Jharkhand State Electricity Regulatory Commission

Tariff Order
on
Annual Revenue Requirement
and
Determination of Generation Tariff
for
Financial Years 2010-11 & 2011-12
for
Tenughat Vidyut Nigam Limited (TVNL)

Ranchi

May 2011

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List of Abbreviations

Abbreviation	Description
A&G	Administrative and General
AAD	Advance Against Depreciation
ARR	Aggregate Revenue Requirement
CISF	Central Industrial Security Forces
COD	Commercial Operation Date
CWIP	Capital Work in Progress
DM	De-mineralised
FY	Financial Year
GCV	Gross Calorific Value
GFA	Gross Fixed Assets
GoI	Government of India
JSEB	Jharkhand State Electricity Board
JSERC	Jharkhand State Electricity Regulatory Commission
kcal	Kilocalorie
kg	Kilogram
kWh	Kilowatt-hour
MGR	Merry-Go-Round
ml	Millilitre
MT	Million Tonnes
MUs	Million Units
MW	Megawatt
O&M	Operations and Maintenance
PLF	Plant Load Factor
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
RoE	Return on Equity
SERC	State Electricity Regulatory Commission
SLM	Straight Line Method

A1: INTRODUCTION

Jharkhand State Electricity Regulatory Commission (JSERC)

1.1 The Jharkhand State Electricity Regulatory Commission (herein after referred to as the "JSERC" or "the Commission") was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act, 1998 on August 22, 2002. The Commission became operational w.e.f. April 24, 2003. The Electricity Act, 2003 (hereinafter referred to as "the Act" or "EA, 2003") came into force w.e.f. June 10, 2003; and the Commission is now deemed to have been constituted and functioning under the provisions of the Act.

1.2 The Government of Jharkhand vide its notification dated 22.08.2002 defined the functions of JSERC as per Section 22 of the Electricity Regulatory Commission Act, 1998 to be the following, namely:-

(a) to determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in Section 29;

(b) to determine the tariff payable for the use of the transmission facilities in the manner provided in Section 29;

(c) to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the State;

(d) to promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act.

1.3 With the Electricity Act, 2003 being brought into force, the earlier Electricity Regulatory Commission Act of 1998 stands repealed and the functions of JSERC are now defined as per Section 86 of the Act.

1.4 In accordance with the Act, the JSERC discharges the following functions: -

(a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State;

Provided that where open access has been permitted to a category of consumers under Section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;

(b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;

(c) facilitate intra-state transmission and wheeling of electricity;

(d) issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;

(e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;

(f) adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;

(g) levy fee for the purposes of this Act;

(h) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;

(i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;

(j) fix the trading margin in the intra-state trading of electricity, if considered, necessary;

(k) discharge such other functions as may be assigned to it under this Act.

1.5 The Commission advises the State Government on all or any of the following matters, namely :-

(a) promotion of competition, efficiency and economy in activities of the electricity industry;

(b) promotion of investment in electricity industry;

(c) reorganisation and restructuring of electricity industry in the State;

(d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.

1.6 The State Commission ensures transparency while exercising its powers and discharging its functions.

1.7 In discharge of its functions, the State Commission is guided by the National Tariff Policy as brought out by GoI in compliance to Section 3 of the Act. The objectives of the National Tariff Policy are to:

(a) ensure availability of electricity to consumers at reasonable and competitive rates;

(b) ensure financial viability of the sector and attract investments;

(c) promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;

(d) promote competition, efficiency in operations and improvement in quality of supply.

Tenughat Vidyut Nigam Limited (TVNL)

1.8 The Tenughat Vidyut Nigam Limited (TVNL) (hereinafter referred to as 'the Petitioner') is a wholly owned Generating Company of Government of Jharkhand and was constituted in 1987 under the Indian Company's Act, 1956.

Overview of the Thermal Stations

1.9 The Petitioner operates two Units (Units I and II) of Tenughat Thermal Power Station that are the subject of tariff determination in the petition filed by it. Each unit has an installed power generation capacity of 210 MW. Unit I commenced its operations in September, 1996 and Unit II in September, 1997. With the creation of State of Jharkhand on November 15, 2000, the Petitioner is an undertaking of Government of Jharkhand.

1.10 The Petitioner has submitted that all the papers relating to Tenughat Thermal Power Station (TTPS) are still lying at the erstwhile office of the Petitioner located in Patna and in spite of the orders of the Jharkhand High Court, the Petitioner has not been able to access these documents. As such the details of the estimated costs of various items related to the project are not available to the Petitioner.

1.11 However, based on the expenditure details available with TTPS and discussions with the Petitioner, the total cost of the project at the time of CoD, including interest during construction (IDC), was approved as Rs 1247.04 Cr by the Commission in its previous Tariff Order.

Status of PPA

1.12 The Petitioner entered into a Power Purchase Agreement (PPA) with JSEB on July 19, 2005. The PPA was executed on September 1, 2005 and was valid and operative till August 1, 2010. There is a provision in the PPA, under clause 10 of the general terms and conditions, which states that in case JSEB continues to receive power from TVNL even after expiry of this agreement without further renewal of formal extension thereof, then all the provisions of this agreement shall continue to operate till this agreement is formally extended, reviewed and replaced.

1.13 As per this PPA, the applicable rate for sale of energy by the Petitioner to JSEB will be the rate decided by the Commission at delivery point. The Commission in its previous Tariff Order for FY 2010-11 had directed the Petitioner to renegotiate its PPA with JSEB at the earliest and also to get the same ratified by the Commission.

1.14 The Petitioner has submitted that as per the directive of the Commission, it has already sent a draft PPA to JSEB for approval vide letter no.742/10-11 dated 11.10.10 but even after repeated reminders, JSEB has not responded on the subject matter.

1.15 The Petitioner has stated that JSEB is continuing to pay Rs.25 crore per month through LC against an average electricity purchase of approx Rs.40 crore per month. Therefore, it has requested that JSEB should enter into PPA and arrange to open an LC for Rs.45 crore. It has further stated that the total outstanding dues on JSEB as on 31.03.11 is approx Rs.2259 crore and JSEB is neither making regular payment for running both Units nor it is entering into fresh Power Purchase Agreement (PPA) based on two part tariff, as such it has no option but to restrict the power supply equal to LC amount only.

1.16 The Petitioner has also requested the Commission to allow them to restrict their power supply to JSEB equal to LC amount only i.e. Rs.25 crore and to also sell the balance power to other consumers through power traders for survival of TVNL.

Scope of the present order

1.17 This Order relates to the ARR and Tariff petition filed by the Petitioner before the Commission for:

(a) Revision for FY 2010-11 based on actual data for nine months and estimated data for remaining three months.

(b) Approval of ARR and determination of tariff for FY 2011-12;

in accordance with Sections 61, 62 and 64 of the Act, provisions of the JSERC (Terms and Conditions for Thermal Generation Tariff) Regulation, 2004 (hereinafter referred to as 'JSERC Generation Tariff Regulations, 2004') and JSERC, (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 (hereinafter referred to as 'JSERC Generation Tariff Regulations, 2010') .

1.18 The Petitioner in its present Tariff Petition has also submitted the revised data for FY 2009-10 based on the revised provisional accounts for the said year. The Commission is of the view that since the expenditure for FY 2009-10 has already been provisionally trued-up in previous Tariff Order of FY 2010-11, it is not appropriate to carry out the second provisional true-up of ARR for FY 2009-10 and it will only conduct a final true-up once the audited accounts are made available by the Petitioner. Accordingly, the Provisional True up for FY 2009-10 is not covered under the scope of this Order.

1.19 While determining ARR and tariff for FY 2010-11 and FY 2011-12, the Commission has taken into consideration the following:

(a) Provisions of Section 86 of the Act;

(b) Provisions of the National Electricity Policy;

(c) Provisions of the National Tariff Policy;

(d) Power Purchase agreement between the Petitioner & JSEB.

(e) Principles laid down in the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004 herein referred to as 'JSERC Generation Tariff Regulations, 2004'; and

(f) Principles laid down in the. JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 herein referred to as 'JSERC Generation Tariff Regulations, 2010'. These Regulations have been used for tariff determination of FY 2011-12, the first year of the transition period.

A2: PROCEDURAL HISTORY

Background

2.1 The Commission issued its last Tariff Order of TVNL for provisional truing up of ARR for FY 2009-10 and the determination of ARR and tariff for FY 2010-11 on 22nd November , 2010. The Petitioner has now submitted a petition for provisional true up of ARR for FY 2009-10, revision of components of ARR for FY 2010-11 and for determination of ARR and tariff for FY 2011-12.

2.2 As stated earlier in section 1.17 and 1.18, the Commission has decided to undertake the following:

a) Review exercise for FY 2010-11 based on the actual data made available by the Petitioner and

b) Determination of ARR and tariff for FY 2011-12 based on the past trends and in accordance with the 'JSERC Generation Tariff Regulations, 2010'.

Information Gaps in the petition

2.3 As part of ARR & tariff determination exercise for FY 2010-11 and FY 2011-12, several deficiencies were observed in the ARR & Tariff Petition received from the Petitioner. The information gaps observed were communicated to the Petitioner through written communication vide Letter No.JSERC/07/2011/711 dated 21st February, 2011 and letter no. JSERC/07/2011/107 dated 06.05.11. The Petitioner subsequently submitted its response and provided the requisite data vide letter dated 4th March, 2011 and 7th May, 2011 respectively.

2.4 Subsequently, further clarifications were obtained from the Petitioner, from time to time, till the finalization of this Tariff Order. The Commission regularly interacted with the officers of the TVNL to validate the information submitted by them.

Inviting Comments/Suggestions from the Public

2.5 After acceptance of the petition, the Commission directed the Petitioner to make available the copies of petition to the general public, and issue a public notice inviting comments/ suggestions thereon. Accordingly, the public notice was published in the following newspapers.

Table 1: List of newspapers and dates on which the public notice appeared

Newspaper	Date
Dainik jagran(Hindi)	01.04.2011
Prabhat Khabar (Hindi)	01.04.2011
Hindustan Times (English)	01.04.2011
Telegraph (English)	01.04.2011
Dainik jagran(Hindi)	02.04.2011
Prabhat Khabar (Hindi)	02.04.2011
Hindustan Times (English)	02.04.2011
Telegraph (English)	02.04.2011

2.6 A period of fifteen days (15) was given for submitting the comments/suggestions from the public.

2.7 The Commission subsequently issued an advertisement on its website, www.jserc.org, and various newspapers for conducting public hearing on the ARR and Tariff filing of the Petitioner for FY 2010-11 and FY 2011-12. The details of the newspapers wherein the advertisements were issued by the Commission are shown hereunder:

Table 2: List of newspapers and dates on which the public notice was issued by JSERC

Newspaper	Date
Hindustan	08.05.2011
Prabhat Khabar	08.05.2011
Ranchi Express	08.05.2011
Dainik Jagran	08.05.2011
Sanmarg	08.05.2011
The Hindustan Times	08.05.2011
The Pioneer	08.05.2011
Quami Tanzeem (Urdu daily)	08.05.2011

Submission of comments/suggestions and conduct of public hearing

2.8 No comments were received from the public in writing within the provided time frame.

2.9 A public hearing was held on 12th May, 2011 at the Commission's office in Ranchi wherein the Petitioner presented a summary of the Petition filed by it to the Commission as well as the public. A total of six members of the public took part in the public hearing process. The list of the attendees is attached in Annexure-I.

