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CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

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

Dated 19th January, 2009

NOTIFICATION

In exercise of 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, 2009.

(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, or 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 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.** These regulations shall apply in all cases where tariff for a generating station or a unit thereof (other than those based on non-conventional energy sources) and the transmission system 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) **'expenditure incurred'** means the fund, whether the equity or debt or both, actually deployed and paid in cash or cash equivalent, for creation or acquisition of a useful asset and does not include commitments or liabilities for which no payment has been released;

(3) **'additional capitalisation'** means the capital expenditure 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 9;

(4) **'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, expressed as a percentage of the sum of gross energy generated at the generator terminals of all the units of the generating station;

- (5) **‘auditor’** means an auditor appointed by the generating company or the transmission licensee, as the case may be, in accordance with the provisions of [sections 224, 233B and 619 of the Companies Act, 1956 (1 of 1956)]¹, or any other law for the time being in force;
- (6) **‘beneficiary’** in relation to a generating station means the person purchasing electricity generated at such a generating station whose tariff is determined under these regulations;
- (7) **‘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;
- (8) **‘capital cost’** means the capital cost as defined in regulation 7;
- (9) **‘change in law’** means occurrence of any of the following events:
- (i) the enactment, bringing into effect, adoption, promulgation, amendment, modification or repeal of any law; or
 - (ii) change in interpretation of any law by a competent court, Tribunal or Indian Governmental Instrumentality which is the final authority under law for such interpretation; or
 - (iii) change by any competent statutory authority, in any consent, approval or licence available or obtained for the project.
- (10) **‘Commission’** means the Central Electricity Regulatory Commission referred to in subsection (1) of section 76 of the Act;
- (11) **‘cut-off date’** means 31st March of the year closing after two years of 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 31st March of the year closing after three years of the year of commercial operation;
- (12) **‘date of commercial operation’ or ‘COD’** means
- (a) in relation to a unit or block of the thermal generating station, the date declared by the generating company after demonstrating the maximum continuous rating (MCR) or the installed

¹Substituted vide Corrigendum dated 17.06.2009

capacity (IC) through a successful trial run after notice to the beneficiaries, from 0000 hour of 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, ["including pumped storage hydro generation station"]² the date declared by the generating company from 0000 hour of which, after notice to the beneficiaries, scheduling process in accordance with the Indian Electricity Grid Code 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 with pondage or storage 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 to 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. In case of 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, it shall be mandatory for such hydro generating station or unit to demonstrate peaking capability equivalent to installed capacity as and when sufficient inflow is available.

(c) in relation to the transmission system, the date declared by the transmission licensee from 0000 hour of which an element of the transmission system is in regular service after successful charging and trial operation:

Provided that the date shall be the first day of a calendar month and transmission charge for the element shall be payable and its availability shall be accounted for, from that date:

² Inserted vide Third Amendment Regulations, 2012 w.e.f 01.01.2013.

Provided further that in case an element of the transmission system is ready for regular service but is prevented from providing such service for reasons not attributable to the transmission licensee, its suppliers or contractors, the Commission may approve the date of commercial operation prior to the element coming into regular service.

- (13) **'day'** means the 24 hour period starting at 0000 hour;
- (14) **'declared capacity'** or **'DC'** in relation to a generating station means, the capability to deliver ex-bus electricity in MW declared by such generating station in relation to any time-block of the day or whole of the day, duly taking into account the availability of fuel or water, and subject to further qualification in the relevant regulation;
- (15) **'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;
- (16) **'existing generating station'** means a generating station declared under commercial operation from a date prior to 1.4.2009;
- (17) **'existing project'** means the project declared under commercial operation from a date prior to 1.4.2009;
- (18) **'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;
- (19) **'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;
- (20) **'infirm power'** means electricity injected into the grid prior to the commercial operation of a unit or block of the generating station;
- (21) **'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), approved by the Commission from time to time;

(22) **‘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;

(23) **‘inter-State generating station’ or ‘ISGS’** has the meaning as assigned in the Indian Electricity Grid Code specified by the Commission;

(24) **‘long-term transmission customer’** means a person having a long-term contractual right to use inter-State transmission system by paying transmission charges;

(25) **‘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 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;

(26) **‘medium term’** in the context of usage of transmission system means the period exceeding three months and up to three years.

(27) **‘normative annual plant availability factor’ or ‘NAPAF’** in relation to a generating station means the availability factor 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, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

(29) **‘original project cost’** means the capital 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 declared capacities (DCs) for all the days during that period expressed as a percentage of the installed capacity in MW reduced by the normative auxiliary energy consumption.

(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;

[(31a) 'pumped storage hydro generating station' means a hydro station which generates power through energy stored in the form of water energy, pumped from a lower elevation reservoir to a higher elevation reservoir.]³

(32) **'run-of-river generating station'** means a hydro generating station which does not have upstream pondage;

(33) **'run –of-river generating 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 and includes such lower voltage at which any transmission line is charged or for the time being charged, in consultation with long-term transmission customers;

(35) **'scheduled energy'** means the quantum of energy scheduled by the concerned Load Despatch Centre to be injected into the grid by a generating station over a day ;

(36) **'scheduled generation' or 'SG'** at any time or for any period or time-block means schedule of generation in MW or MWh ex-bus, given by the concerned 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

³ Added vide Third Amendment Regulations, 2012 w.e.f 01.01.2013

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.

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

(38) **'storage type generating 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 for the operational phase of the transmission system;

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

(41) **'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 ["including pumped storage hydro generation station"]⁴ means turbine-generator and its auxiliaries;

(42) **'useful life'** in relation to a unit of a generating station and transmission system from the COD shall mean the following, namely:-

- | | |
|--|----------|
| (a) Coal/Lignite based thermal generating station | 25 years |
| (b) Gas/Liquid fuel based thermal generating station | 25 years |

⁴ Inserted vide Amendment Regulations, 2012 w.e.f. 01.01.2013

- | | |
|---|----------|
| (c) AC and DC sub-station | 25 years |
| (d) Hydro generating station
["including pumped storage
hydro generation station"] ⁵ | 35 years |
| (e) Transmission line | 35 years |
- (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 AND COMPUTATION OF CAPITAL COST AND CAPITAL STRUCTURE

4. **Tariff determination.**

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

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

Provided that where break-up of the capital cost of the project for different stages or units or blocks and transmission lines or sub-stations 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

⁵ Inserted vide Amendment Regulations, 2012 w.e.f. 01.01.2013

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 transmission 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 incurred duly certified by the auditors or projected to be incurred up to the date of commercial operation and additional capital expenditure 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 31.3.2009 and estimated additional capital expenditure 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) In case of the existing projects, the generating company or the transmission licensee, as the case may be, shall continue to provisionally bill the beneficiaries or the [transmission

customers]⁶ with the tariff approved by the Commission and applicable as on 31.3.2009 for the period starting from 1.4.2009 till approval of tariff by the Commission in accordance these regulations:

[Provided that where the tariff provisionally billed exceeds or falls short of the final tariff approved by the Commission under these regulations, the generating company or the transmission licensee, as the case may be, shall refund to or recover from the beneficiaries or the transmission customers, as the case may be, within six months along with simple interest at the following rates for the period from the date of provisional billing to the date of issue of the final tariff order of the Commission:

- (i) SBI short-term Prime Lending Rate as on 01.04.2009 for the year 2009-10.
- (ii) SBI Base Rate as on 01.07.2010 plus 350 basis points for the year 2010-11.
- (iii) Monthly average SBI Base Rate from 01.07.2010 to 31.3.2011 plus 350 basis points for the year 2011-12.
- (iv) Monthly average SBI Base Rate during previous year plus 350 basis points for the year 2012-13 and 2013-14.

