

A9: TARIFF DETERMINATION FOR FY 2009-10

- 9.1 The Commission has scrutinized the petition filed by TPCL for FY 2009-10 for cost estimation of cost & operational parameter.
- 9.2 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

- 9.3 The petitioner has submitted its proposal of energy and fixed charges as per the terms and conditions of the PPA signed between the petitioner and TSL in 1997 and the estimated data for FY 2009-10 for parameters not specified in the PPA.

Commission's analysis

- 9.4 As stated earlier, the Commission has decided to determine the tariff for FY 2009-10 in accordance with the provisions of the PPA. For parameters involved in tariff determination that have not been specified in the PPA, the Commission has adhered to the 'Generation Tariff Regulations, 2004'.

Plant Load Factor (PLF)

Petitioner's submission

- 9.5 For FY 2009-10, the petitioner has projected the PLF to be 80% for both the Units.

Commission's analysis

- 9.6 The Commission has scrutinized the latest available figures of generation data from both TPCL and its purchaser TSL and has computed the PLF of 80.27% each for the two Units for FY 2009-10.

Gross Generation

Petitioner's submission

- 9.7 The petitioner has submitted 841 MUs each, on the basis of the PLF, as the gross generation proposed for Unit II and III for FY 2009-10.

Commission's analysis

- 9.8 The Commission approves the gross generation as per the PLF computed for the two Units. The Gross generation approved by the Commission is 844 MUs each for the two Units of Jojobera plant.

Auxiliary Consumption

Petitioner's submission

- 9.9 The petitioner has stated that although the auxiliary consumption stipulated in the PPA is 14.99%, the PPA has a clause that the tariff would be adjusted according to actual auxiliary consumption. For FY 2009-10, the petitioner has assumed an auxiliary consumption of 10.40% for both Units, for the purpose of tariff computation.

Commission's analysis

- 9.10 Since the auxiliary consumption specified in the petition for Unit II as well as Unit III is lower than the same specified in the PPA and is also similar to the figures for FY 2008-09, the Commission approves the auxiliary consumption as 10.40% for both the Units of Jojobera Plant.

Net Generation

Petitioner's submission

- 9.11 The petitioner has projected net generation for FY 2009-10 to be 754 MUs each for both the Units after taking into account its projections for gross generation and auxiliary consumption.

Commission's analysis

- 9.12 The Commission has computed and approved the net generation at 756 MUs each for the two Units.

Station Heat Rate (SHR)

Petitioner's submission

- 9.13 The petitioner has submitted that the PPA signed with TSL specifies that a SHR of 2800 kcal/kWh will be considered for tariff computation. However, the PPA also mentions that "the actual cost of coal, calorific value of coal and the heat rate of the plant during the year will be considered for bill adjustment at the end of each year."

- 9.14 The station heat rate of both Units in FY 2009-10 has been projected by the petitioner to be 2680 kcal/kWh.

Commission's analysis

- 9.15 Since the SHR specified in the petition for FY 2009-10 is lower than that specified in the PPA and a lower SHR corresponds to lower fuel cost, the Commission approves the SHR as 2680 kcal/kWh for both Unit II and III as given in the tariff petition subject to the condition that the same would be trued up when the actual data is available.

Specific oil consumption

Petitioner's submission

- 9.16 The specific oil consumption for FY 2009-10 is proposed by the petitioner to be 0.97 ml/kWh for both the Units.

Commission's analysis

- 9.17 The 'Generation Tariff Regulations, 2004' specify a maximum secondary fuel consumption of 2.0 ml/kWh but since a lower specific oil consumption corresponds to lower specific oil consumption and hence lower fuel cost, the Commission approves the petitioner's proposed submission of specific oil consumption as 0.97 ml/kWh for both Units.

Gross Calorific Value (GCV) of primary and secondary fuel

Petitioner's submission

- 9.18 The petitioner has submitted that for FY 2009-10, the coal for Units II and III is sourced from four sources – MCL (IB Valley), West Bokaro, RJC and imported coal. The petitioner has proposed their GCV as 2800 kcal/kg, 4400 kcal/kg, 3000 kcal/kg and 5200 kcal/kg respectively. The GCV of secondary fuel is considered as 9100 kcal/kl.

