

# Tariff order for Tenughat Vidyut Nigam Limited for FY 2005-06

**Jharkhand State Electricity Regulatory Commission (JSERC)**

## CHAPTER 2

### REVIEW OF PERFORMANCE IN FY 2004-05

**2.1** TVNL is a Government of Jharkhand undertaking, generating electricity. TVNL had filed its petition on March 31, 2004 for setting generation tariff for the FY 2004-05. The Commission issued the Generation Tariff Order of FY 2004-05 for TVNL on August 23, 2004. The Commission approved an aggregate tariff of Rs. 1.83 per unit that comprised fixed charge of Rs.1.05 per unit and variable charge of Rs.0.78 per unit.

**2.2** In the Generation Tariff Order for TVNL for FY 2004-05, the Commission had approved a two-part tariff comprising of fixed and variable charges, based on the historic cost approach. While analyzing the fixed cost components, the Commission had undertaken a detailed assessment of (a) Interest rate on loan, (b) Return on equity, (c) Depreciation including Advance against depreciation, (d) Operation and Maintenance (O&M) Expenses and (e) Interest on working capital. The analysis of energy charge components comprised of fuel (coal and oil) cost and consumption details.

**2.3** The Commission has evaluated the performance of TVNL with regard to the various fixed charge and variable charge components as outlined above in Section 2.2. Accordingly, the following sections have reviewed the actual performance of TVNL in FY 2004-05 with respect to different fixed cost and energy charge components vis-à-vis the cost components approved by the Commission for FY 2004-05 and the proposed expenses as per the petition and responses to the information gaps submitted by TVNL on June 25, 2004<sup>[1]</sup>.

**2.4** The tariff for sale of electricity from a thermal power generating station comprises of two parts, namely, the recovery of annual capacity (fixed) charges and energy (variable) charges.

The annual capacity (fixed) charges consist of:

- (a) Interest on loan capital
- (b) Return on Equity
- (c) Depreciation, including Advance Against Depreciation
- (d) Operation and Maintenance expenses
- (e) Interest on working capital

The energy (variable) charges, cover fuel cost

### **2.5 Interest on Loan Capital**

TVNL had proposed an amount of Rs 83.06 Crore as the interest payable on the loan capital (at an interest rate of 13%). It had however not provided the details of the source-wise interest payable. The Commission had approved the proposed amount but had instructed TVNL to explore refinancing options to reduce the interest liability. The Commission had also expressed concern on the non-payment of loan liability by the petitioner.

In the tariff petition for 2005-06, the petitioner has stated its total interest liability for 2004-05 to be Rs 83.14 Crore. This includes interest amount of Rs 79.16 Crore payable to Government of Bihar on a loan amount of Rs 608.90 Crore (at an interest rate of 13%) and interest amount of Rs 3.98 Crore payable to the Government of Jharkhand on a loan amount of Rs 30 Crore (at an interest rate of 13.25%). The interest amount for 2004-05 is still outstanding and the petitioner has neither repaid the interest nor the principle amount owed to the Jharkhand and Bihar State Government.

### **2.6 Return on equity**

TVNL in its petition for FY 2004-05 had proposed return on equity at 14% on the equity portion of Rs 100 Crores i.e. Rs 14 Crores. The Commission in its generation tariff order for 2004-05 has allowed return on equity at 14%, as per the JSERC terms and conditions for determination of generation tariff.

## 2.7 Operation & Maintenance (O&M) Expenses

TVNL had proposed O&M expenses of Rs 96.22 Crores for FY 2004-05. The Commission had observed that the O&M expenses were much higher than those prescribed under the Central Electricity Regulatory Commission (CERC) norms. The Commission was particularly concerned about the extremely high water charges (proposed at Rs 61.16 Crore) as it contributed to almost 60% of the total O&M expenses. The Commission did not allow the excessive O&M expenses to be passed on to the consumer and capped the O&M expenses at Rs 57.96 Crore (as per CERC norms). The Commission also directed TVNL to explore possibilities to reduce the water charges.