Provided that in cases where tariff has already been determined on the date of issue of this notification, the above provisions, to the extent of change in interest rate, shall be given effect to by the parties themselves and discrepancy, if any, shall be corrected at the time of truing up.”]⁷

[(4) Where application for determination of tariff of an existing or a new project has been filed before the Commission in accordance with clauses (1) and (2) of this regulation, the Commission may consider in its discretion to grant provisional tariff upto 95% of the annual fixed cost of the project claimed in the application subject to adjustment as per proviso to clause (3) of this regulation after the final tariff order has been issued:

Provided that recovery of capacity charge and energy charge or transmission charge, as the case may be, in respect of the existing or new project for which provisional tariff has been granted shall be made in accordance with the relevant provisions of these regulations.]⁸

⁶ Substituted vide Corrigendum dated 17.6.2009

⁷ Substituted vide Second Amendment Regulations, 2011, w.e.f. 21.06.2011

⁸ Substituted vide First Amendment Regulations, 2011, w.e.f. 02.05.2011

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

(1) The Commission shall carry out truing up exercise along with the tariff petition filed for the next tariff period, with respect to the capital expenditure including additional capital expenditure incurred up to 31.3.2014, as admitted by the Commission after prudence check at the time of truing up.

Provided that the generating company or the transmission licensee, as the case may be, may in its discretion make an application before the Commission one more time prior to 2013-14 for 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 a unit or block thereof or the transmission system or the transmission lines or sub-stations thereof by 31.10.2014;

(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 incurred for the period from 1.4.2009 to 31.3.2014, duly audited and certified by the auditors;

[(4) Where after the truing up, the tariff recovered exceeds the tariff approved by the commission under these regulations, the generating company or the transmission licensee, as the case may be, shall refund to the beneficiaries or the transmission customers, as the case may be, the excess amount so recovered along with simple interest the at the rates specified in the proviso to this regulation.

(5) Where after the truing up, the tariff recovered is less than the tariff approved by the Commission under these regulations, the generating company or the transmission licensee, as the case may be, shall recover from the beneficiaries or the transmission customers, as the case may be, the under-recovered amount along with simple interest at the rates specified in the proviso to this regulation.

(6) The amount under-recovered or over-recovered, along with simple interest at the rates specified in the proviso to this regulation, shall be recovered or refunded 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.

Provided that the rate of interest, for clauses (4), (5) and (6) of this regulation, for calculation of simple interest shall be considered as under:

- (i) SBI short-term Prime Lending Rate as on 01.04.2009 for the year 2009-10.
- (ii) SBI Base Rate as on 01.07.2010 plus 350 basis points for the year 2010-11.
- (iii) Monthly average SBI Base Rate from 01.07.2010 to 31.3.2011 plus 350 basis points for the year 2011-12.
- (iv) Monthly average SBI Base Rate during previous year plus 350 basis points for the year 2012-13 & 2013-14.]⁹

7. **Capital Cost.**

(1) Capital cost for a project shall include:

- (a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan - (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, - up to the date of commercial operation of the project, as admitted by the Commission, after prudence check;
- (b) capitalised initial spares subject to the ceiling rates specified in regulation 8; and
- (c) additional capital expenditure determined under regulation 9:

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

(2) The capital cost admitted by the Commission after prudence check shall form the basis for determination of tariff:

Provided that in case of the thermal generating station and the transmission system, prudence check of capital cost may be carried out based on the benchmark norms to be specified by the

⁹ Substituted vide Second Amendment Regulations, 2011, w.e.f. 21.06.2011

Commission from time to time:

Provided further that in cases where benchmark norms have not been specified, 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 the Commission may issue guidelines for vetting of capital cost of hydro-electric projects by independent agency or expert and in that event the capital cost as vetted by such agency or expert may be considered by the Commission while determining the tariff for the hydro generating station:

[Provided also that the Commission may issue guidelines for scrutiny and commissioning schedule of the hydro-electric projects in accordance with the tariff policy issued by the Central Government under section 3 of the Act from time to time.]¹⁰

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 the developer's 10% contribution towards Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) project in the affected area:

[Provided also that the capital cost of the generating station shall include the cost for creating infrastructure for supply of power to the rural households located within a radius of five kilometers of the power station if the generating company does not intend to meet such expenditure as part

¹⁰ Substituted vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

of its Corporate Social Responsibility.]¹¹

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 customer, 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 duly trued up by excluding un-discharged liability, if any, as on 1.4.2009 and the additional capital expenditure projected to be incurred for the respective year of the tariff period 2009-14, as may be admitted by the Commission, shall form the basis for determination of tariff.]¹²

8. **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 including pumped storage hydro-electric generating station	-	1.5%.] ¹³
(iv)	Transmission system		
	(a) Transmission line	-	0.75%
	(b) Transmission Sub-station	-	2.5%
	(c) Series Compensation devices and HVDC Station	-	3.5%
	[(d) Gas Insulated Sub-station (GIS)	-	3.5%.] ¹⁴

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 7, such norms

¹¹ Added vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

¹² Substituted vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

¹³ Substituted vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

¹⁴ Added vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

shall apply to the exclusion of the norms specified herein.

9. **Additional Capitalisation.** (1) The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:

- (i) Undischarged liabilities;
- (ii) Works deferred for execution;
- (iii) Procurement of initial capital spares within the original scope of work, subject to the provisions of regulation 8;
- (iv) Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and
- (v) Change in law

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

(2) The capital expenditure incurred [or projected to be incurred]¹⁵ on the following counts 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) Change in law;
- (iii) Deferred works relating to ash pond or ash handling system in the original scope of work;
- (iv) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of

¹⁵ Added vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

power house attributable to the negligence of the generating company) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and

(v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement of switchyard equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system:

[(vi) In case of gas/ liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations.

Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.

(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialisation of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

(viii) Any undischarged liability towards final payment/withheld payment due to contractual exigencies for works executed within the cut-off date, after prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding of payment and release of such payments etc.]¹⁶

[(ix) Expenditure on account of creation of infrastructure for supply of reliable power to rural households within a radius of five kilometers of the power station if, the generating company does not intend to meet such expenditure as part of its Corporate Social Responsibility.]¹⁷

Provided that in respect sub-clauses (iv) and (v) above, any expenditure on acquiring the minor items or the assets like tools and tackles, furniture, air-conditioners, voltage stabilizers,

¹⁶ Added vide Second Amendment Regulations, 2011 w.e.f. 21.6.2011

¹⁷ Added vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

refrigerators, coolers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2009.

10. **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, record of consultation with beneficiaries and any other information considered to be relevant by the generating company or the transmission licensee:

Provided that in case of coal-based/lignite fired thermal generating station, the generating company, may, in its discretion, avail of a 'special allowance' in accordance with the norms specified in clause (4), 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 and the applicable operational norms shall not be relaxed but the special allowance shall be included in the annual fixed cost:

Provided also that such option shall not be available for a generating station or unit for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational and performance norms.

(2) Where the generating company or the transmission licensee, as the case may be, makes an application for approval of its proposal for renovation and modernisation, 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 incurred or projected to be incurred and admitted by the Commission after prudence check based on the estimates of renovation and modernization expenditure and life extension, and after 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 the alternative in the first proviso to clause (1) of this regulation, for a coal-based/lignite fired thermal generating station, shall be allowed special allowance @ Rs. 5 lakh/MW/year in 2009-10 and thereafter escalated @ 5.72% every year during the tariff period 2009-14, unit-wise from the next financial year from the respective date of the completion of useful life with reference to the date of commercial operation of the respective unit of generating station:

Provided that in respect of a unit in commercial operation for more than 25 years as on 1.4.2009, this allowance shall be admissible from the year 2009-10.

11. **Sale of Infirm Power.** Supply of infirm power shall be accounted as Unscheduled Interchange (UI) and paid for from the regional or State UI pool account [in accordance with the Central Electricity Regulatory Commission (Unscheduled Interchange and Related Matters) Regulations, 2009 as amended from time to time.]¹⁸

Provided that any revenue earned by the generating company from sale of infirm power after accounting for the fuel expenses shall be applied for reduction in capital cost:

12. **Debt-Equity Ratio.**

(1) For a project declared under commercial operation on or after 1.4.2009, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

¹⁸ Substituted vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

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

Provided further that 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 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 or the transmission system.

(2) In case of the generating station and the 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 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.

CHAPTER – 3

COMPUTATION OF TARIFF

13. Components of Tariff.

(1) The tariff for supply of electricity from a thermal generating station shall comprise two parts, namely, capacity charge (for recovery of annual fixed cost consisting of the components specified to in regulation 14) and energy charge (for recovery of primary fuel cost and limestone cost where applicable).

(2) The tariff for supply of electricity from a hydro generating station shall comprise capacity charge and energy charge to be derived in the manner specified in regulation 22, for recovery of annual fixed cost (consisting of the components referred to in regulation 14) through the two charges.

