

CHAPTER 2

REVIEW OF PERFORMANCE IN FY 2005-06 & FY 2006-07

2.1 TVNL is a Government of Jharkhand undertaking for generating electricity. TVNL had filed its petition on September 7, 2005 for determination of generation tariff for FY 2005-06. The Commission issued the Generation Tariff Order of FY 2005-06 for TVNL on March 30, 2006. The Commission approved an aggregate tariff of Rs.1.90 per unit that comprised fixed charge of Rs.1.049 per unit and variable charge of Rs.0.855 per unit.

2.2 TVNL did not file tariff petition for revision of generation tariff for FY 2006-07 and hence the aggregate tariff approved by the Commission for FY 2005-06 of Rs.1.90 per unit remained applicable for FY 2006-07.

2.3 In the Generation Tariff Order for TVNL for FY 2005-06, 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 undertook 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 their consumption details.

2.4 The following section reviews the actual performance and expenses incurred by TVNL in FY2005-06 vis-à-vis the costs proposed by TVNL and approved by the Commission in FY 2005-06. This section also reviews the performance and actual expenses incurred by TVNL during FY 2006-07.

2.5 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) Return on equity
- (b) Interest on loan capital,
- (c) Operation and Maintenance (O&M) expenses
- (d) Depreciation
- (e) Interest on working capital

The energy (variable) charges cover fuel cost comprising of the coal of coal and cost of secondary oil.

2.6 Return on Equity (ROE)

The Petitioner, in its tariff petition for generation tariff for FY 2005-06, had proposed to State Government to raise its equity from Rs.100 Crore (which was only 7% of total project cost of Rs.1355.58 Crore) to Rs.1100 Crore by converting the outstanding loan of Rs.608.90 Crore and part of accumulated interest of Rs.949.52 Crore into Equity (i.e. Rs.391 Crore approximately). Since the capital cost of the project was Rs.1355.58 Crore, it proposed to avail ROE on Rs.406.7 Crore (i.e. 30% of Rs.1355.58 Crore). The Petitioner thus claimed return on equity of Rs.56.93 Crore estimated at the rate of 14% on proposed equity amount of Rs.406.70 Crore for FY 2005-06.

The Commission, in its generation Tariff Order for TVNL for FY 2005-06, accepted only the original equity amount of Rs.100 Crore, as the proposed conversion of part of debt into equity had not taken place. The Commission allowed return of 14% on Rs.100 Crore, i.e. Rs.14 Crore.

As per the tariff petition for FY 2007-08, the actual return on equity for FY 2005-06 as well as for FY 2006-07 was Rs.14 Crore.

2.7 Interest on Loan Capital

The petitioner, in tariff petition for FY 2005-06, submitted source-wise details of loan drawal and repayment for FY 2005-06. TVNL claimed outstanding loan amount of Rs.638.90 Crore as on March 31, 2005. This included Bihar Government loan of Rs 608.9 Crore and Jharkhand Government loan Rs 30 Crore. The petitioner was to further avail a loan of Rs 22 Crore from the Jharkhand Government during the year. The petitioner proposed to the state government to convert part of the Bihar government loan of Rs 306.7 Crore into equity. The outstanding loan after the conversion would comprise Rs.302.20 Crore from Bihar Government at the rate of 13% and loan of Rs 52 Crore from Jharkhand Government at the rate of 13.25%. The total outstanding loan for FY 2005-06 would therefore be Rs 354.2 Crore. The total interest outstanding would work to Rs.46.18 Crore. This comprises of an interest amount of Rs 39.28 Crore on the Bihar Government loan and Rs 6.89 Crore on the Jharkhand Government Loan.

For computing interest on loan for FY 2005-06, the Commission considered the actual debt component of Rs.638.9 Crore (Bihar Government loan of Rs.608.9 Crore and Jharkhand Government loan of Rs.30 Crore) as the proposed conversion of debt into equity and the proposed loan of Rs.22 Crore from Jharkhand Government had not been approved. The total interest liability approved by Commission, allowing interest rate of 13% for the Government of Bihar loan and

13.25% for the Government of Jharkhand loan, was Rs.83.13 Crore for FY 2005-06. The actual amount of loan outstanding as on March 31, 2005 was Rs.638.90 Crore and actual interest liability for FY 2005-06 was Rs.83.13 Crore as approved by Commission.