The petitioner has managed to bring down its O&M expenses and it reported its actual O&M expenses at Rs 59.01 Crore for 2004-05. This is only marginally (around 2%) higher than the amount approved by the Commission in the Generation Tariff Order for TVNL for 2004-05.

The petitioner managed to bring down the water charges to Rs 20.18 Crore in 2004-05 (water charges in FY 2003-04 was Rs 61.15 Crore).

## 2.8 Depreciation

TVNL in its petition for FY 2004-05 had computed the rate of depreciation at 3.29% (as per JSERC norms). This was approved by the JSERC. The actual depreciation for 2004-05 was reported as Rs 43.6 Crore, which was computed by the petitioner at a rate of 3.34%. This is 14% lower than the amount proposed by TVNL and approved by the Commission for FY 2004-05.<sup>[2]</sup>

## 2.9 Interest on Working Capital

TVNL had proposed a total working capital requirement of Rs 124.58 Crore and a weighted average interest on working capital of Rs 17.44 Crore. (@ 14% interest rate)

The Commission approved a total working capital requirement of Rs 89.18 Crore at an interest rate of 12.5%. The amount of interest on working capital approved by the Commission for FY 2004-05 was Rs 11.15 Crore.

The actual total working capital required during 2004-05 by TVNL was reported as Rs 87.37 Crore. The actual amount of interest on working capital (@ 12.5%) during 2004-05 has been reported by TVNL as Rs 10.92 Crore.

The actual working capital requirement during 2004-05 as reported by TVNL is similar to that approved by the Commission in its generation tariff order for FY 2004-05. There is a substantial difference (greater than 40%) between the total working capital requirement that was proposed by TVNL in its petition for FY 2004-05 and the actual expenditure during 2004-

05.

### 2.10 Plant Load Factor (PLF)

TVNL had proposed a PLF of 46.61% for FY 2004-05. The Commission was of the opinion that the proposed PLF was very low and had approved a PLF of 68.5%. The actual PLF of the power plant during 2004-05 was 36.04%, which was much lower than what was proposed by TVNL.

It is to be noted that even the proposed PLF of 46.61% was much higher than the actual PLF recorded in the previous few years. (The PLF has been in the range of 36-37%). The petitioner has stated that the low PLF is on account of the fact that for most of the time the two units never work together. The petitioner also blamed inadequate evacuation capacity, poor maintenance and lack of demand for the low PLF recorded by the station.

### 2.11 Auxiliary Energy Consumption

TVNL had proposed auxiliary consumption of 12.5% for 2004-05 and had stated that the auxiliary consumption would reduce substantially when both the units of the plants are run simultaneously. The Commission was of the view that an auxiliary consumption of 12.5% was very high. The Commission approved an auxiliary consumption of 9% (as per CERC norms) in its generation tariff order for FY 2004-05 for TVNL. The actual auxiliary consumption during 2004-05 was reported at 17.57%. The auxiliary consumption has ranged between 16-17% in the past five years.

### 2.12 Net Generation

The net generation proposed by TVNL for 2004-05 was 1715 MU at a PLF of 46.61%. The net generation of the power plant should have been 2530 MU at the approved PLF of 68.5%. The actual generation by TTPS during 2004-05 was only 1326 MU at a PLF of 36.04%.

### 2.13 Summary of Fixed charge components

The table below summarizes the fixed cost components as per (a) the petition submitted by TVNL for FY 2004-05, (b) the generation tariff approved by JSERC for TVNL for FY 2004-05 and (c) the actual performance of TVL for the FY 2004-05.

**Table 1: Summary of Fixed Charge Components, FY 2004-05**

Fixed Charge Components (In			
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<b>Rs. Crores)</b>	<b>Proposed</b>	<b>Approved</b>	<b>Actual</b>
Interest on loan capital (A)	83.06	83.06	83.19
Return on Equity (B)	14.00	14.00	14.00
Operation & Maintenance Expenses (C)	96.22	57.96	59.01
Depreciation (D)	50.68	50.68	43.65
Additional Depreciation (E)		9.33	
Interest on Working Capital (F)	17.44	11.15	10.92
Interest on additional investments		14.30	
Total expenses (A+B+C+D+E+F)	261.40	246.77	210.78
Plant Load Factor (PLF)	46.61%	68.50%	36.04%
Auxiliary consumption	12.50%	9.00%	17.57%

## 2.14 Energy Charges

For computing a two-part tariff comprising of fixed and variable charges, the variable charge components that are taken into account comprise of fuel cost viz. coal and oil cost.