(3) The tariff for transmission of electricity on inter-State transmission system shall comprise transmission charge for recovery of annual fixed cost consisting of the components specified in regulation 14.

14. **Annual Fixed Cost.** The annual fixed cost (AFC) of a generating station or a transmission system 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;
- (f) Cost of secondary fuel oil (for coal-based and lignite fired generating stations only);
- (g) Special allowance in lieu of R&M or separate compensation allowance, wherever applicable.

15. **Return on Equity.**

(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

[(2) Return on Equity shall be computed on pre-tax basis at the base rate of 15.5% for thermal generating stations, transmission system and run of the river generating station, and 16.5% for the storage type generating stations including pumped storage hydro generating stations and run of river generating station with pondage and shall be grossed up as per clause (3) of this regulation:]¹⁹

¹⁹ Substituted vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in Appendix-II:

Provided further that the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever.

[(3) The rate of return on equity shall be computed by grossing up the base rate with the Minimum Alternate/Corporate Income Tax Rate for the year 2008-09, as per the Income Tax Act, 1961, as applicable to the concerned generating company or the transmission licensee, as the case may be.

(4) Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

Where “t” is the applicable tax rate in accordance with clause (3) of this regulation.]²⁰

[(5) The generating company or the transmission licensee, as the case may be, shall recover the shortfall or refund the excess Annual Fixed Charge on account of Return on Equity due to change in applicable Minimum Alternate/Corporate Income Tax Rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission:

Provided further that Annual Fixed Charge with respect to the tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective year during the tariff period shall be trued up in accordance with Regulation 6 of these regulations.]²¹

Illustration.-

(i) In case of the generating company or the transmission licensee paying Minimum Alternate Tax (MAT) @ 11.33% including surcharge and cess:

$$\text{Rate of return on equity} = 15.50 / (1-0.1133) = 17.481\%$$

²⁰ Substituted vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

²¹ Added vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

- (ii) In case of generating company or the transmission licensee paying normal corporate tax @ 33.99% including surcharge and cess:

$$\text{Rate of return on equity} = 15.50 / (1 - 0.3399) = 23.481\%$$

16. **Interest on loan capital.**

- (1) The loans arrived at in the manner indicated in regulation 12 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 year of the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that year:
- (4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed,.
- (5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the project.:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, 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 savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings 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 make an 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 for settlement of the dispute:

Provided that the beneficiary or the transmission customers shall not withhold any payment on account of the interest claimed by 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 salvage 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.

Provided that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site:

Provided further that the capital cost of the assets of the hydro generating station for the purpose

of computation of depreciable value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff.

(3) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(4) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III to these regulations for the assets of the generating station and transmission system:

Provided that, the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the assets.

(5) In case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting [the cumulative depreciation including Advance against Depreciation]²² as admitted by the Commission upto 31.3.2009 from the gross depreciable value of the assets.

(6) 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-fired thermal generating stations

(i) Cost of coal or lignite and limestone, if applicable, for 1½ months for pit- head generating stations and two months for non-pit-head generating stations, for generation

²² Substituted vide Corrigendum dated 17.06.2009

corresponding to the normative annual plant availability factor;

(ii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil.

(iii) Maintenance spares @ 20% of operation and maintenance expenses specified in regulation 19.

(iv) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the normative annual plant availability factor, and

(v) Operation and maintenance expenses for one month.

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

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

[(ii) Liquid fuel stock for ½ month corresponding to the normative annual plant availability factor, duly taking in to account mode of operation of the generating stations of gas fuel and liquid fuel and in case of use of more than one liquid fuel, cost of main liquid fuel.]²³

(iii) Maintenance spares @ 30% of operation and maintenance expenses specified in regulation 19.

(iv) Receivables equivalent to two months of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel, and

(v) Operation and maintenance expenses for one month.

(c) [In case of Hydro generating stations including pumped storage hydro-electric generating station and transmission system.]²⁴

²³ Substituted vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

²⁴ Substituted vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

- (i) Receivables equivalent to two months of fixed cost.
- (ii) Maintenance spares @ 15% of operation and maintenance expenses specified in regulation 19;
- (iii) Operation and maintenance expenses for one month.

(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 three months preceding the first month for which tariff is to be determined 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 considered as follows:

- (i) SBI short-term Prime Lending Rate as on 01.04.2009 or on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later, for the unit or station whose date of commercial operation falls on or before 30.6.2010.
- (ii) SBI Base Rate plus 350 basis points as on 1.7.2010 or as on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later, for the units or station whose date of commercial operation lies between the period 1.7.2010 to 31.3.2014:

Provided that in cases where tariff has already been determined on the date of issue of this notification, the above provisions shall be given effect to at the time of truing up.]²⁵

(4) Interest on working capital shall be payable on normative basis notwithstanding that the generating company or the transmission licensee has not taken loan for working capital from any outside agency.

²⁵ Substituted vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

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

- (a) Coal based and lignite fired (including those based on CFBC technology) generating stations, other than the generating stations referred to in clauses (b) and (d):

(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	18.20	16.00	13.00	11.70
2010-11	19.24	16.92	13.74	12.37
2011-12	20.34	17.88	14.53	13.08
2012-13	21.51	18.91	15.36	13.82
2013-14	22.74	19.99	16.24	14.62

Provided that the above norms shall be multiplied by the following factors for additional units in respective unit sizes for the units whose COD occurs on or after 1.4.2009 in the same station:

200/210/250 MW	Additional 5 th & 6 th units	0.9
	Additional 7 th & more units	0.85
300/330/350 MW	Additional 4 th & 5 th units	0.9
	Additional 6 th & more units	0.85
500 MW and above	Additional 3 rd & 4 th units	0.9
	Additional 5 th & above units	0.85

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

(Rs. in lakh/MW)

Year	Talcher TPS	Tanda and Chandrapura TPS	Badarpur, Bokaro and Durgapur TPS
2009-10	32.75	26.25	31.35
2010-11	34.62	27.75	32.25
2011-12	36.60	29.34	33.17
2012-13	38.70	31.02	34.12
2013-14	40.91	32.79	35.09

(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	14.80	22.90	31.75
2010-11	15.65	24.21	33.57
2011-12	16.54	25.59	35.49
2012-13	17.49	27.06	37.52
2013-14	18.49	28.61	39.66

(d) Lignite-fired generating stations

(Rs. in lakh/MW)

Year	125 MW Sets	TPS-I of NLC
2009-10	24.00	27.00
2010-11	25.37	28.54
2011-12	26.82	30.18
2012-13	28.36	31.90
2013-14	29.98	33.73

(e) In case of coal-based or 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 from the year following the year of completion of 10, 15, or 20 years of useful life:

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

(f) Hydro generating station

(i) Operation and maintenance expenses, for the existing generating stations which have been in operation for 5 years or more in the base year of 2007-08, 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 normalised operation and maintenance expenses after prudence check, for the years 2003-04 to 2007-08, shall be escalated at the rate of 5.17% to arrive at the normalized operation and maintenance expenses at the 2007-08 price level respectively and then averaged to arrive at normalized average operation and maintenance expenses for the 2003-04 to 2007-08 at 2007-08 price level. The average normalized operation and maintenance expenses at 2007-08 price level shall be escalated at the rate of 5.72% to arrive at the operation and maintenance expenses for year 2009-10:

Provided that operation and maintenance expenses for the year 2009-10 shall be further rationalized considering 50% increase in employee cost on account of pay revision of the employees of the Public Sector Undertakings to arrive at the permissible operation and maintenance expenses for the year 2009-10.

(iii) The operation and maintenance expenses for the year 2009-10 shall be escalated

further at the rate of 5.72% per annum to arrive at permissible operation and maintenance expenses for the subsequent years of the tariff period.

(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 2% of the original project cost (excluding cost of rehabilitation & resettlement works). Further, in such case, operation and maintenance expenses in first year of commercial operation shall be escalated @5.17% per annum up to the year 2007-08 and then averaged to arrive at the O&M expenses at 2007-08 price level. It shall be thereafter escalated @ 5.72% per annum to arrive at operation and maintenance expenses in respective year of the tariff period. [The impact of pay revision on employee cost for arriving at the operation and maintenance expenses for the year 2009-10 shall be considered in accordance with the procedure given in proviso to sub-clause (ii) of clause (f) of this regulation.]²⁶

(v) In case of the hydro generating stations declared under commercial operation on or after 1.4.2009, operation and maintenance expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation & resettlement works) and shall be subject to annual escalation of 5.72% per annum for the subsequent years.

