and Part-2 shall be shared as under:

- a. Part-1: The transmission charge for Part-1 of the transmission system shall be shared in a pre-decided manner by the firm up beneficiaries of the generating station or by the generating station or a combination of the two.
- b. Part-2: This part comprises the system strengthening schemes and the transmission charge for this part shall be pooled for sharing in the same manner as clause (2) of this regulation:

Provided that the transmission charge for the step down transformers (ICTs) and downstream system declared under commercial operation on or after 1.4.2008 shall be determined separately and shall be payable only by the long-term transmission customer directly served.

(4) If a generating station's capacity or part thereof has been commissioned but the required transmission system augmentation based on planning criteria specified in the IEGC has for any reason not taken place, the generating station may be allowed to use the existing transmission system. In such a case, the generating station shall share pooled monthly transmission charge of the region concerned in accordance with clause (2) of this regulation. The allotted transmission capacity of the generating station in such a case shall be equal to the generation capacity under commercial operation reduced by the generation capacity for which transmission system augmentation has taken place.

(5) Annual transmission charge for the inter-regional assets declared under commercial operation prior to 1.4.2008 shall be shared in the following manner:



<b>S.No.</b>	<b>Inter-regional Asset connecting</b>	<b>Manner of sharing of Transmission Charges</b>
(i)	Eastern and Northern Region	To be borne by long-term transmission customers of Northern Region
(ii)	Eastern and Western Region	To be borne by long-term transmission customers of Western Region
(iii)	Eastern and Southern Region	To be borne by long-term transmission customers of Southern Region
(iv)	Eastern and North-Eastern Region	To be shared equally between long-term transmission customers of the two Regions
(v)	Northern and Western Region	
(vi)	Southern and Western Region	

Provided that the manner of sharing of the transmission charge for the inter-regional assets declared under commercial operation on or after 1.4.2008 may in appropriate cases and for reasons to be recorded in writing be decided in deviation of the manner specified above.

Provided further that the transmission charge for inter-regional assets payable by long-term transmission customers of a particular region shall be pooled for sharing amongst the long-term transmission customers of that region in the same manner as specified in clause (2) of this regulation:

Provided also that Birpara-Salakati transmission line shall be treated as part of the Eastern Region transmission system and its charges shall be payable by long-term transmission customers of Eastern Region only.

34. **Rebate.** (1) For payment of bills of the generating company and the transmission licensee through letter of credit on presentation, a rebate of 2% shall be allowed.

(2) Where payments are made other than through letter of credit within a period of one month of presentation of bills by the generating company or the transmission licensee, a rebate of 1% shall be allowed.

35. **Late payment surcharge.** In case the payment of any bill (other than UI & VAR charges) is delayed by a beneficiary beyond a period of 60 days from the date of billing a late payment surcharge at the rate of 1.25% per month shall be levied by the generating company or the transmission licensee, as the case may be.

## CHAPTER - 7

### **MISCELLANEOUS PROVISIONS**

36. The proceeds of carbon credit from approved CDM project shall be shared in the following manner, namely-

(a) 100% of the gross proceeds on account of CDM to be retained by the project developer in the first year after the date of commercial operation of the generating station or the transmission system, as the case may be;

(b) in the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, whereafter the proceeds shall be shared in equal proportion, by the generating company or the transmission licensee, as the case may be, and the beneficiaries.

37. **Norms of operation to be ceiling norms.** Norms of operation specified in these regulations are the ceiling norms and shall not preclude the generating company or the transmission licensee, as the case may be, and the beneficiaries and the long-term transmission customers from agreeing to the improved norms of operation and in case the improved norms are agreed to, such improved norms shall be applicable for determination of tariff.