A3: SUMMARY OF ARR & TARIFF PETITION

3.1 The summary of the energy charges submitted for both Units (combined) of the TTPS in the Tariff Petition filed for FY 2010-11 and FY 2011-12 is given Table 3 below:

Table 3: Energy Charges for FY 2010-11 and FY 2011-12

Details	Units	FY 2010-11 (Revised)	FY 2011-12 (Projected)
Installed Capacity	MW	420	420
PLF	%	70.48%	75%
Availability	%	-	85%
Gross Generation	MU	2593	2759
Auxiliary Consumption	%	9.70%	9.50%
Net Generation	MU	2342	2497
Heat Rate	kCal/kWh	2965	3043
Specific Oil Consumption	ml/kWh	3.02	2
Total Coal cost	**Rs. Cr**	**244.78**	**272.25**
Total oil cost	**Rs. Cr**	**34.23**	**-**
Coal Cost per unit	**Rs./kWh**	**1.05**	**1.09**
Oil Cost per unit	**Rs./kWh**	**0.15**	**-***

* As per the 'JSERC Generation Tariff Regulations, 2010' the Oil cost shall be considered as a fixed cost component from FY 2011-12

3.2 The summary of the fixed charges and generation tariff for both units (Combined) of the TTPS filed in the Tariff Petition for FY 2010-11 and FY 2011-12 is given in Table 4:

Table 4: Fixed Charges and Generation Tariff for FY 2010-11 and FY 2011-12

Details	Units	FY 2010-11 (Revised)	FY 2011-12 (Projected)
Cost of secondary fuel oil	Rs Cr	-	32.24
Depreciation	Rs. Cr	46.48	48.27
Interest on Loan	Rs. Cr	83.06	83.06
Return on Equity	Rs. Cr	22.41	30.91
Interest on Working Capital	Rs. Cr	21.12	23.43
O&M Expenses	Rs. Cr	128.09	111.68
Less Non-Tariff Income	Rs. Cr	**14.29**	16.08
Total Fixed Charges	**Rs. Cr**	**286.87**	**313.72**
Total Fuel Cost	**Rs. Cr**	**278.96**	**272.25**
Total Cost	**Rs. Cr**	**565.87**	**585.97**
Generation Tariff	**Rs./kWh**	**2.395**	**2.346**

A4: PUBLIC CONSULTATION PROCESS- ISSUES RAISED

4.1 The ARR & Tariff Petition for FY 2011-1 evoked response only from JSEB (Jharkhand State Electricity Board), the purchaser of power from TVNL. The representative of JSEB, put forth its comments and suggestions before the Commission in the presence of the Petitioner.

4.2 The issues raised by the participant along with the reply of the Petitioner and views of the Commission thereon are discussed in this chapter.

Reliability of power

Views of JSEB

4.3 JSEB had raised concern over unreliability of power from TVNL.

Petitioner's Response

4.4 The Petitioner has submitted that it would like to bring into kind notice of the Commission that it is doing its best, based on available resources, to achieve normative targets. The data submitted by the Petitioner related with reliability for last 10 years is given in the Table 5 below:

Table 5: Operational parameters submitted by the Petitioner

Parameters	FY11	FY 10	FY 09	FY 08	FY 07	FY 06	FY 05	FY 04	FY 03	FY 02
Availability (%)	74.84	66.02	67.79	52.04	82.56	50.85	43.45	45.53	44.10	41.18
Loading Factor (%)	89.08	84.61	89.14	93.53	89.75	84.60	84.10	80.97	83.92	76.74
Partial Loading (%)	10.92	15.39	10.86	6.47	10.25	15.40	15.90	19.03	16.08	23.26
Running Hours	13117	11566	12597	9593	13990	8228	7506	7995	7734	7159
Outage Hours	4403	5990	5642	8430	3078	8912	10011.	9645.2	9786.6	1036
Forced Outage (%)	25.13	34.19	32.20	48.12	17.57	50.87	57.14	55.05	55.86	59.14

4.5 The Petitioner has submitted that the reliability of TTPS is adversely affected due to following reasons:

a) Frequent tripping of units due to poor quality & quantity of coal.

b) Grid backing down by JSEB.

c) Tripping of Transmission Lines: The Petitioner has stated that the arrangement for evacuation of power from Tenughat TPS is through the two transmission lines- Tenughat TPS to BSEB grid of Bihar Sharif Single Circuit of 400 KV line and Tenughat TPS to Patratu TPS grid of 400 KV. Both lines are operating at 220 KV due to non readiness of 400 KV S/S at terminating ends. Due to constraints in existing two transmission lines, load on the units has to be regulated frequently.

d) Partial load operation of units due to ageing of equipments

4.6 The Petitioner has further stated that apart from above, maintenance work of the transmission line has to be carried out frequently as frequent tripping of units takes place especially in summer and rainy season, which ultimately increases the consumption of primary and secondary fuel and reduces the life of the plant and adversely affect the plant reliability.

4.7 The Petitioner has informed that it becomes difficult to carry out quality maintenance and R & M activities as there is a serious fund crisis due to non payment by JSEB.

Commission's analysis

4.8 The Commission has taken note of the reasons mentioned by the Petitioner with regards to the unreliability of power. The Petitioner should take necessary steps to improve the reliability of power and should also take other initiatives for improving the performance of the station like training of manpower, conducting the energy audit of the system etc.

4.9 Regarding non-payment of dues by JSEB, as per the PPA between TVNL and JSEB, the Petitioner is allowed to recover dues from JSEB on the basis of single-part tariff only, which does not have provision for recovery of capacity charges. Thus, the Commission in the previous Tariff Order of FY 2010-11 directed the Petitioner to revise its PPA with JSEB and get the same ratified by the Commission. The petitioner should vigorously pursue the matter with JSEB and renegotiate the PPA in line with the "JSERC Generation Tariff Regulations" and also work out an effective mechanism with JSEB for recovery of the dues. The Petitioner and JSEB, the sole purchaser of power, from the seller (Petitioner) should ensure that the generation capacity of the Petitioner is fully utilized. This should be kept in mind while renegotiating the PPA as it will not only assist the Petitioner in improving its financial health but will also ensure adequate supply of power to the consumers of Jharkhand.

A5: REVISED ESTIMATES FOR FY 2010-11

5.1 The Petitioner has submitted the revised Tariff Petition for FY 2010-11 on the basis of actual operational and financial figures submitted for nine months and estimated for remaining three months. The petitioner has submitted the comparison of each and every component of expenditure and revenue for FY 2010-11 vis-à-vis the figures approved by the Commission in its previous Tariff Order.

5.2 The Commission has scrutinized the petition filed by the Petitioner for the revised cost estimates & operational parameters for FY 2010-11 as per the actual data and collected through additional information.

5.3 The component-wise description of the Petitioner's submission and the Commission's analysis on the same is given below.

Basis of Fuel Cost & Fixed Cost Determination

Petitioner's submission

5.4 The Petitioner proposed the energy and fixed charges as per the terms and conditions of the PPA signed between the Petitioner and JSEB in 2005.

Commission's analysis

5.5 The PPA states that the applicable rate of sale of energy by the Petitioner to JSEB will be the rate as decided by the Commission at delivery point. Accordingly, the Commission has determined the tariff for FY 2010-11 in accordance with the JSERC 'Generation Tariff Regulations, 2004' and the past operational performance of the Tenughat Thermal Power station.

Plant Load Factor (PLF)

Petitioner's submission

5.6 The Petitioner in its Tariff Petition has submitted the provisional PLF of 70.48% for FY 2010-11 against the PLF of 74.88% approved by the Commission in its previous Tariff Order of FY 2010-11.

Commission's analysis

5.7 The Commission noticed that the PLF of 70.48% submitted by the Petitioner was based on the actual figures for nine months and estimated for remaining three months. By the time the Commission was scrutinizing the Tariff petition for FY 2011-12 filed by the Petitioner, FY 2010-11 was already over. Therefore, the Commission asked the Petitioner to submit the actual availability and PLF for the entire year as additional information.

5.8 The month-wise availability and PLF submitted by the Petitioner is given in the Table 6

Table 6: Actual Availability (%) and PLF (%) as submitted by the Petitioner for FY 2010-11

Months	Availability (%)			PLF (%)		
	Unit-I	Unit-II	Station	Unit-I	Unit-II	Station

April,2010	94.70	0.00	47.35	85.78	0.00	42.89
May,2010	94.83	35.61	65.22	84.88	26.43	55.60
June,2010	62.13	45.50	53.82	52.80	39.97	46.94
July, 2010	85.37	89.25	87.31	75.74	87.01	80.95
August,2010	98.43	91.44	94.93	89.84	87.05	89.08
September,2010	71.25	91.42	81.33	61.13	85.61	73.37
October,2010	86.46	87.63	87.05	71.73	76.69	74.15
November,2010	78.76	69.00	73.88	66.97	59.43	62.44
December,2010	95.80	60.52	78.16	87.28	55.95	71.62
January,2011	73.67	76.44	75.05	65.71	72.95	69.33
February,2011	60.68	91.78	76.23	54.34	90.07	72.20
March, 2011	78.33	68.81	73.57	62.71	59.07	60.89
Annual for FY 2010-11	**81.93**	**67.81**	**74.87**	**71.65**	**61.73**	**66.69**

5.9 The table above shows that the availability and PLF of Unit-II is exceptionally poor and the PLF is below the target level of 74.88% approved by the Commission in the previous Tariff Order.

5.10 The Commission enquired about the reasons for the lower availability and PLF of the station. In response to which, the Petitioner as additional information has submitted following reasons:

a) Forced shutdown of Unit-II for nearly two months during FY 2010-11 due to Generator Stator Bar leakage.

b) Frequent tripping of the units due to poor coal quality

c) Backing down of the units under instructions of JSEB due to lack of load.

d) Tripping of the transmission line

5.11 The Commission is of the view that the lower PLF of the station is not only due to the above mentioned constraints but also due to the lower availability of the station. The Petitioner should therefore take adequate and sustainable measures to improve the PLF and availability and to attain the normative level of 85% availability as mentioned in the 'JSERC Generation Tariff Regulations, 2010'.

5.12 The Petitioner in the previous Tariff Order for FY 2010-11 was also directed to give the details of outages of the station as per the format prescribed in Annexure 2 of the said Order and furnish information to the Commission on the quarterly basis. The Petitioner has not submitted any report to the Commission in this regards and accordingly has not complied with the directive. The Commission has taken serious note of the casual attitude of the petitioner and has again given directive in this regard in the directives section of this Order.

5.13 In view of the above facts and the target given in the previous Tariff Order, the Commission has decided to approve the PLF of 74.88% based on the target levels approved in the Previous Tariff Order for FY 2010-11.

Gross Generation

Petitioner's submission

5.14 The Petitioner in its ARR & Tariff Petition submitted the estimated gross generation of 2593 MUs for both the units based on the PLF of 70.48% for FY 2010-11 with the ARR Petition.

Commission's analysis

5.15 The Commission asked the Petitioner to submit the actual month-wise gross generation data for FY 2010-11 since by the time the Commission was scrutinizing the Tariff Petition, the FY 2010-11 was already over. Accordingly, the Petitioner submitted the actual month-wise data as additional information.

5.16 The Commission for the verification of the actual data for FY 2010-11 submitted by the Petitioner had sent its representatives to the Petitioner's office. The Petitioner for the purpose of validation of gross generation units produced a joint meter reading sheet signed by the representatives of TVNL and JSEB. From that, the Commission validated the gross generation and auxiliary consumption data for the month of September'2010 and January'2011 which was found to be in line with the submission made by the Petitioner in the additional information.

5.17 Therefore, the Commission approves the gross generation of 2453.69 MUs for FY 2010-11 based on the actual generation submitted by the Petitioner, after the prudence check.

5.18 Meanwhile, the gross generation of 2453.69 MU approved on the basis of the actual PLF is much less than the targeted gross generation of 2754.98 MU determined on the basis of the approved PLF of 74.88%.

5.19 The Commission views that this difference in the targeted units and actual units of 300.19 MU is on account of the inefficiencies of the Petitioner and cannot be allowed to be passed on. The cost pertaining to these inefficiencies has been disallowed from the fuel cost as per the targeted generation, as mentioned later in section 5.54 of this Order.

Auxiliary Consumption

Petitioner's submission

5.20 The Petitioner in its Petition has submitted the estimated auxiliary consumption of 9.00% for FY 2010-11 with the Petition. As per the discrepancy observed by the Commission, the Petitioner had submitted auxiliary consumption of 9% in Table 7 and 9.70% in Table 4 of the petition for FY 2010-11. The Petitioner clarified that the mistake was in Table 7 as the Petitioner had inadvertently submitted the auxiliary consumption at the approved figures of the Previous Tariff Order for FY 2010-11. The Petitioner submitted that the auxiliary consumption was at 9.70% as mentioned in Table 4 of the petition. The figure was as per nine months actual and three months estimated data of FY 2010-11.