(g) Transmission system

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

Norms for O&M expenditure for Transmission System

2009-10, 2010-11, 2011-12, 2012-13, 2013-14

Norms for sub-station (Rs Lakh per bay)

765 kV	73.36	77.56	81.99	86.68	91.64
400 kV	52.40	55.40	58.57	61.92	65.46
220 kV	36.68	38.78	41.00	43.34	45.82
132 kV and below	26.20	27.70	29.28	30.96	32.73

²⁶ Inserted vide Addendum dated 17.06.2009

Norms for AC and HVDC lines (Rs Lakh per km)					
Single Circuit (Bundled conductor with four or more sub-conductors)	0.537	0.568	0.600	0.635	0.671
Single Circuit (Twin & Triple Conductor)	0.358	0.378	0.400	0.423	0.447
Single Circuit (Single Conductor)	0.179	0.189	0.200	0.212	0.224
Double Circuit (Bundled conductor with four or more sub-conductors)	0.940	0.994	1.051	1.111	1.174
Double Circuit (Twin & Triple Conductor)	0.627	0.663	0.701	0.741	0.783
Double Circuit (Single Conductor)	0.269	0.284	0.301	0.318	0.336
Norm for HVDC Stations					
HVDC Back-to-back stations (Rs lakh per 500 MW)	443.00	468.00	495.00	523.00	553.00
Rihand-Dadri HVDC bipole scheme (Rs Lakh)	1450.00	1533.00	1621.00	1713.00	1811.00
Talcher-Kolar HVDC bipole scheme (Rs Lakh)	1699.00	1796.00	1899.00	2008.00	2122.00

(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 for coal-based and lignite-fired generating station.**

(1) Expenses on secondary fuel oil in Rupees shall be computed corresponding to normative secondary fuel oil consumption (SFC) specified in clause (iii) of regulation 26, in accordance with the following formula:

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

Where,

SFC – Normative Specific Fuel Oil consumption in ml/kWh

LPSF_i – Weighted Average Landed Price of Secondary Fuel in Rs./ml considered initially

NAPAF – Normative Annual Plant Availability Factor in percentage

- NDY – Number of days in a year
 IC - Installed Capacity in MW.

(2) Initially, the landed cost incurred by the generating company on secondary fuel oil shall be taken based on actuals of the weighted average price of the three preceding months and in the absence of landed costs for the three preceding months, latest procurement price for the generating station, before the start of the year.

The secondary fuel oil expenses shall be subject to fuel price adjustment at the end of the each year of tariff period as per following formula:

$$\text{SFC} \times \text{NAPAF} \times 24 \times \text{NDY} \times \text{IC} \times 10 \times (\text{LPSF}_y - \text{LPSF}_i)$$

Where,

$\text{LPSF}_y =$ The weighted average landed price of secondary fuel oil for the year in Rs. /ml

21. Computation and Payment of Capacity Charge and Energy Charge for Thermal Generating Stations

(1) The fixed cost of a thermal generating station shall be computed on annual basis, based on norms specified under these regulations, and recovered on monthly basis under capacity charge. The total capacity charge payable for a generating station shall be shared by its beneficiaries as per their respective percentage share / allocation in the capacity of the generating station.

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

(a) Generating stations in commercial operation for less than ten (10) years on 1st April of the financial year :

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

Provided that in case the plant availability factor achieved during a financial year (PAFY)

is less than 70%, the total capacity charge for the year shall be restricted to

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

- (b) For generating stations in commercial operation for ten (10) years or more on 1st April of the year:

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

Where,

AFC = Annual fixed cost specified for the year, in Rupees.

NAPAF = Normative annual plant availability factor in percentage

NDM = Number of days in the month

NDY = Number of days in the year

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

PAFY = Plant availability factor achieved during the year, in percent

- (3) The PAFM and PAFY shall be computed in accordance with the following formula:

$$N$$

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

Where,

AUX = Normative auxiliary energy consumption in percentage.

DC_i = Average declared capacity (in ex-bus MW), subject to clause (4) below, for the ith day of the period i.e. the month or the year as the case may be, as certified by the concerned load dispatch centre after the day is over.

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

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

Note : DC_i and IC shall exclude the capacity of generating units not declared under commercial operation. In case of a change in IC during the concerned period, its average value shall be taken.

(4) In case of fuel shortage in a thermal generating station, the generating company may propose to deliver a higher MW during peak-load hours by saving fuel during off-peak hours. The concerned Load Despatch Centre may then specify a pragmatic day-ahead schedule for the generating station to optimally utilize its MW and energy capability, in consultation with the beneficiaries. DC_i in such an event shall be taken to be equal to the maximum peak-hour ex-power plant MW schedule specified by the concerned Load Despatch Centre for that day.

(5) The energy charge shall cover the primary fuel cost and limestone consumption cost (where applicable), 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 and limestone price adjustment). Total Energy charge payable to the generating company for a month shall be:

(Energy charge rate in Rs./kWh) x {Scheduled energy (ex-bus) for the month in kWh.}

(6) 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:

(a) For coal based and lignite fired stations

$$ECR = \{ (GHR - SFC \times CVSF) \times LPPF / CVPF + LC \times LPL \} \times 100 / (100 - AUX)$$

(b) For gas and liquid fuel based stations

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

Where,

- AUX = Normative auxiliary energy consumption in percentage.
- CVPF = Gross calorific value of primary fuel as fired, in kCal per kg, per litre or per standard cubic metre, as applicable.
- CVSF = Calorific value of secondary fuel, in kCal per ml.
- ECR = Energy charge rate, in Rupees per kWh sent out.
- GHR = Gross station heat rate, in kCal per kWh.
- LC = Normative limestone consumption in kg per kWh.
- LPL = Weighted average landed price of limestone in Rupees per kg.
- LPPF = Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month.
- SFC = Specific fuel oil consumption, in ml per kWh.

[Provided that generating company shall provide to the beneficiaries of the generating station the details of parameters of GCV and price of fuel i.e. domestic coal, imported coal, e-auction coal, lignite, natural gas, RLNG, liquid fuel etc., as per the form 15 of the Part-I of Appendix I to these regulations:

Provided further that the details of blending ratio of the imported coal with domestic coal, proportion of e-auction coal and the weighted average GCV of the fuels as received shall also be provided separately, along with the bills of the respective month:

Provided further that copies of the bills and details of parameters of GCV and price of fuel i.e. domestic coal, imported coal, e-auction coal, lignite, natural gas, RLNG, liquid fuel etc., details of blending ratio of the imported coal with domestic coal, proportion of e-auction coal shall also be displayed on the website of the generating company. The details should be available on its website on monthly basis for a period of three months.]²⁷

- (7) The landed cost of fuel for the month shall include price of fuel corresponding to the

²⁷ Added vide Third Amendment Regulations, 2012 w.e.f. 1.1.2013

grade and quality of fuel 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 charge, and in case of coal/lignite shall be arrived at after considering normative transit and handling losses as percentage of the quantity of coal or lignite dispatched by the coal or lignite supply company during the month as given below :

Pithead generating stations	:	0.2%
Non-pithead generating stations	:	0.8%

(8) The landed price of limestone shall be taken based on procurement price of limestone for the generating station, inclusive of royalty, taxes and duties as applicable and transportation cost for the month.

(9) 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 cost (AFC), normative annual plant availability factor (NAPAF), installed capacity (IC), normative auxiliary power consumption (AUX) and energy charge rate (ECR) for such stations.

22. [Computation and Payment of Capacity charge and Energy Charge for Hydro Generating Stations other than Pumped Storage Hydro Generating Stations.]²⁸

(1) The fixed cost of a hydro generating station shall be computed on annual basis, based on norms specified under these regulations, and recovered on monthly basis under capacity charge (inclusive of incentive) and energy charge, which shall be payable by the beneficiaries in proportion to their respective allocation in the saleable capacity of the generating station, that is to say, in the capacity excluding the free power to the home State:

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 annual fixed cost shall provisionally be worked out based on the latest estimate of the completion cost for the generating station, for the purpose of determining the capacity charge and energy charge payment during such period.