38. **Deviation from norms.** (1) Tariff for sale of electricity by the generating company or the transmission licensee, as the case may be, may also be determined in deviation of the norms specified in these regulations subject to the conditions that-

(a) The levelised tariff over the useful life of the project, calculated based on the discounting factor as notified by the Commission from time

to time for the projects under section 63 of the Act, on the basis of the norms in deviation does not exceed the levelised tariff calculated on the basis of the norms specified in these regulations; and

(b) Any deviation shall come into effect only after approval by the Commission, for which an application shall be made by the generating company or the transmission licensee, as the case may be.

(2) The tariff of the existing generating stations, namely, TPS-I and TPS-II (Stage I & II) and TPS-I(Expansion) of Neyveli Lignite Corporation Ltd and Badarpur TPS of NTPC Ltd., whose tariff for the tariff period 2004-09 has been determined by following the Net Fixed Assets approach, shall continue to be determined by adopting Net Fixed Assets approach.

39. **Tax on Income.** (1) Tax on the income streams of the generating company or the transmission licensee, as the case may be, from its core business excluding net UI income and incentives shall be recovered from the beneficiaries, or the long-term transmission customer, as the case may be.

(2) Any under-recovery or over-recovery of tax on income shall be adjusted every year on the basis of income-tax assessment under the Income-Tax Act, 1961, as certified by the auditors:

Provided that the station-wise profit before tax in the case of the generating company and the region-wise profit before tax in case of the transmission licensee as estimated for a year in advance shall constitute the basis for apportionment of the corporate tax liability to all the generating stations and transmission regions:

Provided further that the benefits of tax-holiday as applicable in accordance with the provisions of the Income-Tax Act, 1961 (43 of 1961) shall

be passed on to the beneficiaries, or the long-term transmission customer, as the case may be:

Provided also that in the absence of any other equitable basis the credit for carry forward losses and unabsorbed depreciation shall be apportioned in the manner provided in the first proviso to this regulation:

Provided also that income-tax allocated to the generating station shall be charged to the beneficiaries in the same proportion as annual fixed charge, and in case of inter-State transmission system, the sharing of income-tax shall be in the same proportion as annual transmission charge.

40. **Recovery of Income-tax, cost of hedging Foreign Exchange Rate Variation, etc..** Recovery of income-tax, cost of hedging and foreign exchange rate variation shall be done directly by the generating company or the transmission licensee, as the case may be, from the beneficiaries or the long-term transmission customers, as the case may be, without making any application before the Commission:

Provided that in case of any objections by the beneficiaries to the amounts claimed on account of income-tax or foreign exchange rate variation or cost of hedging, the generating company or the transmission licensee, as the case may be, may make an appropriate application before the Commission for its decision.

41. **Tax Escrow Mechanism.** (1) The beneficiaries and the long-term transmission customers shall maintain an interest-bearing tax escrow account in a scheduled bank, to which all amounts of interest shall be credited.

(2) The tax liability shall be estimated two months before the commencement of each year and intimated to the beneficiaries or the long-term

transmission customer, as the case may be. The generating company or the transmission licensee shall endeavour to minimize its liability on account of taxes recoverable.

(3) The generating company or the transmission licensee shall be authorised to withdraw the amounts for settling the income-tax liability on presentation to the escrow holder, a certificate from their auditors that the amounts are immediately due and payable to the taxing authority.

(4) The generating company or the transmission licensee shall pay into the tax escrow account any refund received from the taxing authority.

(5) The refunds, if any, shall not be paid back to the beneficiaries or the long-term transmission customer, as the case may be, and shall be adjusted in the escrow account. Any balance due or returnable shall be rolled over to the next year.

(6) The escrow accounts shall be reflected in the books of accounts of the beneficiaries or the long-term transmission customer, as the case may be, as their bank account.

42. **Application fee and the publication expenses.** The application filing fee and the expenses incurred on publication of notices in the application for approval of tariff, may in the discretion of the Commission, be allowed to be recovered by the generating company or the transmission licensee, as the case may be, directly from the beneficiaries or the long-term transmission customer, as the case may be:

43. **Power to Relax.** The Commission, for reasons to be recorded in writing, may relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

(Alok Kumar)  
Secretary