5.21 The Petitioner also submitted the following reasons for the higher auxiliary consumption than the target given by Commission in the Previous Tariff Order

(a) Frequent tripping of Units due to poor quality & quantity of coal: Frequent tripping of units generates less power but consume auxiliary power equivalent of normal operation.

(b) Grid backing down by JSEB.

(c) Tripping of Transmission Lines: Due to frequent tripping of transmission line, frequent tripping of units takes place, especially in summer and rainy season, which ultimately increases the consumption of auxiliary power.

(d) Partial load operation of Units due to ageing of equipments. Also due to fund crisis due to non payment by JSEB it becomes difficult to carry out quality maintenance and R & M activities.

Commission's analysis

5.22 The auxiliary consumption refers to the quantum of energy consumed by the auxiliary equipment of the generating station. Higher auxiliary consumption reduces the net generation of a generating station.

5.23 Since the auxiliary consumption submitted by the Petitioner was on the estimated basis and by the time the Commission was scrutinizing the Tariff Petition for FY 2011-12 filed by the Petitioner, FY 2010-11 was already over, therefore, the Commission asked the Petitioner to submit month-wise auxiliary consumption for both the units. The information submitted by the Petitioner is detailed in the Table 7

Table 7: Actual Auxiliary consumption submitted by the Petitioner for FY 2010-11

Months	Auxiliary consumption	
	MUs	%
April,2010	14.270	10.98
May,2010	17.042	9.81
June,2010	14.760	10.39
July, 2010	19.812	7.83
August,2010	23.052	8.28
September,2010	23.790	10.71
October,2010	25.602	11.05
November,2010	22.220	11.76
December,2010	22.472	10.04
January,2011	20.972	9.68
February,2011	20.616	10
March, 2011	22.212	11.84
Annual for FY 2010-11	**246.820**	**10.06**

5.24 As stated above, the Commission did a sample check of the data submitted by the Petitioner from the joint meter reading produced by the Petitioner for the month of September'2010 and January'2011 which was found to be in line with the submission made by the Petitioner in the additional information.

5.25 The Commission observed that the actual auxiliary consumption for FY 2010-11 is much higher than the auxiliary consumption approved by the Commission in Previous Tariff Order for FY 2010-11. The Commission also analyzed the reasons given by the Petition for the increase in auxiliary consumption as stated in section 5.21 above.

5.26 The Commission does not find it logical to approve auxiliary consumption at the actual level stated above as it has observed the following

(a) TVNL has claimed higher auxiliary consumption on account of frequent unit tripping, poor coal quality, transmission line tripping and partial load operation. However the tripping related details in terms of number of trips, re-synchronization period has not been made available to substantiate the reasons for increase in consumption.

(b) Also it is not clear from the previous period performance, the specific causal analysis of forced outage or grid separation and the cumulative impact whether principally caused by extraneous factors (coal quality not withstanding fuel chain management is generation utility responsibility) in terms of number of trips, or intermittent period operations from shut down to light up. In the absence of the details pertaining to trips or prolonged grid backing down, higher auxiliary consumption cannot be unilaterally assigned to external factors.

5.27 Accordingly, the Commission approves auxiliary consumption at 9%, which is line with the target specified in the Previous Tariff Order for FY 2010-11.

5.28 Meanwhile, the Commission feels that the Petitioner should take various measures to improve the auxiliary consumption of its power station. Some of the measures which can be taken are highlighted below:

(a) Conduct a plant based system-wise auxiliary consumption study (CHP, CW system, CHP, Milling System, Feedwater System, Ash Handling System) substantiated by Energy Meter data for principal load bearing equipment (BFP, CW Pump, ARCW Pumps, Mills, PA, FD & ID Fans etc, ESP System, Cooling Towers)

(b) Map the above against the design efficiency levels with ageing curves as provided by the manufacturer.

(c) Should further benchmark the system wise auxiliary consumption with other 210 MW series machines of similar make and vintage and

(d) Provide a causal analysis of the observed gaps along with a roadmap to migrate to the best in class level through process interventions or equipment retrofits.

(e) A comprehensive energy audit of the plant may also be conducted by a certified EA agency.

Net Generation

Petitioner's submission

5.29 The Petitioner submitted the estimated net generation of 2341.7 MU on the basis of gross generation of 2593 MU and 9.70% auxiliary consumption.

Commission's analysis

5.30 The Commission approves net generation of 2232.86 MUs for FY 2010-11 based on the approved gross generation of 2453.69 MU and the auxiliary consumption of 9.0% for the said year.

5.31 Meanwhile, as per the Targeted PLF of 74.88% and auxiliary consumption of 9.0%, the Petitioner should have achieved a net generation of 2507.04 MU. The cost pertaining to these inefficiencies has been disallowed from the fuel cost as per the targeted generation, as mentioned later in section 5.54 of this Order.

Station Heat Rate (SHR)

Petitioner's submission

5.32 The Petitioner has submitted estimated SHR of 2965 kcal/kWh for FY 2010-11.

Commission's analysis

5.33 The Commission asked the Petitioner to submit the monthly unit-wise station heat rate for FY 2010-11. Table 8 details the information submitted by the Petitioner as additional information:

Table 8: Actual SHR submitted by the Petitioner for FY 2010-11

Months	Station Heat Rate		
	Unit-I	Unit-II	Station
April,2010	2824.93	NA	2830.27
May,2010	3026.23	3406.41	3116.58
June,2010	3318.20	3201.93	3267.15
July, 2010	3165.05	2872.90	3007.26
August,2010	2766.80	2858.54	2811.51
September,2010	2944.76	3001.74	2978.05
October,2010	3037.97	2981.70	3008.90
November,2010	2897.51	3062.76	2974.06
December,2010	2838.83	2869.81	2850.93
January,2011	3013.92	2899.35	2952.37
February,2011	2966.65	2930.38	2944.27
March, 2011	3242.14	3193.11	3218.13
Annual for FY 2010-11	**2988.78**	**2980.93**	**2985.14**

5.34 As part of the framing of ‘JSERC Generation Regulations, 2010’ the Commission had conducted study of the operational parameters of the two units of TTPS and observed that the SHR of the station would be about 3043 kcal/kWh.

5.35 The Commission has decided to approve the SHR at the actual figures of 2985 Kcal/kWh for FY 2010-11 as it is less than the SHR determined as per the study.

Specific Oil Consumption

Petitioner’s submission

5.36 The Petitioner has submitted estimated specific oil consumption of 3.02 ml/kWh for both the Units for FY 2010-11.

Commission’s analysis

5.37 The specific oil consumption is the amount of secondary fuel (in ml) consumed in the process of generation of one unit of power produced (in kWh). A lower specific oil consumption lowers the consumption of the secondary fuel in the generation process, and hence lowers the secondary fuel cost.

5.38 As mentioned in the previous Tariff Orders, specific secondary fuel oil consumption is directly related to the number of start ups of the units and the average unit loading. The need of secondary fuel support for flame stabilization is normally required at unit load below 40%, except for start up.

5.39 Since, by the time the Commission was scrutinizing the Tariff petition for FY 2011-12 filed by the Petitioner, FY 2010-11 was already over, therefore, the Commission asked the Petitioner to submit month-wise actual specific oil consumption for FY 2010-11. Subsequently, the Petitioner submitted the month-wise specific oil consumption and also the annual consumption of 4.42 ml/kWh as additional information. The data submitted was also verified by the representatives of the Commission and found to be in line with the submission made by the Petitioner.

5.40 The actual specific oil consumption of 4.42 ml/kWh is much higher than the norm of 2 ml/kWh specified in the ‘JSERC Generation Tariff Regulations,2004’. Accordingly, the Commission approves the normative specific oil consumption of 2 ml/kwh for FY 2010-11 as per the above regulations.

Gross Calorific Value (GCV) Of Primary and Secondary Fuel

Petitioner's submission

5.41 The Petitioner sources Grade D coal from the collieries of Central Coal Fields Limited. The gross calorific value of coal and oil were submitted as 4300 kcal/kg and 9359 kcal/kl. respectively for FY 2010-11.

Commission's analysis

5.42 The Calorific value of a fuel refers to the amount of heat released on burning one unit of the fuel. Thus, a higher GCV indicates better quality of fuel and also lowers fuel cost, since it lowers the consumption of fuel needed for producing the required amount of energy.

5.43 The Petitioner in its Tariff Petition submitted the actual figures for nine months and estimated for remaining three months. Since by the time the Commission was scrutinizing the Tariff Petition for FY 2011-12 filed by the Petitioner, FY 2010-11 was already over, therefore, the Commission asked the Petitioner to submit month-wise actual consumption and GCV of coal and oil for the said year. Subsequently, the Petitioner submitted the desired information as additional information and also requested the Commission to consider the actual figures for FY 2010-11.

5.44 The Commission did a sample check of the data submitted by the Petitioner from the coal analysis report and monthly report maintained by the Petitioner at the head office. The data was found to be in line with the submission made by the Petitioner as additional information.

5.45 The Commission calculated the weighted average GCV of coal and oil based on the submissions made by the Petitioner. The annual GCV of coal and oil for FY 2010-11 was worked out as 4080.07 kcal/kg and 9359 kcal/kl respectively.

5.46 Therefore, for FY 2010-11, the Commission approves the actual GCV of coal and oil as 4080.07 kcal/kg and 9359 kcal/kl respectively based on the actual data submitted by the Petitioner for the entire year.

Price of Primary and Secondary Fuel

Petitioner's submission

5.47 The Petitioner has submitted the estimated delivered coal price as Rs 1378/MT and delivered oil price as Rs 43705/kl for FY 2010-11 which is based on nine actual and three months estimated data for the said year.

Commission's analysis

5.48 The Commission asked the Petitioner to submit the month-wise summary of the actual coal and oil cost for FY 2010-11. Subsequently, the Petitioner submitted the data as additional information and also requested the Commission to consider the actual figures for FY 2010-11.

5.49 The Commission's representatives did a sample check of the data submitted by the petitioner. The oil cost was validated from the proforma invoice raised by Bharat petroleum. The coal cost was validated from the coal bills and also from the summary of the bills maintained at the site and made available to the Commission representatives at the head office by the Petitioner which included quantity received from CCL, billed amount and transportation cost. The data was found to be in line with the submission made by the Petitioner as additional information.

5.50 The Commission calculated the weighted average price of coal and oil as Rs 1424 /MT and Rs 48300.13/kl respectively.

5.51 Based on the actual data, the Commission approves the price of coal as Rs 1424 /MT and price of oil as Rs 48300.13/kl for FY 2010-11.

Transit Loss

Petitioner's submission

5.52 The Petitioner has proposed 0.3% transit loss of coal for FY 2010-11.

Commission's analysis

5.53 The JSERC 'Generation Tariff Regulations, 2004' allow transit loss of 0.3% for pithead generating stations. Since the transit loss submitted by the Petitioner is in line with the said regulations, the Commission approves the transit loss of 0.3% for FY 2010-11.

Inefficient cost of TTPS

5.54 The Commission has disincentivized the Petitioner for inefficiencies in meeting the target PLF and auxiliary consumption as approve din the previous Tariff Order for FY 2010-11. The computation of inefficient cost is in line with the methodology followed for the PTPS generation plant of JSEB in the JSEB Tariff Orders for FY 2006-07 and FY 2010-11. The following table summarizes the inefficient cost determined for TTPS for FY 2010-11:

Table 9: Inefficient Cost of TTPS

Months	UoM	Formula	FY 2010-11
Fuel Cost	Rs. Cr	A	312.71
Approved fuel Cost per unit	Rs/Kwh	B	1.25
Actual Net Generation	MU	C	2206.85
Targeted Net Generation	MU	D	2507.04
Approved Net generation	MU	E	2232.86
Shortfall in Generation	MU	F=D-C	300.19
Disallowed fuel cost	**Rs. Cr**	**G=F*B**	**37.44**
Approved Fuel Cost	Rs. Cr	H=A-G	275.27
Approved fixed Cost per unit	Rs./Kwh	I	0.92
Disallowed fixed cost	**Rs. Cr**	**J=F*I**	**27.67**
Total inefficient cost disallowed	**Rs. Cr**	**K=J+G**	**65.12**

Summary of Plant Parameters & Fuel Cost Determinants

5.55 The summary of plant parameters and fuel cost determinants for the two Units of Tenughat Thermal Power Station as approved by the Commission in the previous Tariff Order of FY 2010-11, as estimated by the Petitioner in its present Tariff Petition for FY 2011-12 , actual submitted by the Petitioner as additional information and now approved by the Commission for FY 2010-11 is given in Table 10.