Commission's analysis

- 9.19 Calorific value of a fuel refers to the amount of heat released on burning one unit of the fuel and a higher GCV indicates better quality of fuel and also lowers fuel cost, since it lowers the consumption of that fuel needed for producing the requisite amount of energy.
- 9.20 With the intent of determining the projections for FY 2009-10 to an established historic trend in GCV, the Commission asked the petitioner to furnish additional information on the actual GCV of fuels consumed during FY 2008-09. As per the actual data of FY 2008-09, the GCV of MCL coal averaged over the entire year comes out to be 3055 kcal/kg while that of West Bokaro coal comes out to be 4562 kcal/kg. The actual data for RJC as well as imported coal is not available so the Commission approves the figures submitted by the petitioner for FY 2009-10.

- 9.21 In case, the actual GCV of FY 2009-10 differ from the Commission's approved figures, the same would be trued up once actual data for FY 2009-10 is made available to the Commission.
- 9.22 The proposed GCV of secondary fuel at 9100 kcal/kl has been accepted by the Commission since the actual GCV of secondary fuel in FY 2008-09 was the same.

Price of primary and secondary fuel

Petitioner's submission

- 9.23 The petitioner has taken the price of MCL coal to be Rs. 1061/MT, West Bokaro coal to be Rs. 2000/MT, RJC coal to be Rs. 2700/MT and that of imported coal to be Rs. 6700/MT.
- 9.24 The price of secondary fuel is taken to be Rs. 46000/kilolitre.

Commission's analysis

- 9.25 Since price of fuel is an uncontrollable factor for the petitioner and the actual rate of fuel paid by the petitioner needs to be factored into the fuel cost calculation, the Commission asked the petitioner to furnish monthly bills from its fuel suppliers for FY 2008-09 in order to determine the actual price and consumption of fuels during FY 2008-09.
- 9.26 After averaging the rate of each fuel over the entire year, the Commission arrived at Rs. 1002/MT as the price of MCL coal, Rs. 1796/MT as the price of West Bokaro coal and Rs. 41755/kilolitre as the rate of secondary oil for FY 2008-09. In order to rationalize the projected cost of fuel in FY 2009-10, the Commission has decided to follow the historic trend of fuel prices and hence it has retained the actual prices of fuels in FY 2008-09 as the approved price of fuels in FY 2009-10.
- 9.27 Meanwhile, the Commission has approved the price of RJC coal as well as imported coal as submitted by the petitioner since the actual data is not available for the year.
- 9.28 In case the actual fuel prices of FY 2009-10 differ from the Commission's approved figures, the same would be trued up once actual data for FY 2009-10 is made available to the Commission.

Transit Loss

Petitioner's submission

- 9.29 As per the petitioner, the PPA with TSL specifies that fuel costs shall mean the actual landed cost of primary and secondary fuel consumed by the power station, including all agreed transport losses.

Commission's analysis

9.30 The Commission has not considered any transit loss since the actual landed cost of fuel is inclusive of any transit losses that may have been incurred.

Summary of Plant parameters & fuel cost determinants

9.31 The summary of Plant parameters and fuel cost determinants for the two Units of Jojobera plant of TPCL submitted by the petitioner and approved by the Commission for FY 2009-10 is given below

Table 20 Plant parameters & Fuel cost determinants (FY 2009-10)

