

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

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

Dated 3rd September 2010

NOTIFICATION (DRAFT)

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 to amend the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as “the principal 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) (First Amendment) Regulations, 2010.

(2) These regulations shall come into force with effect from the date of its notification in the Official Gazette.

2. **Amendment of Regulation 3 of the Principal Regulations**

(1) Two new clauses namely, clauses (17 A) and (17 B) shall be inserted after clause (17) of Regulation 3 as under:

“(17A) ‘gas turbine generating station’ means generating station which generates power through gas turbine above 50 MW in open cycle mode or in combined cycle mode

(17B) ‘gas engine generating station’ means generating station which generates power through reciprocating gas engines using natural gas or RLNG as fuel.”

(2) Three new clauses, namely (29 A), (29B) and (29C) shall be inserted after clause (29) of Regulation 3 as under:

“(29A) Off-Peak hours for the day for the thermal generating stations shall be the period other than the Peak hours for the day.

(29B) Peak hours for the days of a month of a region for thermal generating stations shall be as specified by the respective RLDC a month in advance for 2 hours period in the morning and 4 hours period in the evening. The peak hours may be different in different days of the month.

(29C) Peaking stations shall be the thermal generating stations which shall be generating power only during the peak hours as specified by the respective RLDC.

(3) A new clause namely, (31 A) shall be inserted after clause (31) of Regulation 3 as under:

(31 A) ‘pumped storage hydro-electric generating station’ means the hydro-electric station which generates power through energy stored in the form of water energy, pumped from a lower elevation reservoir to a higher elevation reservoir.

(4) In sub-clause (b) of clause (12), clause (41) and sub-clause (d) of clause (42) of Regulation 3, the words “including pumped storage hydro-electric generating station” shall be inserted after the words “hydro generating stations”.

3. Amendment of Regulation 5 of the Principal Regulations

Proviso to clause (3) of Regulation 5 shall be substituted as under:

“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:

- (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.

Provided further 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.

4. Amendment of Regulation 6 of the Principal Regulations

Regulation 6 (4),(5) & (6) shall be substituted as under:

“6. Truing up of Capital Expenditure and Tariff

(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 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.

Provided further 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.

5. Amendment of Regulation 7 of the Principal Regulations

The last proviso of Regulation 7 shall be substituted as under:

“Provided also that in case of the existing projects, the capital cost admitted by the Commission prior to 1.4.2009 duly trued up upfront with regard to un-discharged liability, if any, 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 under Regulation 9, shall form the basis for determination of tariff.”

6. Amendment of Regulation 8 of the Principal Regulations

Clause (iii) of Regulation 8 shall be substituted as under:

- “(iii) Hydro generating stations including pumped storage
hydro-electric generating station - 1.5%”

7. Amendment of Regulation 9 of the Principal Regulations: A new sub-clause namely, (vi) shall be inserted after sub-clause (v) of clause (2) of Regulation 9 as under:

“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 from the R&M expenditure to be allowed after due prudence.”

8. Amendment of Regulation 15 of the Principal Regulations:

Clauses (3) and (4) of Regulation 15 shall be substituted as under, namely:

“(3) The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate for the year 2008-09 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:

Rate of pre-tax return on equity = Base rate / (1-t)

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

(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 income tax rate as per the Finance Act of the respective year directly without making any application before the Commission:

Provided that in case of any dispute pertaining to recovery or refund of the amount of Annual Fixed Charge on account of change in income tax rate arises, the aggrieved party may approach the Commission for redressal:

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 as per Regulation 6 of these regulations.”

9. Amendment of Regulation 18 of the Principal Regulations

(1) Heading of Sub-clause (b) of Clause 1 of Regulation 18 shall be substituted as under, namely:

“ (b) Open-cycle Gas Turbine or gas engine/ Combined Cycle thermal generating stations including generating stations based on Gas Engine”

(2) Sub-clause (b) (ii) of Regulation 18 shall be substituted as under, namely:

“(ii) Liquid fuel stock for ½ month corresponding to the normative annual plant availability factor, duly taking in to account 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.”

(3) Heading of Sub-clause (c) of Clause 1 shall be substituted as under, namely:

“(c) In case of Hydro generating stations including pumped storage hydro-electric generating station and transmission system”

(4) Clause (3) of Regulation 18 shall be substituted as under, namely:

“(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 units or station whose COD is on or before 30.6.2010.

- (ii) SBI Base Rate plus 350 basis points as on 1.7.2010 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 units or station whose COD lies between the period 1.7.2010 to 31.3.2014.”

Provided further 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.