²⁸ Substituted vide Third Amendment Regulations, 2012 w.e.f. 1.1.2013

(2) The capacity charge (inclusive of incentive) payable to a hydro generating station for a calendar month shall be

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

Where,

AFC	=	Annual fixed cost specified for the year, in Rupees.
NAPAF	=	Normative plant availability factor in percentage
NDM	=	Number of days in the month
NDY	=	Number of days in the year
PAFM	=	Plant availability factor achieved during the month, in percentage

(3) The PAFM shall be computed in accordance with the following formula:

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

Where,

AUX	=	Normative auxiliary energy consumption in percentage
DC _i	=	Declared Capacity (in ex-bus MW) for the i th day of the month which the station can deliver for at least three (3) hours, as certified by the nodal load dispatch centre after the day is over.
IC	=	Installed capacity (in MW) of the complete generating station
N	=	Number of days in the month

Normative auxiliary energy consumption in percentage Declared capacity (in ex-bus MW) for the i^{th} day of the month which the station can deliver for at least three (3) hours, as certified by the nodal load dispatch centre after the day is over. Installed capacity (in MW) of the complete generating station Number of days in the month.

(4) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy charge payable to the generating company for a month shall be :

(Energy charge rate in Rs. / kWh) x {Scheduled energy (ex-bus) for the month in kWh} x (100 – FEHS) / 100.

(5) 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, subject to the provisions of clause (7) :

$$\text{ECR} = \text{AFC} \times 0.5 \times 10 / \{ \text{DE} \times (100 - \text{AUX}) \times (100 - \text{FEHS}) \}$$

Where,

DE = Annual design energy specified for the hydro generating station,
In MWh, subject to the provision in clause (6) below.

FEHS = Free energy for home State, in per cent, as defined in regulation 32.

(6) In case actual total energy generated by a hydro generating station during a year is less than the design energy for reasons beyond the control of the generating company, the following

treatment shall be applied on a rolling basis:

(i) in case the energy shortfall occurs within ten years from the date of commercial operation of a generating station, the ECR for the year following the year of energy shortfall shall be computed based on the formula specified in clause (5) with the modification that the DE for the year shall be considered as equal to the actual energy generated during the year of the shortfall, till the energy charge shortfall of the previous year has been made up, after which normal ECR shall be applicable;

(ii) in case the energy shortfall occurs after ten years from the date of commercial operation of a generating station, the following shall apply:

Suppose the specified annual design energy for the station is DE MWh, and the actual energy generated during the concerned (first) and the following (second) financial years is A1 and A2 MWh respectively, A1 being less than DE. Then, the design energy to be considered in the formula in clause (5) of this Regulation for calculating the ECR for the third financial year shall be moderated as $(A1 + A2 - DE)$ MWh, subject to a maximum of DE MWh and a minimum of A1 MWh.

(iii) Actual energy generated (e.g. A1, A2) shall be arrived at by multiplying the net metered energy sent out from the station by $100 / (100 - AUX)$.

(7) In case the energy charge rate (ECR) for a hydro generating station, as computed in clause (5) above, exceeds eighty paise per kWh, and the actual saleable energy in a year exceeds $\{ DE \times (100 - AUX) \times (100 - FEHS) / 10000 \}$ MWh, the Energy charge for the energy in excess of the above shall be billed at eighty paise per kWh only:

Provided that in a year following a year in which total energy generated was less than the design energy for reasons beyond the control of the generating company, the energy charge rate shall be reduced to eighty paise per kWh after the energy charge shortfall of the previous year has been made up.

[7a. In case of the hydro generating stations of NHPC Limited located in the State of Jammu and Kashmir, any expenditure incurred for payment of water usage charges to the State Water Resources Development Authority, Jammu under Jammu & Kashmir Water Resources (Regulations and Management) Act, 2010 shall be payable by the beneficiaries as additional energy charge in proportion of the supply of power from the generating stations on month to month basis:

Provided that NHPC shall be entitled to recover the additional energy charges for the payment already made to State Water Resources Authority, Jammu as water usage charges as on the date of notification of these regulations along with interest at the prevailing State Bank of India base rate in six equal monthly installments:

Provided further that the provisions of this clause shall be subject to the decision of the Hon'ble High Court of Jammu & Kashmir in OWP No. 604/2011 and shall stand modified in accordance with the decision of the High Court.]²⁹

(8) The concerned Load Despatch Centre shall finalise the schedules for the hydro generating stations, in consultation with the beneficiaries, for optimal utilization of all the energy declared to be available, which shall be scheduled for all beneficiaries in proportion to their respective allocations in the generating station.

[22A. Pumped Storage Hydro Generating Stations

(1) The fixed cost of a pumped storage hydro generating station shall be computed on annual basis, based on norms specified under these regulations, and recovered on monthly basis as capacity charge. The capacity charge shall be payable by the beneficiaries in proportion to their

²⁹ Added vide Third Amendment Regulations, 2012 w.e.f. 1.1.2013

respective allocation in the saleable capacity of the generating station, that is to say, in the capacity excluding the free power to the home State:

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 annual fixed cost shall be worked out provisionally based on the latest estimate of the completion cost for the generating station, for the purpose of determining the capacity charge payment during such period.

(2) The capacity charge payable to a pumped storage hydro generating station for a calendar month shall be:

(AFC x NDM / NDY) (in Rupees), if actual Generation during the month is ≥ 75 % of the Pumping Energy consumed by the station during the month and

{(AFC x NDM / NDY) x (Actual Generation during the month during peak hours/ 75% of the Pumping Energy consumed by the station during the month) (in Rupees)}, if actual Generation during the month is < 75 % of the Pumping Energy consumed by the station during the month.

Where,

AFC = Annual fixed cost specified for the year, in Rupees.
 NDM = Number of days in the month
 NDY = Number of days in the year

(3) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary in excess of the design energy plus 75% of the energy utilized in pumping the water from the lower elevation reservoir to the higher elevation reservoir, at a flat rate equal to the average energy charge rate of 20 paise per kWh, excluding free energy, if any, during the calendar month, on ex power plant basis.

(4) Energy charge payable to the generating company for a month shall be:

$= 0.20 \times \{ \text{Scheduled energy (ex-bus) for the month in kWh} - (\text{Design Energy for the month} + 75\% \text{ of the energy utilized in pumping the water from the lower elevation reservoir to the higher elevation reservoir of the month}) \} \times (100 - \text{FEHS}) / 100.$

Where,

DEm = Design energy for the month specified for the hydro generating station, In MWh,

subject to the provision in clause (6) below.

FEHS = Free energy for home State, in per cent, as defined in regulation 32, if any.

Provided further that in case the Scheduled energy in a month is less than the Design Energy for the month plus 75% of the energy utilized in pumping the water from the lower elevation reservoir to the higher elevation reservoir of the month, then the energy charges payable by the beneficiaries shall be zero.

(5) The Generator shall maintain the record of daily inflows of natural water into the upper elevation reservoir and the reservoir levels of upper elevation reservoir and lower elevation reservoir on hourly basis. The generator shall be required to maximize the peak hour supplies with the available water including the natural flow of water. In case it is established that generator is deliberately or otherwise without any valid reason, is not pumping water from lower elevation reservoir to the higher elevation during off-peak period or not generating power to its potential or wasting natural flow of water, the capacity charges of the day shall not be payable by the beneficiary. For this purpose, outages of the unit(s)/station including planned outages and the forced outages up to the 15% in a year shall be construed as the valid reason for not pumping water from lower elevation reservoir to the higher elevation during off-peak period or not generating power using energy of pumped water or natural flow of water,

Provided further that the total capacity charges recovered during the year shall be adjusted on prorata basis in the following manner in the event of total machine outages in a year exceeds 15%:

$$(\text{ACC})_{\text{adj}} = (\text{ACC}) \text{ R} \times (100 - \text{ATO})/85$$

Where,

(ACC)_{adj} = Adjusted Annual capacity Charges

(ACC) R = Annual capacity Charges recovered

ATO = Total Outages in percentage for the year including forced and Planned outages

Provided further that the generating station shall be required to declare its machine availability daily on day ahead basis for all the time blocks of the day in line with the scheduling procedure of

Grid Code.]³⁰

23. Computation and Payment of Transmission Charge for Inter-State Transmission System

(1) The fixed cost of the transmission system shall be computed on annual basis, in accordance with norms contained in these regulations, aggregated as appropriate, and recovered on monthly basis as transmission charge from the users, who shall share these charges in the manner specified in Regulation 33.