Table 10: Approved Plant parameters & Fuel Cost Determinants for FY 2010-11

Parameters	Formula	Unit	Unit I&II			
			Approved by the Commission in the TO of FY 2010-11	Submitted by TVNL in its Tariff Petition for FY 2011-12 (Estimated)	Submitted by TVNL as additional information (Actual)	Now Approved by the Commission
Capacity	A	MW	420	420	420	420
PLF	B	%	74.88%	70.48%	66.69%	74.88%
Gross Generation	C=Ax1000 x8760 x B/10^6	MU	2755	2593	2453.69	2754.98*
Heat Rate	D	kcal/kWh	2500	2965	2985.14	2985.14
Specific oil consumption	E	ml/kWh	2.00	3.02	4.42	2.0
Calorific value of oil	F	kcal/kl	10,000	9359	9359.00	9359.00
Auxiliary Consumption	G	%	9.00%	9.00%	10.06%	9.0%
Net Generation	H=C x (1-G)	MU	2507.04	2359.72	2206.92	2507.04*

Parameters	Formula	Unit	Unit I&II			
			Approved by the Commission in the TO of FY 2010-11	Submitted by TVNL in its Tariff Petition for FY 2011-12 (Estimated)	Submitted by TVNL as additional information (Actual)	Now Approved by the Commission
Calorific value of coal	I	kcal/kg	4300	4300	4080.07	4080.07
Overall heat	J=C x D	kcal	6887462.40	7688542	7324615.614	8224024.166
Oil consumption	K=C x E	kl	5509.97	7831.16	10855.70	5509.97
Heat from Oil	L=K x F/1000	kcal	55099.70	73291.85	101598.50	51567.81
Heat from coal	M=J-L	kcal	6832363	7615250	7223017.12	8172456.36
Transit Loss	N	%	0.30%	0.30%	0.30%	0.30%
Consumption of Indian coal inc transit loss	O= M/I* 1000 /(1-N)	MT	1593703	1776317	1775643.0	2009044.8
Cost of oil per kl	P	Rs/kl	43269.11	43705.00	48300.13	48300.13
Cost of coal per MT without transit loss	Q	Rs/MT	1477.30	1378.00	1424.05	1424.05
Total cost of oil	R=P x K /10^7	Rs Cr	23.84	34.23	52.43	26.61
Cost of coal	S=OxQ/10^7	Rs Cr	235.44	244.74	252.86	286.61
Total Fuel Cost	T=R+S	Rs Cr	259.28	**278.96**	**305.29**	**312.71**
Per unit oil cost	U=R/H*10	Rs/kWh	0.10	**0.15**	**0.24**	**0.11**
Per unit coal cost	V=S/H*10	Rs/kWh	0.94	**1.04**	**1.15**	**1.14**
Per unit fuel cost	**W=U+V**	Rs/kwh	**1.03**	**1.18**	**1.38**	**1.25**
Inefficient cost disallowed	**Y**	Rs. Cr				**37.44**
Net Fuel cost allowed	**Z**	Rs. Cr				**275.27**

* This is the target generation as per the target PLF of 74.88% given by the Commission in the previous Tariff Order. The Commission has approved gross generation at 2453.69 MU and net generation at 2232.86 MU but used the target generation to disallow inefficient cost of TTPS.

Project Cost Structure

Petitioner's submission

5.56 The Petitioner has submitted that the Commission had approved the project cost at the end of FY 2009-10 as Rs 1360.58 Cr based on the additional capitalisation of Rs 8.68 Cr but the Petitioner was able to capitalise the assets amounting to Rs 5.97 Cr only. Accordingly, the opening balance of the project cost for FY 2010-11 amounts to Rs 1357.87 Cr. The Petitioner has submitted that it plans to infuse equity of Rs 39.99 Cr on account of asset additions for FY 2010-11.

5.57 The following is the proposed project cost structure for FY 2010-11:

Table 11: Proposed Cost structure for FY 2010-11

Particulars	Amount (Rs. Cr)
Project cost at start of 2009-10	1351.90
Additional capitalization in 2009-10	5.97
Total Project Cost at the start of FY 2010-11	1357.87
Additional capitalisation in FY 2010-11	39.99
Total Project Cost at the end of FY 2010-11	1397.86

Commission's analysis

5.58 The Commission had asked the Petitioner to submit the details of the capitalised assets of Rs 39.99 Cr being claimed by it for FY 2010-11. The Petitioner submitted the details of assets amounting only to Rs 19.25 Cr only and further stated that the accounts for FY 2010-11 are not yet ready so it is difficult at this point of time to provide with such details.

5.59 The Commission based on the submission made by the Petitioner approves the additional capitalisation of Rs 19.25 Cr and the same will be trued up when the audited annual accounts for FY 2010-11 are made available by the Petitioner.

5.60 Therefore, the Commission approves the project cost of Rs 1377.12 Cr which includes additional capitalisation of Rs 19.25 Cr for FY 2010-11.

5.61 Based on the submission made by the Petitioner, the Commission approves the following project cost for FY 2010-11:

Table 12: Approved Project cost structure (Rs Cr)

Item	Amount
Project cost at start of FY 2010-11	1357.87
Additional capitalization in FY 2010-11	19.25
Total Project Cost	1377.12

5.62 The Commission has observed that there is inadequate information available for the Commission to ascertain the funding details of the project structure and the Petitioner needs to reconcile the same. The Commission has given directions on the same in the Directives section of this Order.

5.63 In the meantime, the Commission has approved the funding structure for FY 2010-11 as per the methodology followed by the Commission in the previous Tariff Order for FY 2010-11.

Operation & Maintenance (O&M) Expenses

Petitioner's submission

5.64 The Petitioner has submitted that the O&M expenses of the generating station include employee cost, administrative and general expenses, repairs and maintenance and consumption of stores & spares.

5.65 Table 13 details the O&M expenses submitted by the Petitioner for FY 2010-11:

Table 13: Proposed O&M Expenses for FY 2010-11 (Rs Cr)

Particulars	FY 2010-11
Employee Cost	50.65
A&G Expenses	5.85
R&M	-
O&M (Works and spares)	71.59
Total	**128.09**

Commission's analysis

5.66 The Commission observed that the O&M expenses claimed by the Petitioner are very high and not based on the 'JSERC Generation Tariff Regulations, 2004', according to which, for plants set up before 01.04.2004, the O&M should considered at 2.50% of the capital cost, escalated @ 6% p.a.

5.67 The Commission has approved the O&M expenses for FY 2010-11 in line with the said regulations. The O&M expenses approved for FY 2010-11 amount to Rs 75.30 Cr, which is based on 2.50% of initial project cost of Rs 1247.04 Cr and average capitalisation in each year, escalated at the rate of 6% per annum till the FY 2010-11.

5.68 The Petitioner in the additional information has submitted that it has disbursed an amount Rs 9.11 Cr on account of sixth pay Commission in FY 2010-11. The Commission after verifying has allowed the same subject to the condition that the same would be trued up next year as per the audited annual accounts for the said year.

5.69 The Commission in the previous Tariff Order had also allowed a sum of Rs 7.45 Cr as CISF cost and had directed the Petitioner to provide the following details of the expenses projected under CISF security cost along with the next tariff petition :

a) Name & designation of the CISF personnel involved with their respective salaries; and

b) Deployment against each CISF personnel

5.70 The Petitioner in the additional information has submitted the month-wise details of the CISF cost but has not submitted the details as directed by the Commission in the previous Tariff Order of FY 2010-11, as mentioned in section 5.69 above. The reply submitted by the Petitioner was not found satisfactory and therefore the Commission has disallowed this cost. The same will be considered in the next Tariff Order provided the above mentioned information is submitted by the Petitioner.

Depreciation

Petitioner's submission

5.71 The Petitioner has calculated the depreciation on historical capital cost of the assets. Depreciation is calculated annually as per the straight line method at the rates prescribed in the schedule attached in appendix-II of the 'JSERC Generation Tariff Regulation, 2004'.

5.72 The depreciation expense submitted by the Petitioner is detailed in Table 14 below:

Table 14: Proposed Depreciation Expenses for FY 2010-11 (Rs Cr)

Item	FY 2010-11
Depreciation for Plant	45.64
Depreciation for HO	0.13
Depreciation for Additional Capitalization	0.70
Total	**46.48**

Commission's analysis

5.73 The depreciation expenses are calculated on the historical cost of the asset based on the straight-line method over the useful life of the asset. According to the JSERC 'Generation Tariff Regulations, 2004', depreciation is allowed up to a maximum of 90% of the historical cost of the asset.

5.74 In the previous Tariff Orders, the Commission has given directives to the Petitioner to maintain proper records of its fixed assets in the form of a fixed assets register. The Petitioner has submitted that it is maintaining proper records of its fixed assets in the form of fixed assets registers and compliance report of the same will be shortly submitted to the Commission. However, the Commission has neither received any compliance report nor has received any details of the depreciation in the manner specified by the Commission. The Commission has given directions to the Petitioner on the above regard in the Section 8 of this Order.

5.75 Meanwhile, the Commission has computed the depreciation based on the asset classification, cost of acquisition and additional capitalisation made available by the Petitioner and has thus approved the depreciation charges of Rs 46.15 Cr for FY 2010-11.

5.76 Table 15 below details the depreciation approved by the Commission for FY 2010-11:

Table 15: Approved Depreciation Expenses for FY 2010-11 (Rs Cr)

Item	FY 2010-11
Depreciation for Plant	45.65
Depreciation for HO	0.13
Depreciation for Additional Capitalization	0.37
Total	**46.15**

Interest on Loan

Petitioner's submission

5.77 The Petitioner has submitted interest on loan as Rs 83.06 Cr for FY 2010-11. The Table 16 summarises the outstanding loan and interest estimated by the Petitioner for FY 10-11:

Table 16 : Details of the Outstanding Loan and Interest Payable in FY 2010-11 (Rs Cr)

Name of the Institution	Balance at the beginning of the year	Loan received during the year	Repayment during the year	Balance outstanding at the end of the year	Rate of Interest (%)	Interest for the year
Bihar Govt. Loan	608.90	-	-	608.90	13	79.16
Jharkhand Govt. Loan	30.00	-	-	30.00	13	3.90
Total	**638.90**			**638.90**		**83.06**

Commission's analysis

5.78 The Commission observes that the Petitioner is not repaying its loan due to its inability to collect dues from JSEB. The Petitioner should work out an effective mechanism to recover the amount due from JSEB. The Commission feels that had there been timely repayment of loans, the interest on account of the loan would have come down.

5.79 Meanwhile, the Commission allows the aggregate interest of Rs. 83.06 Cr for the existing debt for FY 2010-11. It also directs the Petitioner to restructure its outstanding debt at the earliest.

Interest on Working Capital (IWC)

Petitioner's submission

5.80 The Petitioner has estimated the IWC for FY 2010-11 at Rs 21.12 Cr.

Commission's analysis

5.81 The working capital requirement for FY 2010-11 has been approved as per the JSERC 'Generation Tariff Regulations, 2004'. As per the JSERC Generation Tariff Regulations, 2004 the rate of interest on working capital is to be the short-term Prime Lending Rate of State Bank of India as on 1st April of the year for which the tariff is to be determined.

5.82 For FY 2010-11, the Commission approves the IWC at the rate of 11.75% which was the prevailing SBI PLR on 1st April 2010.

5.83 The approved IWC for FY 2010-11 is summarised in Table 17:

Table 17: Approved Interest on Working Capital (Rs Cr)

Particulars	FY 2010-11
Cost of Coal for 1½ month	31.08
Secondary Fuel Oil for 1 month	2.22
Operation & Maintenance expenses for 1 month	6.27
Maintenance expenses @ 1% of Plant & Equipment	11.72
Receivables equivalent to 2 months of fixed and variable Charges	40.90
Total Working Capital	92.19
Interest on Working Capital	**10.83**

Return on Equity (RoE)

Petitioner's submission

5.84 During FY 2010-11, an amount of Rs 39.99 Cr is estimated to be infused as equity on account of addition in assets. The Petitioner has calculated return on equity of Rs 22.41 Cr at 14% p.a.