10. Amendment of Regulation 19 of the Principal Regulations

- (1) Clause (c) of Regulation 19 of principal regulations shall be substituted as under, namely:

“(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	Open cycle Gas turbine peaking stations	Agartala GPS
(1)	(2)	(3)	(4)	(5)
2009-10	14.80	22.90	22.20	31.75
2010-11	15.65	24.21	23.48	33.57
2011-12	16.54	25.59	24.81	35.49
2012-13	17.49	27.06	26.24	37.52
2013-14	18.49	28.61	21.99	39.66

(2) A Sub-clause (cc) shall be inserted in Regulation 19 of principal regulations as under, namely:

“(cc) Gas Engine based open cycle peaking stations

(Rs. in lakh/MW)

Year	O&M Cost Norm
(1)	(2)
2009-10	16.00
2010-11	16.92
2011-12	17.88
2012-13	18.91
2013-14	19.99

11. Amendments to Regulation 21 of principal regulations:Following proviso shall be inserted at the end of Clause (1) of Regulation 21:

“Provided that the thermal generating stations other than the peaking stations shall have the option to adopt alternative methodology as provided in the Regulation 21A of these regulations.”

12. Insertion of Regulation 21A and 21B: Regulations 21A and 21B shall be inserted after Regulations 21 of principal regulations as under:

“21A. Alternative methodology for the Computation and Payment of Capacity Charge and Energy Charge for the Thermal Generating Stations other than the Peaking Stations”

(1) The fixed cost of a thermal generating station shall be computed on annual basis, based on norms specified under these regulations, and shall be bifurcated into two components namely, the Annual Fixed charge for the peak hours and the Annual Fixed charge for the off-peak hours in such manner that the Annual Fixed charge for the peak hours and the Annual Fixed charge for the off-peak hours shall be in the ratio of 1:2.4. The fixed charges shall be recovered on monthly basis

under capacity charge as the sum of capacity charges for the peak hours and the off-peak hours. 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) For Coal/Lignite based thermal Generating stations in commercial operation for less than ten (10) years on 1st April of the financial year:

Peak hour Capacity charges =

$AFC_{ph} \times (NDM / NDY) \times (0.5 + 0.5 \times PAFM_{ph} / NAPAF_{ph})$ (in Rupees) if $PAFM_{ph} < NAPAF_{ph}$ or

$AFC_{ph} \times (NDM / NDY)$ (in Rupees) if $PAFM_{ph} \geq NAPAF_{ph}$

Off- Peak hour Capacity Charges=

$AFC_{oph} \times (NDM / NDY) \times (0.5 + 0.5 \times PAFM_{oph} / NAPAF_{oph})$ (in Rupees) if $PAFM_{oph} < NAPAF_{oph}$ or

$AFC_{oph} \times (NDM / NDY)$ (in Rupees) if $PAFM_{oph} \geq NAPAF_{oph}$

Provided that in case the plant availability factors during peak hours or off peak hours achieved during a financial year (PAFY) is less than 70%, the total capacity charge during peak hours and off- peak hours for the year shall be restricted to

$AFC_{ph} \times (0.5 + 35 / NAPAF_{ph}) \times (PAFY_{ph} / 70)$ or / and

$AFC_{oph} \times (0.5 + 35 / NAPAF_{oph}) \times (PAFY_{oph} / 70)$ (in Rupees).

Provide further that the generating station shall be entitled to incentive in a month if the PAFM > NAPAF and shall be computed as follows:

$$AFC \times 0.5 \times (PAFM/NAPAF - 1)$$

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

Peak hour Capacity charges =

$$AFC_{ph} \times (NDM / NDY) \times (PAFM_{ph} / NAPAF_{ph}) \text{ (in Rupees) if } PAFM_{ph} < NAPAF_{ph} \text{ or}$$

$$AFC_{ph} \times (NDM / NDY) \text{ (in Rupees) if } PAFM_{ph} \geq NAPAF_{ph}$$

Off- Peak hour Capacity Charges=

$$AFC_{oph} \times (NDM / NDY) \times (PAFM_{oph} / NAPAF_{oph}) \text{ (in Rupees) if } PAFM_{oph} < NAPAF_{oph} \text{ or}$$

$$AFC_{oph} \times (NDM / NDY) \text{ (in Rupees) if } PAFM_{oph} \geq NAPAF_{oph}$$

Provide that the generating station shall be entitled to incentive in a month if the PAFM > NAPAF and shall be computed as follows:

$$AFC \times (PAFM/NAPAF - 1)$$

- (c) For Gas/Liquid fuel based combine cycle thermal Generating stations in commercial operation for less than ten (10) years on 1st April of the financial year:

Peak hour Capacity charges =

$AFC_{ph} \times (NDM / NDY) \times (0.5 + 0.5 \times PAFM_{ph} / NAPAF_{ph})$ (in Rupees) if $PAFM_{ph} < NAPAF_{ph}$ or