Parameters	Unit	Unit II		Unit III	
		Submitted by TPCL	Approved by JSERC	Submitted by TPCL	Approved by JSERC
Capacity	MW	120	120	120	120
Plant Load Factor	%	80%	80.27%	80%	80.27%
Auxiliary Consumption	%	10.40%	10.40%	10.40%	10.40%
Station Heat Rate	Kcal/Kwh	2680	2680	2680	2680
GCV of Coal (IB Valley/West Bokaro/ RJC/Imported)	Kcal/Kg	2800/ 4400/ 3000/ 5200	3055/ 4562/ 3000/ 5200	2800/ 4400/ 3000/ 5200	3055/ 4562/ 3000/ 5200
GCV of oil	Kcal/Kg	9100	9100	9100	9100
Specific oil consumption	ml/Kwh	0.97	0.97	0.97	0.97
Coal consumption (Indian/imported)	Kwh	544636/ 11116	524137/ 11116	544636/ 11116	524137/ 11116
Oil consumption	Kwh	816	818	816	818
Price of Coal (IB Valley/West Bokaro/RJC/Imported)	Rs/MT	1061/2000/ 2700/6700	1002/1796/ 2700/6700	1061/2000/ 2700/6700	1002/1796/ 2700/6700
Price of Oil	Rs/KL	46000	41755	46000	41755
Total Coal Cost	Rs. Cr	108.40	95.92	108.40	95.92
Total Oil cost	Rs. Cr	3.75	3.42	3.75	3.42
Net Fuel Cost	Rs. Cr	112.16	99.34	112.16	99.34
Energy Charges	Rs/Unit	1.49	1.31	1.49	1.31

Operation & Maintenance (O&M) Expenses

Petitioner's submission

9.32 The petitioner has projected the O&M expenses of the two thermal stations according to the terms of its PPA. As per the PPA, the O&M expenditure inclusive of insurance is considered at 3% of the project cost, escalated by 7% per annum. The completed project cost for Unit II is 431.3 Cr and for Unit III is Rs. 418.1 Cr. Unit II commenced with its operations in February 2001 and Unit III in February 2002.

9.33 Taking these factors into account, the petitioner has projected the O&M expenses for FY 2009-10 to be Rs. 22.49 Cr for Unit II and Rs.20.38 Cr for Unit III.

Commission's analysis

9.34 Accepting the legally binding nature of the PPA, the Commission has approved the O&M norms followed by the petitioner.

9.35 Taking the same capital cost of the two Units as proposed the petitioner, the O&M expenses computed by the Commission for FY 2009-10 as per the norms of the PPA come to Rs. 22.23 Cr and Rs. 20.14 Cr for Unit II and Unit III respectively.

Depreciation

Petitioner's submission

9.36 According to the petitioner, the depreciation rate used for cost computation is 7.84% on plant and machinery (the most dominant fraction of the asset base) as per the PPA. The petitioner submits that this rate of depreciation of 7.84% is as per the rates specified by the Government of India under the erstwhile Electricity (Supply) Act, 1948 and was the prevalent rate when the PPA was signed in 1997.

Table 21 Depreciation schedule submitted by the petitioner

Asset Class	Asset Class Rate	Acquisition Value (Rs. Cr)	Depreciation for FY 2007-08
Land	0.00%	0	0
Plant & machinery	7.84%	405.10	31.76
Building & Civil works	3.02%	2.97	0.09
Vehicles, Battery & ACs	33.40%	0.96	0
Office furniture & others	12.77%	2.92	0.37
Fixed Tools (3 years life)	18.00%	0	0
Fixed Tools (5 years life)	30.00%	0.058	0
Cable & Other works	5.27%	6.12	0.32

9.37 The depreciation submitted by the petitioner for FY 2009-10 is Rs. 32.54 Cr for Unit II and Rs. 32.19 Cr for Unit III.

Commission's analysis

9.38 Depreciation is calculated on the historical cost of the asset at the straight-line method over the useful life of the asset. According to the 'Generation Tariff Regulations, 2004', depreciation is allowed up to a maximum of 90% of the historical cost of the asset. As for the rate of depreciation, keeping in mind the fact that the PPA was signed in 1997, the Commission has referred to the depreciation schedule notified by the Ministry of Power in 1994 since it was the schedule prevalent at the time of PPA execution.

9.39 Accordingly, for the purpose of tariff calculation, the Commission has computed depreciation charges to be Rs. 32.54 Cr for Unit II and Rs. 32.19 Cr for Unit III.

Interest on Loan

Petitioner's submission

9.40 The petitioner has submitted that the required debt funding for the project has been met through various loans. The petition stated that the opening balances of all loans have been computed as per the billing method specified in the PPA. As per the PPA, repayment of debt is considered on half yearly basis. The PPA states that: "*Interest on loans is estimated at 8.0% for foreign loan and 13.5% for local loans. Interest is calculated on loans less accumulated deemed repayment. Accumulated deemed repayment is calculated to match claim of accumulated Electricity Act depreciation at the end of each year.*"

9.41 Based on this method of calculation, the petitioner has computed the interest payable for FY 2009-10 for Unit II to be Rs. 2.82 Cr and for Unit III to be Rs. 6.85 Cr.