The actual amount of loan outstanding at the end of FY 2006-07 was Rs.657.90 Crore, which included loan of Rs.608.90 Crore from Government of Bihar and loan of Rs.49 Crore (including loan of Rs.19 Crore undertaken during FY 2005-06) from Government of Jharkhand. The actual interest liability of petitioner for FY 2006-07, as stated in its tariff petition for FY 2007-08, was Rs.85.65 Crore estimated at the rate of 13% on loan from Bihar Government and at the rate of 13.25% on loan from Jharkhand Government.

The Commission in its tariff orders for FY 2004-05 and FY 2005-06 had expressed concern on the non-payment of outstanding loan by the petitioner. The petitioner attributed its inability to repay the loan to the large outstanding dues from Jharkhand State Electricity Board (JSEB). The petitioner stated that JSEB is not regularly paying the electricity charges for power received from TVNL.

2.8 Operation & Maintenance (O&M) Expenses

For FY 2005-06, the petitioner had claimed O&M expenses based on estimated expenditure at Rs.59.33 Crore. The Commission, however, computed O&M expenses as per the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004. As per the norms, O&M expenses is allowed as 2.5% of capital cost at the time of commissioning of the plant and an escalation of 6% every year thereafter. Taking the capital cost as Rs.1355.58 Crores at the time of commissioning, the Commission arrived at an annual O&M expenses for FY 2005-06 as Rs.57.25 Crore.

The petitioner has claimed that its actual O&M expenses in FY 2005-06 were Rs.67.17 Crore. This is 17% higher than the amount approved by the Commission. The petitioner stated that this increase was mainly attributable to Repair and Maintenance (R&M) expenses incurred during the year.

In FY 2006-07, the actual O&M expenditure incurred by the petitioner was Rs.95.47 Crore, which is approximately a 70% increase over amount approved by the Commission for FY 2005-06 and 42% higher than the actual O&M expenditure in FY 2005-06.

Subsequently however the petitioner provided information vide letter ref 1374/07 dated 20/09/07 at Annexure-VI in which it stated its O&M expenditure for FY 2006-07 as 90.44 Crore. This shows a discrepancy in the data submitted by TVNL to the Commission on different occasions.

2.9 Depreciation

In the tariff petition for FY 2005-06, the petitioner had proposed a depreciation amount of Rs.43.69 Crore estimated at an average rate of 3.34% on historical capital cost of assets. The Commission verified the value of the assets forming part of the gross block as given in the petition with the balance sheet of TVNL as on March 31, 2005. The proposed depreciation rate of each item forming part of the gross block was also compared with the rates prescribed by JSERC. The Commission arrived at the same figure for depreciation as proposed by the petitioner and hence approved the same. The actual depreciation liability for FY 2005-06, as stated in the tariff petition for FY 2007-08, is also Rs 43.69 Crore.

The actual depreciation liability for FY 2006-07, as given in tariff petition for FY 2007-08, was Rs.43.77 Crore, which was a marginal 0.2% increase over actual depreciation in previous year.

2.10 Interest on Working Capital

For FY 2005-06, TVNL had proposed a total working capital requirement of Rs.111.32 Crore and interest on working capital of Rs.13.91 Crore at an interest rate of 12.5%.

The Commission approved a total working capital requirement of Rs.97.50 Crore for FY 2005-06. The interest on working capital approved by the Commission for FY 2005-06 worked out to be Rs.10.24 Crore at an interest rate of 10.5% (Sub Prime Lending Rate as per State Bank of India prevailing during April 1, 2005).

The actual total working capital required during FY 2005-06 by TVNL was reported as Rs.81.21 Crore, which is 27% lesser than the amount proposed by petitioner and 17% lesser than amount approved by Commission. The actual amount of interest on working capital estimated at the interest rate of 12.5% during 2005-06 was Rs.10.15 Crore.

The actual working capital required during FY 2006-07 by TVNL was Rs.134.99 Crore and actual amount of interest on working capital estimated at the interest rate of 12.5% during 2006-07, as reported by TVNL in its tariff petition for FY 2007-08, was Rs.16.87 Crore.