$AFC_{ph} \times (NDM / NDY)$ (in Rupees) if $PAFM_{ph} \geq NAPAF_{ph}$

Off- Peak hour Capacity Charges=

$AFC_{oph} \times (NDM / NDY) \times (0.5 + 0.5 \times PAFM_{oph} / NAPAF_{oph})$ (in Rupees) if $PAFM_{oph} < NAPAF_{oph}$ or

$AFC_{oph} \times (NDM / NDY)$ (in Rupees) if $PAFM_{oph} \geq NAPAF_{oph}$

Provided that in case the plant availability factors during peak hours or off peak hours achieved during a financial year (PAFY) is less than 70%, the total capacity charge during peak hours and off- peak hours for the year shall be restricted to

$AFC_{ph} \times (0.5 + 35 / NAPAF_{ph}) \times (PAFY_{ph} / 70)$ or / and $AFC_{oph} \times (0.5 + 35 / NAPAF_{oph}) \times (PAFY_{oph} / 70)$ (in Rupees).

Provided further that the generating station shall be entitled to incentive in a month if the $PAFM > NAPAF$ and shall be computed as follows:

$AFC \times 0.4 \times (PAFM/NAPAF - 1)$

- (d) For Gas/Liquid fuel based combine cycle thermal Generating stations in commercial operation for ten (10) years or more on 1st April of the year:

Peak hour Capacity charges =

$AFC_{ph} \times (NDM / NDY) \times (PAFM_{ph} / NAPAF_{ph})$ (in Rupees) if $PAFM_{ph} < NAPAF_{ph}$ or

$AFC_{ph} \times (NDM / NDY)$ (in Rupees) if $PAFM_{ph} \geq NAPAF_{ph}$

Off- Peak hour Capacity Charges=

$AFC_{oph} \times (NDM / NDY) \times (PAFM_{oph} / NAPAF_{oph})$ (in Rupees) if $PAFM_{oph} < NAPAF_{oph}$ or

$AFC_{oph} \times (NDM / NDY)$ (in Rupees) if $PAFM_{oph} \geq NAPAF_{oph}$

Provide that the generating station shall be entitled to incentive in a month if the $PAFM > NAPAF$ and shall be computed as follows:

$AFC \times 0.8 \times (PAFM/NAPAF - 1)$

(e) For Existing Gas/Liquid fuel based open cycle gas turbine stations:

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

(3) The $PAFM_{ph}$, $PAFM_{oph}$, $PAFY_{ph}$, $PAFY_{oph}$, $PAFM$ and $PAFY$ shall be computed in accordance with the following formula:

$$N = 10000 \times \sum_{i=1} DC_i / \{ N \times IC \times (100 - AUX) \} \%$$

Where,

AUX = Normative auxiliary energy consumption in percentage.

DC_i = Average declared capacity (in ex-bus MW) during the peak hours or the off-peak hours of the day, or the day, subject to clause (4) below, for the i^{th} 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.

21B. Computation and Payment of Capacity Charge and Energy Charge for the the Peaking Stations

(1) The fixed cost of a peaking station shall be computed on annual basis, based on norms specified under these regulations. The fixed charges shall be 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 peaking stations for a calendar month shall be calculated in accordance with the following formulae:

(a) For New Gas/Liquid fuel based open cycle gas turbine peaking stations and Gas based reciprocating Engine peaking stations:

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

Where,

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

NAPAF_{ph} = Normative annual plant availability factor in percentage for the peak hours

NDM = Number of days in the month

NDY = Number of days in the year

PAFM_{ph} = Plant availability factor achieved during the month for the peak hours, in percent

PAFY_{ph} = Plant availability factor achieved during the year for the peak hours, in percent

(3) The PAFM_{ph} and PAFY_{ph} shall be computed in accordance with the following formula:

N

$$= 10000 \times \sum_{i=1} DC_i / \{ N \times IC \times (100 - AUX) \} \%$$

Where,

AUX = Normative auxiliary energy consumption in percentage.

DC_i = Average declared capacity (in ex-bus MW) during the peak hours or the off-peak hours of the day, or the day, 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.”

14. Amendments to the Regulation 22

Regulation 22 of principal regulations shall be substituted as under:

“22. Computation and Payment of Capacity charge and Energy Charge for Hydro Generating Stations.

A. Hydro Generating Stations other than Pumped Storage Hydro Generating Stations

(1) The fixed cost of a hydro generating station other than the pumped storage hydro generating stations 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. The capacity charge (inclusive of incentive) 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.

(2) The capacity charge (inclusive of incentive) payable to a hydro generating station other than the pumped storage hydro generating stations for a calendar month shall be

$$\text{AFC} \times 0.5 \times \text{NDM} / \text{NDY} \times (1 + 1.5 \times (\text{PAFM} - \text{NAPAF}) /$$

NAPAF)), if PAFM > NAPAF (in Rupees) and

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

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:

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

Where,

AUX = Normative auxiliary energy consumption in percentage

DC_i = Declared capacity (in ex-bus MW) for the ith 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

(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 other than the pumped storage hydro generating stations, 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 other than pumped storage hydro generating stations 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 other than the pumped storage hydro generating stations, 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.