Commission's analysis

5.85 The Commission has allowed equity based on the approved capitalisation of Rs 19.25 Cr which the Petitioner has claimed that it will entirely funded through equity.

5.86 The Commission has allowed return on equity at the rate of 14% on the average equity for the FY 2010-11. Table 18 contains the return on equity approved for FY 2010-11.

Table 18: Approved Return on Equity (Rs. Cr.)

Particulars	FY 2010-11
Initial Equity at the start of FY	140.09
Equity Infusion during FY	19.25
Equity at the end of FY	159.34
Average Equity considered for the year	149.72
Return on Equity (%)	14%
Return on Equity (Rs Cr)	20.96

Non tariff Income

Petitioner's submission

5.87 The Petitioner has estimated non-tariff income of Rs 14.29 Cr during FY 2010-11. The non-tariff income includes Rs 14.21 Cr as income from fixed deposits and Rs. 0.08 Cr as income from sale of tender papers.

Commission's analysis

5.88 The Commission has scrutinized the details of non tariff income submitted by the Petitioner and observed that the details provided are as per latest available figures for the entire year and accordingly approves the same at Rs. 14.29 Cr for FY 2010-11.

Income Tax

Petitioner's submission

5.89 The Petitioner has stated that there was no assessable income for income tax and hence no tax on income has been estimated for the year FY 2010-11.

Commission's analysis

5.90 The Commission concurs with the submission made by the Petitioner.

Summary of Fixed Cost Determinants and Generation Tariff

5.91 The summary of fixed cost determinants and Generation Tariff for the two Units of Tenughat Thermal Power Station as approved by the Commission in the previous Tariff Order, as submitted by the Petitioner in the present Tariff Petition of FY 2011-12, actual submitted by the Petitioner as additional information and now approved by the Commission for FY 2010-11 is given in Table 19 below:

Table 19: Approved Fixed cost determinants and Generation Tariff for FY 2010-11

Parameters	Unit	Unit I&II			
		Approved by the Commission in the TO of FY 2010-11	*Submitted by the Petitioner in the Tariff Petition of FY 2011-12*	*Submitted by the Petitioner as additional information*	*Now approved by the Commission*
O&M charges	Rs. Cr	89.74	128.09	-	84.41
Depreciation	Rs. Cr	46.98	46.48	-	46.15
Interest on Loan	Rs. Cr	83.06	83.06	-	83.06
Return on Equity	Rs. Cr	23.73	22.41	-	20.96
Interest on Working Capital	Rs. Cr	15.89	21.12	-	10.83
Total Fixed cost	Rs. Cr	259.40	301.17	-	**245.41***
Energy Cost	Rs. Cr	259.28	278.96	305.29	275.27
Total Expenses	Rs. Cr	**518.68**	**580.13**	**606.45**	**520.68**
Less Non-tariff Income	Rs. Cr	10.97	14.29	14.29	14.29
Less Inefficient Fixed cost of TTPS*					**27.67**
Net Total Expenses	Rs. Cr	**507.71**	**565.84**	**592.16**	**478.71**
Generation Tariff	Rs/kWh	2.05#	2.42	2.68	2.14
Revenue at existing tariff	Rs Cr	514.69	480.74	452.42	457.74
(Gap)/Surplus	Rs Cr		(85.82)	(139.74)	(20.97)

Includes gap of previous year for FY 2009-10;* the inefficient fuel cost has already been accounted for in the approved fuel cost

A6: COMMISSION'S ANALYSIS OF ARR FOR FY 2011-12

6.1 The Petitioner has filed the present petition for determination of ARR and generation tariff for FY 2011-12 based on the past years performance and as per the norms specified in the 'JSERC Generation Tariff Regulations, 2010'.

6.2 The component-wise details of the Petitioner's submission and the Commission's analysis have been discussed in this chapter.

Basis of Fuel Cost & Fixed Cost Determination

Petitioner's submission

6.3 In the Petition for FY 2011-12, the Petitioner has proposed energy and fixed charges as per the terms and conditions of the PPA signed between the Petitioner and JSEB in 2005.

Commission's analysis

6.4 The PPA states that the applicable rate of sale of energy by the Petitioner to JSEB will be the rate as decided by the Commission at delivery point. Accordingly, the Commission has determined the tariff for FY 2011-12, which is in accordance with the JSERC 'Generation Tariff Regulations, 2010'.

Plant Availability Factor (PAF) and Plant Load Factor (PLF)

Petitioner's submission

6.5 The Petitioner has projected the plant availability factor of 85% for FY 2011-12.

6.6 Based on past experience of grid being backed down by JSEB, tripping of transmission lines, tripping of Units and partial load operation attributed to different technical reasons, the Petitioner has projected a PLF of 75% against the availability of 85% for FY 2011-12

Commission's analysis

6.7 As per 'JSERC, Generation Tariff Regulations, 2010', the normative availability allowable for TTPS for FY 2011-12 is 85%. However, as the Intra-state ABT mechanism would take some time to become operative, the generation from TTPS station has been projected on the basis of estimated Plant Load Factor (PLF) for the station. The Commission has also scrutinized and accepted the justification given by the Petitioner on considering 75% PLF corresponding to the 85% of plant availability as the PLF is also more than the target PLF allowed to the Petitioner for FY 2010-11.

Gross Generation

Petitioner's submission

6.8 The Petitioner has projected a gross generation of 2759.40 MUs for both the units based on the projected PLF for FY 2011-12.

Commission's analysis

6.9 The Commission approves the gross generation of 2759.40 MUs for FY 2011-12 based on the approved PLF for the said year.

Auxiliary Consumption

Petitioner's submission

6.10 The Petitioner has projected auxiliary consumption of 9.50% for FY 2011-12.

Commission's analysis

6.11 Auxiliary consumption refers to the quantum of energy consumed by the auxiliary equipment of the generating station. Higher auxiliary consumption reduces the net generation of a generating station.

6.12 As per 'JSERC, Generation Tariff Regulations, 2010', the auxiliary consumption specified for TTPS for FY 2011-12 is 9.50%. Since, the Petitioner's submission is in line with the applicable Regulations, the Commission approves the auxiliary consumption of 9.50% for FY 2011-12 as submitted by the Petitioner.

Net Generation

Petitioner's submission

6.13 The Petitioner has projected net generation of 2497.26 MUs for FY 2011-12.

Commission's analysis

6.14 The Commission approves net generation of 2497.26 for FY 2011-12 based on the approved gross generation of 2759.40 MU and the auxiliary consumption of 9.50% for the said year.

Station Heat Rate (SHR)

Petitioner's submission

6.15 The Petitioner has projected a SHR of 3043 kcal/kWh for FY 2011-12.

Commission's analysis

6.16 'JSERC, Generation Tariff Regulations, 2010', specify SHR of 3043 kcal/kWh for TTPS station for FY 2011-12.

6.17 The Commission has observed that the actual SHR for FY 2010-11 at 2985 kcal/kWh is lower than the approved norms for FY 2011-12.

6.18 'JSERC, Generation Tariff Regulations, 2010' clarifies that the norms of operation specified under the regulations are the threshold norms and this shall not preclude the generating company and the beneficiaries from agreeing to improved norms of operation and in such case improved norms shall be applicable for the determination of tariff. The Commission encourages the Petitioner to take necessary actions to achieve the SHR of a lesser value than the applicable norms and in the meanwhile, approves the normative SHR of 3043 kcal/kWh for FY 2011-12 subject to the condition that the same shall be trued-up when the actual figures are made available by the Petitioner.

Specific Oil Consumption

Petitioner's submission

6.19 The Petitioner in its Tariff Petition for FY 2011-12 has submitted that as per the 'JSERC Generation Tariff Regulations, 2010', the normative specific oil consumption for TTPS has been specified as 1 ml/kWh whereas historically the actual specific oil consumption has been in the range of 2.5-3.5 ml/kWh.

6.20 The Petitioner has further stated that as per CERC Generation Regulations, 2009 specifies a higher specific oil consumption of 2-3 ml/kWh for plants operated by DVC which fall in the same region as petitioner. Therefore, the petitioner has requested the Commission to approve the specific oil consumption of 2ml/kWh for FY 2011-12

Commission's analysis

6.21 The specific oil consumption is the amount of secondary fuel (in ml) consumed in the process of generation of one unit of power produced (in kWh). A lower specific oil consumption lowers the consumption of the secondary fuel in the generation process, and hence lowers the secondary fuel cost.

6.22 The Petitioner has claimed a specific oil consumption of 2 ml/Kwh, in line with the norms specified in the CERC Generation Regulations, 2009 for DVC stations. It is also worth mentioning that most of the NTPC stations, which are much older plants than that of the Petitioner, have a specific oil consumption of even lower than 0.75/ml.

6.23 Moreover, the Commission has notified the 'JSERC Generation Tariff Regulations, 2010', in consultation with all stakeholders. As per these regulations, the norm for specific oil consumption has been fixed at 1ml/kWh for TTPS station for FY 2011-12.

6.24 Therefore, the Commission approved the specific oil consumption of 1ml/kWh for FY 2011-12.

Cost of secondary fuel oil

Petitioner's submission

6.25 The cost of secondary fuel oil calculated by the Petitioner is given in the Table 20 below:

Table 20: Proposed Secondary fuel oil consumption

Particulars	FY 2011-12
Specific oil Consumption in ml/kWH	2
LPSFi in Rs/ml	0.051872
Normative Plant Availability Factor in %	85%
Number of Days in Year	365
Installed capacity in MW	420
Annual cost of secondary fuel	32.44

Commission's analysis

6.26 As per JSERC 'Generation Tariff Regulations, 2010', the cost of secondary fuel oil is to be considered a part of the fixed cost component.

6.27 The Commission has calculated the cost of secondary fuel oil as Rs 17.39 Cr for FY 2011-12. The details of the secondary fuel oil consumption allowed by the Commission is given in the Table 21 below:

Table 21: Approved Secondary fuel oil consumption

Particulars	FY 2011-12
Specific oil Consumption in ml/kWH	1
Weighted average landed price of secondary fuel oil consumption (Rs/ml)	0.056
Normative Plant Availability Factor in %	85
Number of Days in Year	365
Installed capacity in MW	420
Expenses on secondary fuel	17.39

Gross Calorific Value (GCV) Of Primary and Secondary Fuel

Petitioner's submission

6.28 The projected gross calorific value of coal and oil submitted by the petitioner is 4300 kcal/kg and 9350 kcal/kl respectively for FY 2011-12. The Petitioner sources Grade D coal from the collieries of Central Coal Fields Limited.

Commission's analysis

6.29 Calorific value of a fuel refers to the amount of heat released on burning one unit of the fuel. Thus, a higher GCV indicates better quality of fuel and also lowers fuel cost, since it lowers the consumption of fuel needed for producing the required amount of energy.

6.30 The 'JSERC Generation Tariff Regulations, 2010' specifies that the GCV of fuel oil and coal incurred by the generating company shall be taken based on the actual of the weighted average gross calorific value for three preceding months and in the absence of weighted average gross calorific value for three preceding months, latest weighted average gross calorific value for the generating station, before the start of the year.

6.31 The Commission noticed that the Petitioner's submission was not in line with the norms specified in the said Regulations ie the Petitioner had not calculated GCV of coal and oil for FY 2011-12 based on the actual weighted average of the GCV of coal and oil for the preceding three months.

6.32 Accordingly, the Commission asked the Petitioner to submit the consumption and GCV of coal and oil for the month of January'2010 , February'2010 and March'2010 being the preceding three months from the start of FY 2011-12. The information was made available by the petitioner vide letter dated 12th May,2010. The Petitioner vide the same letter has requested the Commission to consider the latest figures submitted by it.

6.33 The Commission has analyzed the information submitted by the Petitioner and accordingly approved the GCV of coal as 4132.43 kcal/kg and GCV of coal as 9359 kcal/kl respectively for FY 2011-12

Price of Primary and Secondary Fuel

Petitioner's submission

6.34 The Petitioner has submitted the actual delivered coal price as Rs 1402/MT and delivered oil price as Rs 51872/kl for FY 2011-12.