2.11 Plant Load Factor (PLF)

TVNL had proposed a PLF of 52.7% for FY 2005-06. The petitioner had stated that the second unit of the plant was out of service for some months and would be in service with full capacity only in October 2005. The Commission was of the opinion that the proposed PLF was very low. The Commission estimated gross generation of 2182 MU for FY 2005-06 based on actual generation for nine months and based on norms for the remaining months. It arrived at a PLF of 59.31%. The actual PLF of the power plant during FY 2005-06 was however only 41.56%, which is much lower than what was even proposed by the petitioner.

There was a marked improvement in PLF during FY 2006-07. The actual PLF of the power plant observed during FY 2006-07 was 73.80% as against an actual PLF of only 41.56% in FY 2005-06. The gross generation in FY 2006-07 was 2715 MU. TVNL stated the improved performance in FY 2006-07 could be attributed to both the units being able to dispatch simultaneously. It is to be noted that in FY 2006-07, the plant was able to overcome the transmission constraints, problems of backing down on no power demand from JSEB and outages due to tube leakages, etc successfully.

2.12 Auxiliary Energy Consumption

TVNL had proposed auxiliary consumption of 12% for FY 2005-06. The Commission was of the view that auxiliary consumption of 12% was high and approved an auxiliary consumption of 9% (as per JSERC norms) for FY 2005-06. The actual auxiliary consumption for FY 2005-06 was 14.23%, which is even higher than what was proposed.

In FY 2006-07, there was an improvement in the auxiliary consumption level. The actual auxiliary consumption observed was 12.04%, a 2.19 percentage point decrease from auxiliary consumption of 14.23% in FY 2005-06. The improvement in performance of the plant can be attributed to the steps undertaken by petitioner to reduce auxiliary consumption like testing and calibrating defective meters, measuring auxiliary consumption and installing digital energy meter in the Petitioner's colony substation, second generating unit coming into operation, etc.

2.13 Net Generation

The net generation (sales) proposed by TVNL for FY 2005-06 was 1705.62 MU. The Commission estimated net generation as 1985.89 MU taking into account generation of 2182 MU and auxiliary consumption of 9%. The actual generation by

TTPS during FY 2005-06 was only 1311.49 MU at a PLF of 41.56% and auxiliary consumption of 14.23%.

The actual net generation of the power plant for FY 2006-07 was impressive at 2388.33 MU at an improved PLF and auxiliary consumption of 73.8% and 12.04% respectively. In all there was a substantial 82% increase in actual net generation recorded in FY 2006-07 over actual net generation in FY 2005-06.

2.14 Summary of Fixed charge components

The table below summarizes the fixed cost components as per (a) the petition submitted by TVNL for FY 2005-06, (b) the generation tariff approved by JSERC for TVNL for FY 2005-06, (c) the actual performance of TVNL for the FY 2005-06 and (d) the actual performance of TVNL for the FY 2006-07.

Table: 1 Summary of Fixed Charges for FY 2005-06 and FY 2006-07

Fixed Charge Components	Units	FY 2005-06			FY 2006-07
		Proposed	Approved	Actual	Actual
Interest on loan capital (A)	<i>Rs. Crores</i>	46.18	83.13	83.13	85.65
Return on Equity (B)	<i>Rs. Crores</i>	56.93	14.00	14.00	14.00
Operation & Maintenance Expenses (C)	<i>Rs. Crores</i>	59.33	57.25	67.17	95.47
Depreciation (D)	<i>Rs. Crores</i>	43.69	43.69	43.69	43.77
Interest on Working Capital (E)	<i>Rs. Crores</i>	13.91	10.24	10.15	16.87
Total Expenses (A+B+C+D+E)	<i>Rs. Crores</i>	223.72	208.31	218.14	255.76
Plant Load Factor (PLF)	%	52.70	59.31	41.56	73.80
Auxiliary Consumption	%	12.00	9.00	14.23	12.04
Per unit Fixed Charges	<i>Rs/Kwh</i>	1.29	1.05	1.66	1.8

Energy Charges

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

2.16 Cost of Coal

TVNL in its petition for FY 2005-06 had stated specific coal consumption as 0.686 kg/kWh, the cost of coal (Grade D) along with transportation cost as Rs.1383.65/MT and transit loss of coal at 1.2% for FY 2005-06. The petitioner

indicated an average Gross Calorific Value of coal (for Grade D) as 4300 kCal/kg and a station heat rate of 2960 kCal/kWh.