(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.”

B. 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 net capacity charge after deducting any revenue earned by the station from the generation and sale of power in excess of 75% of the energy utilized in pumping the water from the lower elevation reservoir to the higher elevation reservoir in a month from the monthly fixed charges. The net capacity charge (inclusive of incentive) 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 payment during such period.

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

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

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

ECC_m = Energy charge Credits for the sale of power 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, of the month in Rupees as per sub-clause 4 and 5.

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

$$PAFM = \frac{10000 \times \sum DC_i}{N \times IC \times (100 - AUX)} \%$$

$$i = 1$$

Where,

- AUX = Normative auxiliary energy consumption in percentage
DC_i = Declared capacity (in ex-bus MW) for the ith 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

(4) 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 80 paise per kWh, excluding free energy, if any, during the calendar month, on ex power plant basis. The revenue earned as energy charges during the month by the generating station from the beneficiaries shall be termed as Energy charge Credits (ECC_m) for the sale of power 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 of the month.

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

$$= 0.80 \times \{ \text{Scheduled energy (ex-bus) for the month in kWh} - (\text{Design Energy for the month} + 75\% \text{ of the energy utilized in pumping the water from the lower elevation reservoir to the higher elevation reservoir of the month}) \} \times (100 - \text{FEHS}) / 100.$$

Where,

- DE_m = 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 incase 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 and ECC_m shall be zero.

13. Amendments to the Regulation 26

(1) A new clause i.e. Clause (ia) shall be inserted after Regulation 26 (i) as under:

“(ia) Normative Annual Plant Availability Factor (NAPAF) of peak hours and the off-peak hours over the years for stations governed by Regulation 21A or Peaking Stations”

(a) All thermal generating stations, except those covered under clauses (b), (c), (d), (e) & (f) for peak hours as well as off peak hours - 85%

(b) Following Coal-Based Thermal Generating Stations of NTPC Ltd for peak hours as well as off peak hours

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) for peak hours as well as off peak hours

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

(d) Following Thermal Generating Stations of Damodar Valley Corporation (DVC) for peak hours as well as off peak hours:

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

(e) Lignite-fired Generating Stations using Circulatory Fluidized Bed Combustion (CFBC) Technology for peak hours as well as off peak hours –

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

(f) Open cycle Gas turbine generating peaking stations / **gas engine generating peaking stations: 95%”**

(2) A new clause i.e. clause (ii)(ea) shall be inserted after clause (ii)(e) of Regulation 26 as under:

“(ii)(ea) Existing Combined Cycle Gas/Liquid fuel based generating stations of NTPC Ltd

3.

Name of generating station	Combined cycle (kCal/kWh)	Open cycle (kCal/kWh)
Gandhar GPS	2050	2960
Kawas GPS	2086	3010
Anta GPS	2086	3010
Dadri GPS	2086	3010

Auraiya GPS	2110	3045
Faridabad GPS	2010	2900
Kayamkulam GPS	2010	2900

(3) Regulation 26 (ii) (B) (b) shall be substituted as under:

“(b) Gas-based / Liquid-based combined cycle 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.”

(4) Two sub-clauses i.e.(c) and (d) shall be added after sub-clause (b) of Regulation 26 (ii) (B)) as under:

“(c) Gas-based open cycle gas turbine peaking unit(s)/Station

= 1.05 X Design Heat Rate of the unit/block for Natural Gas and RLNG (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;

(d) Gas based reciprocating Engine peaking stations unit(s)/blocks

= 1.02 X Design Heat Rate of the unit/block for Natural Gas and RLNG (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;”

(5) Regulation 26 (iv) (cc) shall be added after Regulation 26 (iv) (c) as under:

“(cc) Gas based reciprocating Engine peaking stations:Open cycle 1.5%”

14. Amendments to the Regulation 27

(1) Regulation 27 (i) (1) (iii) shall be substituted as under:

“(iii) Pondage type plants where plant availability is significantly affected by Silt and Pumped storage hydro generating stations: 85%.”

(2) A new clause shall be added at the end of Regulation 27 as under:

“(iii) 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 sell their share of capacity in the generating station, in part or full, whereupon the owner of the capacity share will 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.”

15. Amendments to the Regulation 32: A proviso shall be added in clause (3) of Regulation 32 as under:

“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.”

(Alok Kumar)
Secretary

Note: The principal regulations were notified in the Gazette of India Extraordinary Part III Section 4 on 20th January 2010 at Ser No.10.