(2) The transmission charge (inclusive of incentive) payable for a calendar month for a transmission system or part thereof shall be

$$\text{AFC} \times (\text{NDM} / \text{NDY}) \times (\text{TAFM} / \text{NATAF})$$

Where,

AFC = Annual fixed cost specified for the year, in Rupees

NATAF = Normative annual transmission availability factor, in per cent

NDM = Number of days in the month

NDY = Number of days in the year

TAFM = Transmission system availability factor for the month, in Percent, computed in accordance with Appendix IV.-.

(3) The transmission charges shall be calculated separately for part of the transmission system having differing NATAF, and aggregated thereafter, according to their sharing by the beneficiaries.

(4) The transmission licensee shall raise the bill for the transmission charge (inclusive of incentive) for a month based on its estimate of TAFM. Adjustments, if any, shall be made on the basis of the TAFM to be certified by the Member-Secretary of the Regional Power Committee of the concerned region within 30 days from the last day of the relevant month.

³⁰ Added vide Third Amendment Regulations, 2012 w.e.f. 1.1.2013

24. **Unscheduled Interchange(UI) Charges.** (1) All variations between actual net injection and scheduled net injection for the generating stations, and all variations between actual net drawal and scheduled net drawal for the beneficiaries shall be treated as their respective Unscheduled Interchanges (UI), charges for which shall be governed by the relevant regulations specified by the Commission from time to time.

(2) Actual net unscheduled 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 Despatch Centre.

CHAPTER - 4

NORMS OF OPERATION

25. (1) Recovery of capacity charge, energy charge, transmission 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.

(2) The Commission may on its own revise the norms of Station Heat Rate specified in this Chapter in respect of any of the generating stations for which relaxed norms have been provided

(3) The savings on account of secondary fuel oil consumption in relation to norms shall be shared with beneficiaries in the ratio of 50:50, in accordance with the following formula at the end of the year:

$$(SFC \times NAPAF \times 24 \times NDY \times IC \times 10 - AC_{sfoy}) \times LPSF_y \times 0.5$$

Where,

AC_{sfoy} = Actual consumption of secondary fuel oil during the year in ml

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)

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

(b) Following Coal-Based Thermal Generating Stations of NTPC Ltd

Talcher TPS	82%
Badarpur TPS	82%

- (c) Following Lignite-fired Thermal generating stations of Neyveli Lignite Corporation Ltd, other than specified in sub-clause (b)

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

- (d) Following Thermal Generating Stations of Damodar Valley Corporation (DVC):

Mejia TPS Unit-I to IV	82%
Bokaro TPS	75%
Chandrapura TPS	60%
Durgapur TPS	74%

- (e) Following Gas-Based Thermal Generating Station of NEEPCO :

Assam GPS	72%
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- (f) Lignite-fired Generating Stations using Circulatory Fluidized Bed Combustion (CFBC) Technology –

1. First three years from COD – 75%
2. From next year after completion of 3 years of COD – 80%

(ii) Gross Station Heat Rate

A. Existing Thermal Generating Station

- (a) Existing Coal-based Thermal Generating Stations, other than those covered under clauses (b) and (c) below

200/210/250 MW Sets	500 MW Sets (Sub-critical)
2500 KCal/kWh	2425 kCal/kWh

Note 1

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 2

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 of the combinations.

(b) Thermal generating stations of NTPC Ltd.:

Badarpur TPS	2825 kCal/kWh
Talcher TPS	2950 kCal/kWh
Tanda TPS	2825 kCal/kWh

(c) Thermal Generating Stations of Damodar Valley Corporation (DVC):

Bokaro TPS	2700kCal/kWh
Chandrapura TPS	3100 kCal/kWh
Durgapur TPS	2820 kCal/kWh

(d) Lignite-fired Thermal Generating Stations

(1) For lignite-fired thermal generating stations, except for TPS-I and TPS-II (Stage I & II) of Neyveli Lignite Corporation Ltd, the gross station heat rates specified under sub-clause (a) for coal-based thermal generating stations shall be applied with correction, 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) TPS-I and TPS-II (Stage I & II) of Neyveli Lignite Corporation Ltd

TPS-I 4000 kCal/kWh

TPS-II 2900 kCal/kWh

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

Existing generating stations of NTPC Ltd and NEEPCO

Name of generating station	Combined cycle (kCal/kWh)	Open cycle (kCal/kWh)
Gandhar GPS	2040	2960
Kawas GPS	2075	3010
Anta GPS	2075	3010
Dadri GPS	2075	3010
Auraiya GPS	2100	3045
Faridabad GPS	2000	2900
Kayamkulam GPS	2000	2900
Assam GPS	2400	3440
Agartala GPS		3500

B. New Thermal Generating Station achieving COD on or after 1.4.2009

(a) Coal-based and lignite-fired Thermal Generating Stations

$$= 1.065 \times \text{Design Heat Rate (kCal/kWh)}$$

Where the Design Heat Rate of a unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating (Kg/cm²)	150	170	170	247	247
SHT/RHT (0C)	535/535	537/537	537/565	537/565	565/593
Type of BFP	Electrical Driven	Turbine driven	Turbine driven	Turbine driven	Turbine driven
Max Turbine Cycle Heat rate (kCal/kWh)	1955	1950	1935	1900	1850
Min. Boiler Efficiency					
Sub-Bituminous Indian Coal	0.85	0.85	0.85	0.85	0.85
Bituminous Imported Coal	0.89	0.89	0.89	0.89	0.89
Max Design Unit Heat rate (kCal/kWh)					
Sub-Bituminous Indian Coal	2300	2294	2276	2235	2176
Bituminous Imported Coal	2197	2191	2174	2135	2079

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate of the nearest class shall be taken:

Provided also that where unit heat rate has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler

efficiency.

Provided also that if one or more units were declared under commercial operation prior to 1.4.2009, the heat rate norms for those units as well as units declared under commercial operation on or after 1.4.2009 shall be lower of the heat rate norms arrived at by above methodology and the norms as per the regulation 26 (ii) A (a).

Provided also that in case of lignite-fired generating stations (including stations based on CFBC technology), maximum design heat rates shall be increased using factor for moisture content given in sub clause (1) of clause (ii) A(d) of this regulation.

Note: In respect of units where the boiler feed pumps are electrically operated, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified above with turbine driven BFP.

- (b) Gas-based / Liquid-based thermal generating unit(s)/ block(s)
 = 1.05 X Design Heat Rate of the unit/block for Natural Gas and RLNG(kCal/kWh)
 = 1.071 X Design Heat Rate of the unit/block for Liquid Fuel (kCal/kWh)

Where the Design Heat Rate of a unit shall mean the guaranteed heat rate for a unit at 100% MCR and at site ambient conditions; and the Design Heat Rate of a block shall mean the guaranteed heat rate for a block at 100% MCR, site ambient conditions, zero percent make up, design cooling water temperature/back pressure.

(iii) Secondary fuel oil consumption

- | | | |
|-----|--|---------------|
| (a) | Coal-based generating stations other than at (c) below | : 1.0 ml/kWh |
| (b) | (i) Lignite-fired generating stations except stations based on CFBC technology and TPS-I | : 2.0 ml/kWh |
| | (ii) TPS-I | : 3.5 ml/kWh |
| | (iii) Lignite-fired generating stations based on CFBC technology | : 1.25 ml/kWh |

(c) Coal-based generating stations of DVC

Mejia TPS Unit I to IV	2.0 ml/kWh
Bokaro TPS	2.0 ml/kWh
Chandrapura TPS	3.0 ml/kWh
Durgapur TPS	2.4ml/kWh

(iv) **Auxiliary Energy Consumption**

(a) Coal-based generating stations except at (b) below:

		With Natural Draft cooling tower or without cooling tower
(i)	200 MW series	8.5%
(ii)	[300/330/350/500 MW and above] ³¹	
	Steam driven boiler feed pumps	6.0%
	Electrically driven boiler feed pumps	8.5%

Provided further that for thermal generating stations with induced draft cooling towers, the norms shall be further increased by 0.5%.