Commission's analysis

6.35 The 'JSERC Generation Tariff Regulations, 2010' specifies that the price of fuel oil and coal incurred by the generating company shall be taken based on the actual of the weighted average price for three preceding months and in the absence of weighted average price for three preceding months, latest weighted average procurement price for the generating station, before the start of the year.

6.36 The Commission noticed that the Petitioner's submission was not in line with the norms specified in the said Regulations ie the Petitioner had not calculated price of coal and oil for FY 2011-12 based on the actual weighted average price of coal and oil for the preceding three months.

6.37 Accordingly, the Commission asked the Petitioner to submit the actual consumption and price of coal and oil for the month of January'2010 , February'2010 and March'2010 being the preceding three months from the start of FY 2011-12. The information was made available by the petitioner vide letter dated 12th May,2010. The Petitioner vide the same letter has requested the Commission to consider the latest figures submitted by it.

6.38 The Commission has analyzed the information submitted by the Petitioner and accordingly, approved the price of coal as Rs 1505/MT and oil as Rs 55619/kl respectively for FY 2011-12

Transit Loss

Petitioner's submission

6.39 The Petitioner has proposed 0.2% transit loss of coal for FY 2011-12.

Commission's analysis

6.40 The JSERC 'Generation Tariff Regulations, 2010' allow transit loss of 0.2% for pithead generating stations. Since the transit loss submitted by the Petitioner is in line with the Regulations, the Commission approves the transit loss of 0.2% for FY 2011-12.

Summary of Plant Parameters & Fuel Cost Determinants

6.41 The summary of plant parameters and fuel cost determinants for the two Units of Tenughat Thermal Power Station as submitted by the Petitioner and approved by the Commission for FY 2011-12 is given in Table 22

Table 22: Plant parameters & Fuel Cost Determinants for FY 2011-12

Parameters	Unit I&II			
	Units	*Submitted by TVNL in the Tariff Petition of FY 2011-12 (Projected)*	*Submitted by TVNL as per the additional information*	*Approved by the Commission*
Capacity	MW	420	420	420
Availability	%	85%	85%	85%
PLF	%	75%	75%	75%
Gross generation	MU	2759	2759.40	2759.4
Auxiliary Consumption	%	9.50%	9.50%	9.50%
Net units sent out	MU	2497	2497.26	2497.26
Gross station heat rate	Kcal/kWH	3043	3043	3043
Specific oil consumption	ml/kWh	2	2	1
Calorific value of secondary fuel	Kcal/ml	9359	9.359	9.359
Weighted average landed price of coal	Rs/kg	1.4028	1.505	1.505
Calorific value of Coal	Kcal/kg	4300	4132.43	4132.43
Energy charge rate	Rs/kWH	1.09	1.2167	1.2205
Energy Charge	**Rs Cr**	**272.25**	**303.85**	**304.79**

Project Cost Structure

Petitioner's submission

6.42 The Petitioner has submitted the following details on the funding of the project :

Table 23: Details of Funding of the Project

Particulars	Amount (Rs. Cr)
Project cost at start of 2011-12	1397.86
Additional capitalization in 2011-12	38.66
Total Project Cost	1436.52

6.43 The Petitioner has submitted that it plans to infuse equity of Rs 38.66 Cr on account of asset additions. Since, the investment would be spread over the year, the Petitioner has projected average equity of Rs 199.41 Cr for FY 2011-12.

Commission's analysis

6.44 The Commission has observed that there is inadequate information available for the Commission to ascertain the funding details of the project structure and the Petitioner needs to reconcile the same. The Commission has given directions on the same in the Directives section of this Order.

6.45 Meanwhile, the Commission has approved the project cost at the start of FY 2011-12 as Rs 1377.12 Cr which is same as the project cost approved by the Commission at the end of FY 2010-11.The additional capitalisation of Rs 18.61 Cr is approved by the Commission based on the approved capitalisation for FY 2010-11. It is assumed that the additional capitalisation is funded through the debt equity ratio of 70:30 ie. the normative loan funding in additional capitalisation is computed as Rs 13.03 Cr and normative equity funding in additional capitalization is computed as Rs 5.58 Cr for FY 2011-12. Based on the above, the Commission approves the following project cost for FY 2011-12:

Table 24: Approved Project cost structure (Rs Cr)

Item	FY 2011-12
Project Cost at the start of FY	1377.12
Additional Capitalisation	18.61
Normative debt contribution in additional Capitalisation	*13.03*
Normative Equity contribution in additional Capitalisation	*5.58*
Project cost at the end of FY	1395.73

Operation & Maintenance (O&M) Expenses

Petitioner's submission

6.46 The Petitioner has submitted that the O&M expenses of the generating station include employee cost, repairs and maintenance, consumption of stores & spares, water charges, ash disposal, pollution control cess, insurance and other administrative and general expenses of the corporate office at Ranchi.

6.47 Table 25 details the O&M expenses projected by the Petitioner for FY 2011-12:

Table 25: O&M Expenses for FY 2011-12 (Rs Cr)

Particulars	FY 2011-12
Employee Cost	48.22
A&G Expenses	-
R&M	7.14
O&M including Capital expenditure	56.31
Total	**111.68**

Commission's analysis

6.48 The Commission observed that the O&M expenses claimed by the Petitioner are very high and not based on the 'JSERC Generation Tariff Regulations, 2010', according to which, for plants set up before 01.04.2004, the O&M should considered at 2.50% of the capital cost, escalated @ 6% p.a.

6.49 The Commission has approved the O&M expenses for FY 2011-12 in line with the said regulations. The O&M expenses approved for FY 2011-12 amount to Rs 80.29 Cr, which is based on 2.50% of initial project cost of Rs 1247.04 Cr, average capitalisation each year till FY 2010-11 and approved average capitalisation of Rs 18.61 Cr for FY 2011-12, escalated at the rate of 6% per annum till the end of FY 2011-12.

Depreciation

Petitioner's submission

6.50 The Petitioner has submitted that it has calculated the depreciation based as per the "JSERC Generation Tariff Regulations, 2010'. The depreciation expense submitted by the Petitioner is detailed in Table 26 below:

Table 26: Depreciation Expenses for FY 2011-12 (Rs Cr)

Item	FY 2011-12
Depreciation for Plant	47.69
Depreciation for HO	0.12
Depreciation for Additional Capitalization	0.46
Total	**48.27**

Commission's analysis

6.51 'JSERC Generation Tariff Regulation, 2010' has specified the following methodology for the calculation of depreciation expense

a) Depreciation shall be allowed maximum upto 90% of the capital cost of the asset and the salvage value of the asset shall be considered as 10%

b) Depreciation shall be calculated annually as per the straight line method and at the rates specified in the Appendix-I of the said Regulations.

c) In case of existing projects, during the transition period the balance depreciable value as on 01.04.2011 shall be worked out by deducting the cumulative depreciation including AAD as admitted by the Commission upto 31.03.2011 from the gross depreciable value of the assets.

d) The rate of depreciation shall be continued to be charged at the rate specified in Annexure-I till the cumulative depreciation reaches 70%. Thereafter the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.

6.52 The Commission noticed that the depreciation submitted by the Petitioner was not in consonance with the 'JSERC Tariff Regulations, 2010' for old generation stations. On scrutiny, the Commission observed that the Petitioner had wrongly adopted the methodology that is to be used for calculating the depreciation for new generating stations.

6.53 Accordingly, the Commission asked the Petitioner to resubmit the revised figure of depreciation for FY 2011-12. Subsequently, the Petitioner as additional information submitted a figure of Rs 70.96 Cr against the depreciation for FY 2011-12.

6.54 For FY 2011-12, the Commission has approved capitalisation of Rs 18.61 Cr and has considered that the whole investment will not be made at the starting of the year rather it will be spread over the year. Thus, the Commission has calculated the depreciation on the assets added during the year by taking the average of Rs 18.61 Cr which comes out to Rs 9.30 Cr and has been considered at an average depreciation rate However, the same shall be trued-up, when the actual details of the capital expenditure are made available by the Petitioner in the next Tariff Petition of FY 2012-13.

6.55 The Commission has adopted the methodology specified in the 'JSERC Generation Tariff Regulations, 2010' and accordingly approved the depreciation for FY 2011-12 at Rs. 69.28 Cr. The Table 27 details the depreciation approved by the Commission for FY FY 2011-12:

Table 27: Approved Depreciation Expenses for FY 2011-12 (Rs Cr)

Item	FY 2011-12
Depreciation for Plant	68.70
Depreciation for HO	0.12
Depreciation on the assets added during the year	**0.47**
Total	**69.28**

6.56 As mentioned earlier, in the previous Tariff Orders, the Commission has given directives to the Petitioner to maintain proper records of its fixed assets in the form of a fixed assets register. The Petitioner has submitted that it is maintaining proper records of its fixed assets in the form of fixed assets registers and compliance report of the same to the Commission will be submitted shortly. However, the Commission has neither received any compliance report nor has received any details of the depreciation in the manner specified by the Commission. The Commission has given directions to the Petitioner on the above regard in the Section 8 of this Order

Interest on Loan

Petitioner's submission

6.57 The Petitioner has submitted interest on loan as Rs 83.06 Cr for FY 2011-12.

6.58 The Petitioner has submitted that the loan outstanding as on 31.03.2010 is Rs. 638.90 Cr. This comprises of Rs 608.90 Cr loan from Bihar Government and Rs. 30 Crore loan from Jharkhand Government. As per the terms and conditions, State Government loan is repayable in 15 equal instalments. However, the Petitioner has submitted that it is not able to repay loan due to non-recovery of dues from JSEB.

6.59 Table 28 summarises the outstanding loan and interest to be paid in FY 2011-12:

Table 28 : Details of the Outstanding Loan and Interest Payable in FY 2011-12 (Rs Cr)

Name of the Institution	Balance at the beginning of the year	Loan received during the year	Repayment during the year	Balance outstanding at the end of the year	Rate of Interest (%)	Interest for the year
Bihar Govt. Loan	608.90	-	-	608.90	13	79.16
Jharkhand Govt. Loan	30.00	-	-	30.00	13	3.90
Total	**638.90**			**638.90**		**83.06**

Commission's analysis

6.60 The Commission observes that the Petitioner is not repaying its loan due to its inability to collect dues from JSEB. The Petitioner should work out an effective mechanism to recover the amount due from JSEB. The Commission feels that had there been timely repayment of loans, the interest on account of the loan would have come down.

6.61 The Commission has computed the interest on loan on normative basis as per the 'JSERC Generation Tariff Regulations, 2010'..

6.62 Table 29 details the interest on loan approved by the Commission for FY 2011-12.

Table 29: Approved Interest on Loan (Rs Cr)

Particulars	FY 2011-12
Normative Opening Loan *	652.73
Repayment (Equal to depreciation)	69.28
Additions (Debt component of Addl. Capitalisation)	13.03
Normative Closing Loan	596.47
Normative Average Loan	624.60
Interest on loan	81.20

* The normative loan has been worked out as per the 'JSERC Generation Regulations, 2010.

Interest on Working Capital (IWC)

Petitioner's submission

6.63 The Petitioner has submitted that it has calculated the Interest on working capital in accordance with the 'JSERC, generation tariff Regulations, 2010'.

6.64 Table 30: contains the details of the interest on working capital as submitted by the Petitioner:

Table 30: Interest on Working Capital (Rs Cr)

Particulars	FY 2011-12
Cost of coal for 1.5 months corresponding to Normative availability	38.10
Secondary fuel oil for 2 month normative availability	5.41
O&M Expenses for 1 month	9.31
Maintenance spares @ 20% of O&M	22.34

Receivables- 2 months of fixed and variable charges corresponding to normative availability	111.79
Total Working Capital	187.42
Interest on Working Capital (12.50%)	23.43

Commission's analysis

6.65 The working capital requirement for FY 2011-12 has been approved as per the JSERC 'Generation Tariff Regulations, 2010'. As per the JSERC Generation Tariff Regulations, 2010 the rate of interest on working capital is to be the short-term Prime Lending Rate of State Bank of India as on 1st April of the year for which the tariff is to be determined.