## 2.15 Cost of Coal

TVNL in its petition for FY 2004-05 had stated the specific coal consumption as 0.68 kg/kWh and the cost of coal (Grade D) along with transportation cost as Rs 1224/MT.

The petitioner indicated an average Gross Calorific Value of coal (for Grade D) as 4500 kCal/Kg and a station heat rate of 3040.54 kCal/kWh.

The Commission found from a sampling report that the payment for a higher grade of coal was being made as against receipt of lower grade of coal. The Commission directed the petitioner to provide accurate information about the Grade of coal used and approved a Gross Calorific Value of 4500 kCal/Kg in the interim. Further, the Commission was not satisfied with the station heat rate estimate provided by TVNL. It had directed TVNL to provide accurate information about the grade of coal that is being used in the power plant. In the interim, the Commission approved a normative heat rate of 2500 kCal/kg.

The Commission computed the gross fuel consumption as 0.56 kg/kWh (based on Gross Calorific Value of coal of 4500 kCal/kWh and a normative heat rate of 2500 kCal/kWh).

### 2.15.1 Price of Coal

TVNL had quoted the price of coal (excluding transportation cost) as Rs 917.11 per ton for the period November 2003 – May 2004. For post June, the petitioner had quoted the price as Rs 1092 per ton. The Commission had approved the prices quoted by the petitioner (though it was of the view that the prices were quoted slightly higher).

### 2.15.2 Coal Transport Cost

For FY 2004-05, the Commission had approved a transportation cost of Rs 120 per ton. (Considering a rate of Rs 3 per ton for a distance of 40 km).

The actual transport cost for 2004-05 for coal has been reported by TVNL as Rs 140.65/MT and cost of coal has been stated as Rs 1117.22/ MT. The delivered cost of coal at the thermal power station has been computed as Rs 1257.87 /MT.

### 2.16 Oil consumption

TVNL had proposed oil consumption of 8.5 ml/kWh. The Commission had decided to use the actual oil consumption data from April to July 2004 and for subsequent months had directed TVNL to follow normative oil consumption level of 2 ml/kWh. The Commission had brought down the oil consumption considerably in 2004-05 to 2.327 ml/kWh.

### 2.17 Summary of Energy charge components

The table below gives a summary of the energy charge components viz. coal and oil cost and consumption details as per (a) the petition submitted by TVNL for FY 2004-05, (b) the generation tariff approved by JSERC for TVNL for FY 2004-05 and (c) the actual performance of TVL for the FY 2004-05.

**Table 2: Summary of energy charges, FY 2004-05**

Energy Charge Components	Proposed	Approved	Actual
Calorific Value of Coal (kCal/kg)	4500	4500	4500
Heat Rate (kCal/ kWh)	3040.54	2500	3150
Per Unit Coal Consumption (kg/kWh)	0.68	0.56	0.70
Coal Price (inclusive of transportation cost), Rs./ MT	1224	1182.85	1257.87
Specific Oil Consumption (ml/kWh)	8.5	2.0	2.33

[1] The TVNL had filed a petition for determining an appropriate generation tariff for the year 2004-05 on March 31, 2004. The Commission undertook an examination of the filing and found that there were major information gaps in the petition. The Commission conveyed its observations on the petition and had asked the TVNL to revise its petition incorporating the additional information required vide the Commission's letter No. JSERC/Tariff/170 dated 17.06.2004. Thereupon, the TVNL submitted the required clarification on June 25, 2004.

[2] The TVNL has revised its Project Cost from Rs. 1541.76 Crores as per its petition for FY 2004-05 to Rs. 1355.58 in the 2005-06 petition.