(b) Other Coal-based generating stations:

(i)	Talcher Thermal Power Station	10.5%
(ii)	Tanda Thermal Power Station	12.0%
(iii)	Badarpur Thermal Power Station	9.5%
(iv)	Bokaro Thermal Power Station	10.25%

³¹ Substituted vide Corrigendum dated 17.06.2009

(v)	Chandrapura Thermal Power Station	11.50%
(vi)	Durgapur Thermal Power Station	10.50%

(c) Gas Turbine/Combined Cycle generating stations:

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

(d) 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) above.

Provided that for the lignite fired stations using CFBC technology, the auxiliary energy consumption norms shall be 1.5 percentage point more than the auxiliary energy consumption norms of coal-based generating stations at (iv) (a) above.

(ii) Barsingsar Generating station of NLC using CFBC technology: 11.5%

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

TPS-I	12.0%
TPS-II	10.0%
TPS-I (Expansion)	9.50%

(iv) Lime stone consumption for lignite-based generating station using CFBC technology:

Barsingsar :0.056 kg/kWh.

TPS-II (Expansion) :0.046 kg/kWh.

Norms of operation for hydro generating stations

27. The norms of operation as given hereunder shall apply to hydro generating station:

(i) Normative annual plant availability factor (NAPAF) for hydro generating stations

(1) Normative annual plant availability factor (NAPAF) for hydro generating stations shall be determined by the Commission as per the following criteria:

(i) Storage and Pondage type plants with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of up to 8%, and where plant availability is not affected by silt: 90%

(ii) Storage and Pondage type plants with head variation between FRL and MDDL of more than 8%, where plant availability is not affected by silt: Plant-specific allowance to be provided in NAPAF for reduction in MW output capability as reservoir level falls over the months. As a general guideline the allowance on this account in terms of a multiplying factor may be worked out from the projection of annual average of net head, applying the formula:

$$(\text{Average head} / \text{Rated head}) + 0.02$$

Alternatively in case of a difficulty in making such projection, the multiplying factor may be determined as:

$$(\text{Head at MDDL} / \text{Rated head}) \times 0.5 + 0.52$$

- (iii) Pondage type plants where plant availability is significantly affected by silt : 85%.
- (iv) Run-of-river type plants : NAPAF to be determined plant-wise, based on 10-day design energy data, moderated by past experience where available/relevant.
- (2) A further allowance may be made by the Commission in NAPAF determination under special circumstances, e.g. abnormal silt problem or other operating conditions, and known plant limitations.
- (3) A further allowance of 5% may be allowed for difficulties in North East Region.
- (4) In case of a new hydro electric project the developer shall have the option of approaching the Commission in advance for fixation of NAPAF based on the principles enumerated in sub-clauses (1), (2) and (3) of this regulation.
- (5) Based on the above, the Normative annual plant availability factor (NAPAF) of the hydro generating stations already in operation shall be as follows :-

Station	Type of Plant	Plant Capacity No. of Units x MW	NAPAF (%)
NHPC			
Chamera – 1	Pondage	3 x 180	90
Biarasiul	Pondage	3 x 60	85
Loktak	Storage	3 x 35	85
Chamera-II	Pondage	3 x 100	90

Rangit	Pondage	3 x 20	85
Dhauliganga	Pondage	4 x 70	85
Teesta – V	Pondage	3 x 170	85
Dulhasti	Pondage	3 x 130	90
Salal	ROR	6 x 115	60
Uri	ROR	4 x 120	60
Tanakpur	ROR	3 x 31.4	55
NHDC			
Indirasagar	Storage	8 x 125	85
Omkareshwar	Pondage	8 x 65	90

THDC			
Tehri Stg – 1	Storage	4 x 250	77
SJVNL			
Nathpa Jhakri	Pondage	6 x 250	82
NEEPCO			
Kopili Stg – 1	Storage	4 x 50	79
Khandong & Kopili Stg. - 2	Storage	3 x 25	69
Doyang	Storage	3 x 25	73
Ranganadi	Pondage	3 x 135	85
DVC			
Panchet	Storage	2 x 40	80
Tilaiya	Storage	2 x 2	80
Maithon	Storage	3 x 20	80

(ii) **Auxiliary Energy Consumption (AUX) :**

- (a) Surface hydro generating stations
 - (i) with rotating exciters mounted on the generator shaft : 0.7%
 - (ii) with static excitation system : 1%
- (b) Underground hydro generating stations
 - (i) with rotating exciters mounted on the

generator shaft : 0.9%

(ii) with static excitation system : 1.2%

Norms of operation for transmission system

[(iia) In case of Pumped storage hydro generating stations, the quantum of electricity required for pumping water from down-stream reservoir to up-stream reservoir shall be arranged by the beneficiaries duly taking into account the transmission and distribution losses etc. up to the bus bar of the generating station. In return beneficiaries will be entitled to equivalent energy of 75% of the energy utilized in pumping the water from the lower elevation reservoir to the higher elevation reservoir from the generating station during peak hours and the generating station shall be under obligation to supply such quantum of electricity during peak hours:

Provided that in the event of the beneficiaries failing to supply the desired level of energy during off-peak hours, there will be pro-rata reduction in their energy entitlement from the station during peak hours:

Provided further that the beneficiaries may assign or surrender their share of capacity in the generating station, in part or full, or the capacity may be reallocated by the Central Government, and in that event the owner or assignee of the capacity share shall be responsible for arranging the equivalent energy to the generating station in off-peak hours, and be entitled to corresponding energy during peak hours in the same way as the original beneficiary was entitled.]³²

28. **Normative Annual Transmission System Availability Factor (NATAF)** shall be as under:

(1)	AC system	:	98%
(2)	HVDC bi-pole links	:	92%
(3)	HVDC back-to-back Stations	:	95%

³² Added vide Third Amendment Regulations, 2012 w.e.f. 1.1.2013

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 included in the normative operation and maintenance expenses.

(c) **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 - 5

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 charges.**

(1) Bills shall be raised for capacity charge, energy charge and the transmission charge on monthly basis by the generating company and the transmission licensee in accordance with these regulations, and payments shall be made by the beneficiaries or the transmission customers directly to the generating company or the transmission licensee, as the case may be.

(2) Payment of the capacity charge for a thermal generating station 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 of the generating station. Payment of capacity charge and energy charge for a hydro generating station shall be shared by the beneficiaries of the generating station in proportion to their shares (inclusive of any allocation out of the unallocated capacity) in the saleable capacity (to be determined after deducting the capacity corresponding to free energy to home State as per Note 3 herein.

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 allocation made out of the unallocated capacity. The shares shall be applied in percentages of installed 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 a 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 (in complete months) 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 and its reversion shall be communicated to all concerned by the Member Secretary, Regional Power Committee in advance, at least three days prior to such reallocation or reversion taking effect.

Note 3

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[,]³³ by a State Government by following a two stage transparent process of bidding, the 'free energy' shall be taken as 13%, which shall also include 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 commercial operation of the generating station.

(3) The monthly energy account issued by Member-Secretary of the Regional Power Committee shall also include a statement specifying the ratio in which transmission charges for

³³ Deleted vide Third Amendment Regulations, 2012 w.e.f. 1.1.2013

that month are to be shared by the transmission users in accordance with regulation 33.

[Provided that the sharing of transmission charges shall be governed by the Central Electricity Regulatory Commission (Sharing of inter-state transmission charges and losses) Regulations, 2010 from the date of coming into effect of the said regulations.”]³⁴

33. **Sharing of transmission charges.**

(1) The following shall be added up to arrive at the regional transmission charges payable for a month by the users of the concerned regional (common) transmission system:

- (a) Amounts payable for the month for all components of inter-State transmission system (ISTS) in the region, charges for which have been agreed to be pooled and shared by all regional beneficiaries. These shall necessarily include all components of ISTS in commercial operation on 1.4.2008, as also components of transmission system associated with a generating station [at least one generating unit]³⁵ of which was declared under commercial operation upto 31.3.2008.
- (b) Amounts payable for the month for those parts or the whole of all new transmission systems for which regional beneficiaries have agreed to pay the charges on pooled basis, or it has been so decided by the Commission. These may include an appropriate share of the total charges of a new associated transmission system commensurate with extra capacity built therein to cater to future generation addition and/or for system strengthening not directly attributable to the concerned power plant

(2) The above regional transmission charges (grossed up) shall be shared by the following :

- (i) All regional beneficiaries, in proportion to the sum of their respective entitlements (in MW) during the month in the inter-State generating stations in that region and in other regions, but excluding any generating capacity for which charges of associated transmission system are not being fully pooled.
- (ii) Beneficiaries in other regions having entitlements in any generating station in the concerned region, in proportion to such entitlement (in MW) during the month, but

³⁴ Substituted vide Second Amendment Regulations, 2011 w.e.f. 21.06.2011

³⁵ Substituted vide Corrigendum dated 17.06.2009

excluding any generating capacity for which charges of associated transmission system are not being fully pooled.