6.66 'JSERC Generation Tariff Regulations, 2010' specify the following norms for calculation of interest on working capital:

a) Cost of Coal for 1.5 months for pithead generating stations and for 2 months in non-pithead generating stations for generation corresponding to the Normative Annual Plant Availability Factor;

b) 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;

c) Maintenance spares @ 20% operation and maintenance expenses

d) Operation and maintenance expenses for 1 month

e) Receivables equivalent to 2 months of capacity and energy charges from sale of electricity calculated on the NAPAF.

6.67 The Commission approves the interest on working capital for FY 2011-12 at the rate of 13.25% which was the prevailing SBI PLR as on 1st April 2011.

6.68 The approved interest on working capital for FY 2011-12 is summarised in Table 31:

Table 31: Approved Interest on Working Capital (Rs Cr)

Particulars	FY 2011-12
Cost of coal- 1.5 months	38.10
Cost of secondary oil- 2 months	2.90
O&M- 1 month	6.69
Maintenance spares @ 20% of O&M	16.06
Receivables- 2 months	98.61

Total Working Capital	**162.36**
Interest on Working Capital	21.11

Return on Equity (RoE)

Petitioner's submission

6.69 The Petitioner had projected an equity infusion of Rs 38.66 Cr on account of additional capitalisation for FY 2011-12 in the Tariff Petition of FY 2011-12. Accordingly, the Petitioner has calculated the return on equity on the average equity and has submitted the return on equity of Rs 30.91 Cr for FY 2011-12.

6.70 The petitioner has also stated that it has calculated the return on equity on the base rate of 15.50% and has not grossed-up by the applicable tax rate as there is no assessable income for FY 2011-12 and thus, it is not paying any taxes for FY 2011-12.

Commission's analysis

6.71 As per 'JSERC Generation Tariff Regulations, 2010' the return on equity shall be calculated on pre-tax basis at the base rate of 15.50% to be grossed up the with the normal tax rate applicable to the generating company.

6.72 The Commission has allowed return on equity at the base rate of 15.50% considered on the average equity for FY 2011-12 as the Petitioner has submitted that it is does not have assessable income therefore, it is not paying any taxes for FY 2011-12. Table 32 contains the return on equity approved for FY 2010-11.

Table 32: Approved Return on Equity (Rs. Cr.)

Particulars	FY 2011-12
Opening equity at the start of FY	110.78
Additional infusion during the year	5.58
Closing Equity at the end of FY	116.36
Average Equity	113.57
Return on equity at 15.50%	17.60

Non tariff Income

Petitioner's submission

6.73 The Petitioner has estimated non-tariff income of Rs 16.07 Cr during FY 2011-12. The non-tariff income includes Rs. 15.98 Cr as income from fixed deposits and Rs. 0.10 Cr as income from sale of Tender Papers.

Commission's analysis

6.74 The Commission has scrutinized the details of non tariff income submitted by the Petitioner and observed that the Petitioner has projected the interest on fixed deposits at an escalation of 12.5% from previous year and sale of tender at 25% from previous year in line with the historical trend. The Commission accepts the basis of projection for various components of non-tariff income and approves the same at Rs. 16.07 Cr for FY 2011-12.

Income Tax

Petitioner's submission

6.75 The Petitioner has not projected any income tax for FY 2011-12.

Commission's analysis

6.76 The Commission accepts the submission made by the Petitioner.

Summary of Fixed Cost Determinants and total expenses

6.77 The summary of fixed cost determinants and Generation Tariff for the two Units of Tenughat Thermal Power Station as submitted by the Petitioner in the Tariff Petition of FY 2011-12, submitted by the Petitioner as additional information and approved by the Commission for FY 2011-12 is given in the Table 33

Table 33 : Approved Fixed cost determinants and total expenses for FY 2011-12

Parameters	Unit	Unit I&II		
		Submitted by the Petitioner in the Tariff Petition of FY 2011-12	*Submitted by the Petitioner as additional information*	*Approved by the Commission*
Cost of secondary fuel oil	Rs. Cr	32.44	32.44	17.39
O&M charges	Rs. Cr	111.68	111.68	80.29
Depreciation	Rs. Cr	48.27	70.96	69.28
Interest on Loan	Rs. Cr	83.06	83.06	81.20
Return on Equity	Rs. Cr	30.91	30.91	17.60
Interest on Working Capital	Rs. Cr	23.43	23.43	21.11
Total Fixed cost	Rs. Cr	**329.79**	**352.48**	**286.87**
Energy Cost	Rs. Cr	**272.25**	303.85	**304.79**
Total Expenses	Rs. Cr	**602.04**	**656.33**	**591.66**
Non-tariff Income	Rs. Cr	16.07	16.07	16.07
Net Total Expenses	Rs. Cr	**585.97**	**640.26**	**575.59**
Revenue Surplus/(gap) of FY 2010-11	Rs. Cr	**(82.10)**	**(139.75)**	**(20.97)**
ARR including gap of FY 2010-11	Rs. Cr	**668.07**	**780.01**	**596.56**
Tariff including the gap of FY 2010-11	Rs/kWh	**2.68**	**3.12**	**2.39**

A7: APPROVED GENERATION TARIFF

7.1 The Commission after the detailed analysis and review for FY 2010-11 as well as the analysis of FY 2011-12 based on the petition filed by the Petitioner for FY 2011-12, has approved the tariff of Rs. 2.39/kWh for FY 2011-12.

7.2 The summary of treatment of revenue gap/surplus and tariff approved by the Commission is given in the Table 34.

Table 34: Treatment of Revenue Gap/Surplus and Approved Generation Tariff for FY 2011-12

Particulars	Units	Approved by JSERC
Annual Revenue Requirement for FY 2011-12	**Rs. Cr**	**575.59**
Revenue (Gap)/Surplus for FY 2010-11	Rs. Cr	(20.97)
Net ARR requirement (up to FY 2011-12)	Rs. Cr	596.56
Net Generation for FY 2011-12	**MU**	2497.26
Approved Tariff for FY 2011-12	**Rs/kWh**	2.39

7.3 As shown in the above table, the tariff for FY 2011-12 works out to Rs 2.39/kWh which also covers a gap of Rs 20.97 Cr of FY 2010-11.

7.4 The tariff of Rs 2.39/kWh is applicable from 1st April 2011 onwards.

A8: STATUS OF EARLIER DIRECTIVES

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
Removal of Constraints The Commission directed the Petitioner to complete the feasibility survey and preparation of DPR for construction of 400 kV D/c transmission line from TTPS to Ranchi. The Petitioner was directed to submit a progress report on the same along with the Tariff Petition of FY 2011-12.	The Petitioner submitted that the feasibility survey and preparation of DPR for construction of 400 kV D/c transmission line from TTPS to Ranchi was carried out and submitted to Central Electricity Authority vide letter no.422/10-11 dated 21.07.10 for their kind approval. Matter under follow up with CEA. However CEA & ERPC has opinion that this may be linked with capacity addition program. CEA & ERPC has also directed to take up the work of up gradation for charging existing 220 KV line at 400 KV. Agreement has been made with M/s PGCIL vide agreement no.27/10-11 dated 29.07.10 for construction 400 KV Bays at Tenughat Switchyard for which completion period is two years. Work is yet to start.	The Commission directs the petitioner to complete the work as per the directions of CEA at the earliest and submit quarterly progress report on the same to the Commission.
Energy Audit The Commission directed the Petitioner to have energy audit of its plant carried out by an accredited energy auditor as per the provisions of the Energy Conservation Act, 2001 and submit the Energy Audit findings to the Commission. The Commission has observed that the auxiliary consumption and station heat rate that has been reported by the Petitioner in its petition is quite high. The energy audit must focus on these two issues and recommend steps along with cost and time schedule for achieving values as per norms.	The Petitioner has submitted that the work for for Energy Audit and Performance Study of Unit No. II of Tenughat TPS was awarded to M/s National Productivity Council vide work order no. 39/09-10 dated 08.10.09. Interim report on Energy Audit and Performance Study of Unit No. II of Tenughat TPS has been submitted by M/s National Productivity Council. The recommendation of M/s National Productivity Council is partially implemented rest will be implemented getting funds through recovery of dues from JSEB.	The Commission shows its displeasure on the non-compliance of the directives and Petitioner's submission that the implementation of recommendations made by NPC shall be done after getting funds from JSEB. The Commission warns the Petitioner not link the directions of the Commission with any external and unrelated issues. The Commission directs the Petitioner to implement the recommendations made by NPC at the earliest and submit quarterly progress and performance reports to the Commission. Meanwhile, the Commission has already taken a note on the issues of dues between JSEB and Petitioner and has given fresh

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
		directions on the same in the Section A9: of this Order.
Completion of MGR (Merry-Go-Round) System The Commission directed the Petitioner to ensure the work on the MGR is completed within this financial year and submit a completion report of the same to the Commission.	The Petitioner has submitted that all the works of MGR has been completed except junction arrangement at Dumri Bihar Railway station for which deposit work has been awarded to Railway. As per the latest time schedule given by Railway, work of MGR will be completed shortly. Trial run will be done in May'11. However coal transportation by MGR may take time as CCL has refused Mine linkage till FSA agreement. CCL has an outstanding of Rs.370 crore on TVNL. Due to liquidity crush , TVNL is not able to pay CCL for coal due to huge outstanding on JSEB. For any FSA with CCL, TVNL shall have to open an LC (approx. Rs.25-30 crore).	The Commission directs the Petitioner to sort out its issues with CCL and get the work started at utmost priority as this is resulting in the increased coal cost and generation tariff. The Commission directs the Petitioner to submit the status report within one month of this issue of this Order.
Spare codifications and computerized maintenance management system The Commission directed the Petitioner to take steps for implementation of ERP-SAP and submit an implementation plan. The status report for the same was to be submitted along with the tariff petition of FY 2010-11.	The Petitioner has submitted that it has taken steps for implementation of simplified ERP. Presentation on above matter has already done by M/s TCS during last month.	The Commission views that the Petitioner has not given any implementation plan on the Directives. The Commission directs the Petitioner to submit the implementation plan within one month of the issue of the Order.
Water Chemistry The Commission directed the Petitioner to maintain the DM plant properly and report to the Commission values regarding water chemistry, pH value, conductivity, oxygen content on a monthly basis.	The Petitioner has taken steps for maintaining the DM plant properly. The petitioner had started generating report regarding water chemistry, pH value, conductivity; oxygen content will be submitted to the Commission on a monthly basis from next month.	The Petitioner is directed to comply with the directions given by the Commission seriously and submit monthly information reports on monthly basis.

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
Specific oil consumption The Commission directed the Petitioner to reduce the specific oil consumption to the normative levels specified in the JSERC Generation Tariff Regulations 2004 and its amendments by the end of FY 2011-12.	The petitioner has stated that the higher specific oil Consumption (ml/Kwh) is mainly attributed due to following reasons: 1. Frequent tripping of Units due to poor quality & quantity of coal. 2. Grid backing down by JSEB. 3. Tripping of Transmission Lines: Arrangement for evacuation of power from Tenughat TPS is through the two transmission lines: ➢ Tenughat TPS to BSEB grid of Bihar Sharif Single Circuit of 400 KV line ➢ Tenughat TPS to Patratu TPS grid of 400 KV. Both lines are operating at 220 KV due to non readiness of 400 KV S/S at terminating ends. Due to constraints in existing two transmission lines, load on the units has to be regulated frequently. Apart from above due to frequent maintenance problem in transmission line, frequent tripping of units takes place, especially in summer and rainy season, which ultimately increases the consumption of primary and secondary fuel and reduces the life of the plant.	The Commission has noticed that the actual specific oil consumption for FY 2010-11 works out to 4.42 ml/kwh which clearly shows that the Petitioner has not taken adequate steps to reduce the specific oil consumption to the normative levels and instead given only reasons for non reduction of the same. The Commission directs the Petitioner to prepare an improvement plan for the reduction in specific oil consumption and submit the same to the Commission within two months of the issue of this Order.
Ash Utilization & Management As per the MOEF Notification dtd Sept 14, 1999 all existing thermal power plants as on September 1999 have to achieve ash utilization level of 100% in a phased manner by 2013-14 in accordance with 15-year action plan. In the T.O. for FY 2007-08, the directive was given by the Commission to this effect which the Petitioner has not complied with, hence is directed to take necessary initiatives to sell the ash.	The Petitioner has submitted that it has approached to cement manufacturers like Ultratech cement Co. & Burnpur Cement Co. for setting cement plant nearby Tenughat TPS and both of them are surveying the site for setting up the cement plant.	The Commission views that the Petitioner has not taken the directive of the Commission seriously and directs the Petition to comply with the directive and submit the status report of the same within two months of the issue of this Tariff Order.