The Commission approved a station heat rate of 2500 kCal/kWh based on norms as per its Regulations. The Commission accepted the calorific value of coal as proposed by TVNL at 4300 kCal/kg. Based on the station heat rate and the calorific value of coal the Commission estimated the specific coal consumption as 0.577 kg/kWh for FY 2005-06. The Commission allowed transit loss of coal at 0.8% based on norms.

The actual station heat rate for the generating plant for FY 2005-06 was 2958 kCal/kWh and specific coal consumption was 0.686 kg/kWh based on calorific value of 4300 kCal/kg and actual station heat rate observed.

The actual station heat rate for the generating plant observed in FY 2006-07 was 2821 kCal/kWh and specific coal consumption was 0.657 kg/kWh based on calorific value of 4300 kCal/kg and actual station heat rate.

2.16.1 Price of Coal

TVNL, in its tariff petition for FY 2005-06, had quoted the price of coal (including transportation cost) as Rs.1383.66/MT, proposing a 10% increase over the cost in the previous year. However, Commission approved Rs.1209.91/MT as cost of coal for FY 2005-06 based on the actual average monthly cost incurred by TVNL till December 2005. This cost of coal of Rs.1209.91/MT included on an average Rs.151.09/MT as actual average transportation charges. The actual cost of coal for FY 2005-06 was Rs 1177.31 /MT. This comprised of coal price of Rs 1024.56 /MT and transportation cost of Rs 152.75/MT.

The actual cost of coal (exclusive of transportation charges) for FY 2006-07 was Rs.1097.89/MT and the transport cost by road was Rs.160.85/MT resulting in delivered cost of coal at the plant to be Rs.1258.73/MT for FY 2006-07.

2.17 Oil Consumption

TVNL had proposed specific oil consumption of 4 ml/kWh for FY 2005-06. The Commission, in the generation tariff order for FY 2005-06 for TVNL, had decided to consider specific oil consumption of 3.78 ml/kWh based on an average of the actual monthly specific oil consumption incurred till December 2005. The actual specific oil consumption incurred during FY 2005-06 by TVNL was 3.90 ml/kWh.

The actual specific oil consumption incurred during FY 2006-07 by TVNL was 2.31 ml/kWh, which is a considerable reduction from the 6-14 ml/kWh levels experienced during FY 2000-01 to FY 2003-04.

2.17.1 Price of Oil

The petitioner proposed oil price at Rs.22610.5/kl for FY 2005-06 that was 10% higher than the previous year. The Commission allowed the same for FY 2005-06. Actual delivered cost of oil at the thermal station for FY 2005-06 and FY 2006-07 was Rs.20555/kl and Rs.27835/kl respectively.

2.18 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 2005-06, (b) the generation tariff approved by JSERC for TVNL for FY 2005-06, (c) the actual performance of TVNL for the FY 2005-06 and (d) the actual performance of TVNL for the FY 2006-07.

Table: 2 Summary of Energy Charges for FY 2005-06 and FY 2006-07

Energy Charge Components	Units	FY 2005-06			FY 2006-07
		Proposed	Approved	Actual	Actual
Calorific Value of Coal	Kcal/kg	4300	4300	4300	4300
Heat Rate	KCal/kWh	2960	2500	2958	2821
Per unit Coal Consumption	Kg/kWh	0.687	0.577	0.686	0.656
Coal Price (inclusive of transportation cost)	Rs./Mt	1383.66	1209.91	1177.31	1258.73
Specific Oil Consumption	kl/kWh	4.00	3.78	3.90	2.31
Cost of Oil	Rs/kl	22610	22610	20555	27835
Per unit Variable Charges	Rs/kWh	1.17	0.86	1.03	1.01
Per unit coal cost	Rs/kWh	1.07	0.76	0.93	0.94
Per unit oil cost	Rs/kWh	0.103	0.094	0.093	0.073
Tariff / Per unit cost of generation	Rs/kWh	2.47	1.91	2.69	2.87