- (iii) Generating companies owning generating stations connected to inter-state transmission system in the region, but for which the associated transmission system has not been fully commissioned for any reason, in proportion to the gap (in MW) between the generating capacity commissioned up to the end of the month and the capacity for which the designated associated transmission system has been commissioned up to the beginning of the month.
- (iv) Medium-term users of the regional transmission system, in proportion to the MW for which medium-term usage has been approved by the Central Transmission Utility for that month.

(3) The transmission charges for inter-regional links shall be shared in the following manner, except where specifically agreed otherwise:

- (i) The amount payable for the month for inter-regional links between Eastern and Northern / Western / Southern regions shall be borne by the beneficiaries in the latter region (Northern / Western / Southern), in proportion to the sum of their respective entitlements (in MW) in the inter-State generating stations in their own region and in Eastern region, but excluding any generating capacity for which charges of associated transmission system are not being fully pooled.
- (ii) The amounts payable for the month for inter-regional links between Northern and Western regions, between Western and Southern regions, and between Eastern and North-eastern regions shall be borne by the linked regions in 50 : 50 ratio, and shared by the beneficiaries in the concerned region in proportion to the sum of their respective entitlements (in MW) in the inter – State generating stations in their own region, but excluding any generating capacity for which charges of associated transmission system are not being fully pooled.

Provided that 220 kV Birpara – Salakati transmission line shall be treated as a part of the Eastern Region transmission system and its charges shall be borne by the beneficiaries in Eastern Region only.

(4) For those associated transmission systems or part thereof which are not agreed to be commercially pooled with the Regional transmission system, the applicable transmission charges shall be borne by the beneficiaries of the concerned generating station(s) or the generating company as the case may be and shared between them as mutually agreed or as decided by the Commission.

(5) Transmission charges for 400 / 220 kV step down transformers (ICTS) and downstream systems, under inter-state transmission schemes brought under commercial operation after 28.03.2008 shall be determined separately (i.e. segregated from the rest of the scheme) and shall be payable only by the beneficiary directly served.

(6) Entitlements of Eastern Region beneficiaries in Chukha, Tala and Kurichchu hydro-electric generating stations in Bhutan shall be considered as their entitlements in ISGS in their own region, for the purpose of clauses (2)(i) and (3)(ii) above.

(7) Transmission charges corresponding to any plant capacity for which a beneficiary has not been identified and contracted shall be paid by the concerned generating company.

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 for charges payable under these regulations 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 – 6
MISCELLANEOUS PROVISIONS

36. **Sharing of CDM Benefits.** 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 for transmission charges of 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 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.

Explanation.- For the purpose of calculating the levelised tariff referred to in sub-clause (a) of clause (1), the discounting factor shall be as notified by the Commission from time to time.

(2) The tariff of the existing generating stations of Neyveli Lignite Corporation Ltd, namely, TPS-I and TPS-II (Stage I & II) and TPS-I(Expansion) 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.**

Tax on the income streams of the generating company other transmission licensee, as the case may be, shall not be recovered from the beneficiaries, or the long-term transmission customers, as the case may be:

Provided that the deferred tax liability, excluding Fringe Benefit Tax, for the period up to 31st March, 2009 whenever it materializes, shall be recoverable directly from the beneficiaries and the long-term customers:

40. **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 generating station or the transmission system, in part or full in the

discretion of the generating company or the transmission licensee.

(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.

41. **Recovery of cost of hedging Foreign Exchange Rate Variation.**

Recovery of cost of hedging and foreign exchange rate variation shall be made directly by the generating company or the transmission licensee, as the case may be, from the beneficiaries or the 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 cost of hedging or foreign exchange rate variation, the generating company or the transmission licensee, as the case may be, may make an appropriate application before the Commission for its decision.

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 transmission customers, as the case may be:

[42A. Reimbursement of Fees, Charges and Expenses

(1) The following fees and charges shall be reimbursed directly by the beneficiaries in proportion of their allocation in the generating stations or by the transmission customers in proportion to their share in the inter-State transmission systems determined in accordance with Regulation 33 of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 upto 30.6.2011 and thereafter, in accordance with the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 as amended from time to time;

(a) Fees and charges paid by the generating companies and inter-State transmission licensees (including deemed inter-State transmission licensee) under Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2009, as amended from time to time;

(b) Licence fees paid by the inter-State transmission licensees (including the deemed inter-State transmission licensee) in terms of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2008 and Central Electricity Regulatory Commission (Payment of Fees) Regulations 2012 or any subsequent amendment or re-enactment thereof;

(c) Licence fees paid by NHPC Ltd to the State Water Resources Development Authority, Jammu in accordance with the provisions of Jammu & Kashmir Water Resources (Regulations and Management) Act, 2010.

(2) The generating companies and inter-State transmission licensees (including deemed inter-State transmission licensee) shall be entitled to recover the fees and charges as mentioned in clause (1) of this regulation which have been paid till the notification of these regulations.

(3) The Commission may, in its discretion and for the reasons to be recorded in writing and after hearing the affected parties, allow reimbursement of any fee or expenses as may be considered necessary.”³⁶

43. **Special Provisions relating to Damodar Valley Corporation.**

(1) Subject to clause (2), these regulations shall apply to determination of tariff of the projects owned by Damodar Valley Corporation (DVC).

(2) The following special provisions shall apply for determination of tariff of the projects owned by DVC:

(i) **Capital Cost:** The expenditure allocated to the object ‘power’, in terms of sections 32 and 33 of the Damodar Valley Corporation Act, 1948, to the extent of its apportionment to generation and inter-state transmission, shall form the basis of capital cost for the purpose of determination of tariff:

Provided that the capital expenditure incurred on head office, regional offices, administrative and technical centers of DVC, after due prudence check, shall also form part of the capital cost.

(ii) **Debt Equity Ratio:** The debt equity ratio of all projects of DVC commissioned prior to 01.01.1992 shall be 50:50 and that of the projects commissioned thereafter shall be 70:30.

(iii) **Depreciation:** The depreciation rate stipulated by the Comptroller and Auditor General of India in terms of section 40 of the Damodar Valley Corporation Act, 1948

³⁶ Added vide Third Amendment Regulations, 2012 w.e.f. 01.01.2013

shall be applied for computation of depreciation of projects of DVC.

(iv) **Funds under section 40 of the Damodar Valley Corporation Act, 1948:** The Fund(s) established in terms of section 40 of the Damodar Valley Corporation Act, 1948 shall be considered as items of expenditure to be recovered through tariff.

(3) The provisions in clause (2) of this regulation shall be subject to the decision of the Hon'ble Supreme Court in Civil Appeal No 4289 of 2008 and other related appeals pending in the Hon'ble Court and shall stand modified to the extent they are inconsistent with the decision.

44. **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.

Sd/-
(Alok Kumar)
Secretary

Note: The Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 were notified in the Gazette of India Extraordinary Part III Section 4 (No. 11) on 20th January 2009 and amended vide:-

- (a) Corrigendum and addendum published in Part III, Section 4 No. 100 and 101 respectively of the Gazette of India (Extraordinary) on 17.06.2009
- (b) First Amendment Regulation published in Part III Section 4 No. 92 of the Gazette of India Extraordinary on 02.05.2011.
- (c) Second Amendment published in Part III, Section 4 No. 129 of the Gazette of India Extraordinary on 22.06.2011.
- (d) Third Amendment published in Part III, Section 4 No. 01 of the Gazette of India Extraordinary on 01.01.2013.