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
Revision of PPA The Commission has observed that the PPA between the Petitioner and JSEB expired in August 2010. The Petitioner was directed to renegotiate the PPA at the earliest and submit the same for approval to the Commission.	The Petitioner has stated that the total power generated by Tenughat Thermal Power Station is supplied to JSEB at the tariff decided by JSERC under a Power Purchase Agreement (PPA) between TVNL and JSEB entered on 19.07.05 for 5 years. This PPA expired on 01.08.10. In spite repeated follow up JSEB pays TVNL only Rs.25 crore per month through LC against an average electricity purchase of approx Rs.40 Cr per month. Our request to JSEB to enter into PPA and an LC for Rs.45 Cr has not responded so far. Draft Power Purchase Agreement (PPA) was sent to JSEB (vide letter no.742/10-11 dated 11.10.10) and subsequent reminders have not been responded JSEB. TVNL outstanding dues on JSEB as on 31.03.11 is approx Rs.2259 crore which includes Rs.699 crore against energy charge and Rs.1560 crore against DPS w.e.f 2001. JSEB has neither taken any steps to liquidate these dues nor making full payment for monthly energy purchase. In view of the above, it is prayed before Hon'ble Commission to look into the matter & issue directive to JSEB for following: I. Liquidation of all outstanding dues within a time frame. II. Entering into fresh Power Purchase Agreement (PPA) with TVNL based on two parts tariff. III. Enhance LC amount from Rs.25 crore to Rs. 45 crore for all future energy purchase. The Petitioner has submitted that it may be allowed to sell at least 100 MW power to other consumers through Power Traders for their survival.	The Commission has given fresh directives on the revision of PPA and other matter in the Section A9: of this Order.

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
Repayment of Govt. loans The Commission is allowing certain amount by way of depreciation charge for repayment of loan every year but repayment of loan has not been undertaken. The Petitioner was required to submit the utilization of amount allowed by way of depreciation and to ensure the repayment of loan is done. The Commission observed that the interest on long term loans paid by the Petitioner is very high. The Commission directed the Petitioner to ascertain the interest rates of other banks and conduct a cost benefit analysis for restructuring of its outstanding loans. The Commission also directed the Petitioner to submit a report in this regard along with the tariff petition for FY2010-11. The Petitioner was also asked to pursue the matter of conversion of loan taken from Government into equity.	The Petitioner has submitted that due to non recovery of energy dues from JSEB, repayment of loan has not been undertaken. The amount allowed by way of depreciation is piled up with JSEB as energy dues and the repayment of loan is done only after recovery of dues from JSEB. The Petitioner has submitted that it is continuously pursuing the matter of conversion of loan taken from Government into equity.	The Commission views that the Petitioner should not link the Repayment of Loan with the recovery of dues from JSEB and work out a mechanism to liquidate the Govt Loan either through repayment or conversion of equity. Meanwhile, the Commission has given fresh directives on the issue of recovery of dues with JSEB in the Section A9: of this Order.
Improvement in performance of Operational parameters The Commission notes that the operational performance of the Petitioner is very low. In particular, the SHR and PLF can be improved further. The Commission directed the Petitioner to submit an improvement plan for both its units along with the Tariff Petition of FY 2011-12.	The Petitioner has submitted that for improvement of operational performance of Tenughat TPS it has identified weak areas and action plan was made for the same. Gist of action is as follow: 1. 400KV Switchyard revival 2. UAT Commissioning 3. HP Heater revival 4. Max DNA- Turbine Controls(Order Placed on BHEL) 5. New Coal Mines-Linkage with Rail through MGR 6. HP-LP Bypass up gradation 7. Rehabilitation of CHP for	The Commission warns the Petitioner not link the directions of the Commission with any external and unrelated issues. The Commission directs the Petitioner to implement the action plan at the earliest and submit quarterly progress and performance reports to the Commission.

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
	receiving MGR 8. 6.6KV Bus Transfer Scheme of CW, CHP, Unit-I & II 9. Revival of Milling System The Petitioner has planned to start implementation on above action plan from FY 2011-12 for which it requires approx.Rs.100crore during this year. Implementation on above action plan will depends up on timely release of payment by JSEB.	
Issues in Accounting Treatment of Expenses The Commission directed the Petitioner to submit a report on the end result of the same.	The Petitioner has stated that it has placed Work order no.01/10-11 dated 14.04.10 for the Accounts manual.	The Commission directs the petition to get the work completed and submit the implementation plan within two months of the issue of this Order.
Break-Up of Repair Works In its Tariff Order for FY 2007-08, Commission had allowed a sum of Rs.9.23 Cr., being the half of the estimated sum required for repair of Unit-I by BHEL. The Commission directs the Petitioner to provide the detailed break-up of repair works done by BHEL for Unit-1 within 3 months of the issue of this order. The petitioner was directed to provide the break-up of the repair works to the Commission.	As desired, break up of repair work of Unit-I by BHEL will be submitted separately.	The Commission directs the petitioner to submit the break-up of the repair works with the next Tariff petition otherwise the Commission would disallow any cost of Rs. 9.23 Cr in the next tariff Petition.
Fixed Asset Registers The Commission had observed that the Petitioner is not maintaining a proper record of its fixed assets in the form of a fixed assets register. Maintenance of a FAR helps the company in monitoring of impairment of assets and its impact on the financial situation of the company, overall control and monitoring of assets and also for deriving information for costing purposes and/or statutory proceedings including a statutory audit.	The work of maintaining a proper record of its fixed assets in the form of a fixed assets register has not started as yet due to financial crunch.	The Commission has given fresh directives on the Directive in the Section A9: of this Order.

Directives given in Previous Tariff Orders	Status Update by Petitioner	Views of the Commission
The Petitioner was thus directed to create and maintain a FAR and to submit a compliance report of the same to the Commission within six months of issue of the Tariff Order of FY 2010-11.		
Details of Outages **The Petitioner was directed to give the details of outages of the station as per the format prescribed in Annexure 2 of the Tariff Order and furnish information to the Commission on the quarterly basis.**	The details of outages of the station as per the format prescribed in Annexure-2 of the Tariff Order will be furnished for information to the Commission on the quarterly basis from FY 2011-12.	The Commission is very disappointed with the attitude of the Petitioner of not submitting the information. The Commission directs the petitioner to comply with the Directives and submit information on quarterly basis.
Details of CISF Cost **The Commission directed the Petitioner to provide the following details of the expenses projected under CISF security cost along with the next tariff petition :** **a) Name & designation of the CISF personnel involved with their respective salaries; and** **b) Deployment against each CISF personnel.**	Details of cost of CISF have already submitted.	The Commission has observed that the Petitioner has not submitted the details as per the directions in the Previous Tariff Order. Therefore, the Commission has disallowed the CISF cost of Rs 7.45 Cr as allowed by the Commission in the previous Tariff Order for FY 2010-11. The Commission warns the Petitioner to submit the information in the desired form with the next tariff petition otherwise the cost pertaining to the previous years would not be considered in future years.

A9: NEW DIRECTIVES

The Commission throughout the Tariff Petition has observed that some areas of the operational and financial performance of the petitioner need immediate attention. Therefore, the Commission in addition to the earlier directives given in Section 8 of this Order is issuing the following new directives.

Revision of PPA & Recovery of Dues

9.1 The Commission has observed that the Power Purchase Agreement (PPA) between the Petitioner and the purchaser-JSEB has already expired in August 2010. The Commission in its previous Tariff Order had directed the Petitioner to renegotiate its PPA and get the same ratified by the Commission.

9.2 In compliance to the same, the Petitioner has submitted that it has already sent the PPA to JSEB vide letter no. 742/10-11 dated 11th October, 2010, for its comments but even after repeated reminders, it has not received any response from JSEB.

9.3 The Commission is displeased with the events and views that it is a matter of grave concern that the Petitioner and JSEB have not executed the PPA even after almost one year of expiry of the earlier PPA.

9.4 The Petitioner has also raised its concern regarding the non-recovery of dues from JSEB. The Petitioner has submitted that the total outstanding due on JSEB as on 31.03.2011 is approx Rs 2259 Cr and has suggested enhancement of LC amount for all future energy purchase or sale of power to other consumers for their survival.

9.5 The Commission views that due to the above mentioned issues raised by the Petitioner, the financial position of the Petitioner is deteriorating. In view of this, the Commission allows the Petitioner to sell upto 50 MW of power to other licensees/consumers and also directs the Petitioner to discuss the above mentioned issues with JSEB and may include the above issues in the PPA to be executed with JSEB.

9.6 The Commission also directs the Petitioner and JSEB to execute the PPA within one month of the issue of this Tariff Order. The Commission also directs the Petitioner that if JSEB doesn’t comply within one month of the issue of this Order, then the Petitioner, after getting the PPA ratified by the Commission, can treat it as final.

Maintenance of data recording system

9.7 The Petitioner is directed to frame out an effective plan for maintenance of the data recording system. For any generating station, it is very important to compare the actual parameters with normative targets. The Petitioner is directed to ensure that the system should be such, that the daily details of the operational parameters are updated in the system which could also be accessible to the management at the head office. This will not only help the Petitioner to identify roadblocks in the smooth functioning of the station but also to take a quick decision for rectification of the same.

Quality of coal

9.8 The Petitioner has submitted that the coal quality is very poor because of which it unable to maintain the SHR at the normative levels. The Petitioner is directed to look into the reason for supply of such inferior quality of coal and make remedial measures and inform the Commission within next three months.

Reconciliation of the project cost

9.9 As referred in the 5.62, the Petitioner is directed to provide complete details of the project cost along with the sources of funding. The Petitioner should submit the loans details along with the repayment made against each of them within three months of the issuance of this Order.

Status of Audited Accounts

9.10 The Petitioner has submitted the status and steps taken for auditing of accounts as additional information to the Commission. The Petitioner has stated that the activity of auditing of accounts has commenced.

9.11 The Commission has taken a serious note of the status of auditing of accounts and directs the petitioner to get the accounts audited at the earliest and submit quarterly progress report to the Commission.

Discrepancies in the Tariff petition

9.12 The Commission observed a lot of discrepancies in the Tariff petition of FY 2011-12 filed by the petitioner. The Petitioner is directed to be very careful while filing Tariff Petition in future years.

Adjustment of Bills & payments/receipt as per revised cost of power sold to JSEB

9.13 The Commission directs the petitioner to reconcile the payment due/receipts with JSEB, in lieu of the revised Generation Tariff for power sold to JSEB, as determined by the Commission in this Tariff Order, within one month of the issue of this order. The Generation Company is required to generate a supplementary bill for the reconciled billed amount and submit the same to JSEB.

Data adequacy in next Tariff petition and timelines

9.14 The Commission directs the Petitioner to come up with the next tariff petition for FY 2012-13 removing the various data deficiencies highlighted throughout the Tariff Order along with the audited accounts for FY 2010-12 and latest actual figures of FY 2011-12.

9.15 The Commission also directs the Petitioner to file the Business Plan and MYT tariff petition for the control period FY 2012-13 within the stipulated time.

This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on this the 31st day of May, 2011.

Date: 31st May, 2011

Place: Ranchi

Sd/-	Sd/-
(T.MUNIKRISHNAIAH)	(MUKHTIAR SINGH)
MEMBER (E)	CHAIRPERSON

ANNEXURE-I

List of participating members of public in the public hearing

S No	Address / Organisation if any
Anil Kumar	MD, TVNL, Hinoo, Ranchi
S.R. Singh	EEE, TVNL, Hinoo, Ranchi
N K Saha	F&A, TVNL, Hinoo, Ranchi
S.C. Mishra	CE(C& R), JSEB, Ranchi
M.K Prasad	Dir. Accounts, TVNL
Saurabh Shanker	E & Y Delhi, Consultant of TVNL