Commission's analysis

9.42 For calculation of interest on loans, the Commission has considered the weighted average of the actual interest rates of loans from different sources. It arrived at 13.02% as the rate of interest applicable for Unit II. Since the actual loan amount taken for Unit III did not add up to 70% of its capital cost as is requirement as per the 'Generation Tariff Regulations, 2004' as well as specified in the PPA, the difference between the two has been treated as a normative debt amount at an interest rate of 13.02%, the interest rate mentioned in the PPA for domestic loans. Along with the interest rate on the actual loan taken for Unit III, the weighted average interest rate for Unit III amounts to 12.33%.

9.43 The Commission has accepted the treatment of each year's depreciation as the deemed loan repayment for that year.

9.44 Consequently, for FY 2009-10, the Commission has calculated the interest on loan to be Rs. 2.00 Cr for Unit II and Rs. 5.88 Cr for Unit III.

Table 22 Interest on Loan for FY 2007-08, 2008-09 and 2009-10

S. No	Description	Unit II		Unit III	
		Submitted by TPCL	Approved by JSERC	Submitted by TPCL	Approved by JSERC
1	Total Cost of Project	431.3	431.3	418.1	418.1
2	Total Normative Loan	301.94	301.94	292.70	292.70
3	Total Normative Equity	129.40	129.40	125.44	125.44
4	Rate of Interest	13.02% for domestic loans	13.02%	8% for foreign loans, 13% for domestic loans	12.33%
5	Interest for the year				
(i)	2007-08	10.77	10.4	14.81	13.9
(ii)	2008-09	6.75	6.1	10.82	9.9
(iii)	2009-10	2.82	2.0	6.85	5.9

Interest on Working Capital

Petitioner's submission

9.45 The PPA states that: “Working capital is estimated as per GoI norms and the interest thereon at the prevailing SBI advance rate.” Accordingly, working capital has been calculated after considering the following norms for generating stations.

- (a) Fuel costs for one month, reasonable fuel stocks as actually maintained but limited to 15 days for pit head stations and 30 days for non-pit head stations;
- (b) The cost of 60-day inventory for any fuel other than coal;
- (c) Operation & Maintenance expenses for one month, and
- (d) The project's receivables equivalent to two months' average billing for Capacity Payment and Energy Payment.

9.46 The interest on working capital has been considered as 12.25%, which the petitioner submits is the prevailing SBI Advance Rate. Accordingly, the petitioner requests the Commission to approve Rs. 5.68 Cr and Rs. 5.67 Cr as the respective interest on working capital for Units II and Unit III respectively for FY 2009-10.

Commission's analysis

9.47 The Commission has computed the working capital base for both Units for FY 2009-10 in line with the PPA between the TPCL and TSL. The rate of interest on working capital is taken to be the short-term Prime Lending Rate of State Bank of India as on 1st April of 2009 which is 12.25%.

9.48 Accordingly, the Commission has computed the interest on working capital to be Rs. 5.25 Cr for Unit II and Rs. 5.37 Cr for Unit III for FY 2009-10.

Return on Equity (RoE)

Petitioner's submission

9.49 As per the PPA, the petitioner is entitled to a RoE of 16% at a base PLF of 68.5%. Additional RoE is given for generation above 68.5% PLF. The PPA specifies the following mechanism for incentive in the RoE vis-à-vis PLF achieved in a financial year: For each 1.0% (or fraction thereof, on *prorata* basis) the PLF is greater than the Guaranteed PLF of 75%, the RoE for such year shall be increased by

- (a) 0.5% if the PLF is between 68.5% and 73.5%;
- (b) 0.6% if the PLF is between 73.5% and 75.5%; and
- (c) 0.7% if the PLF is between 75.6% and 95%.

The PPA also contains a disincentive clause for poor performance on this parameter. For each 1.0% that the PLF is below the Minimum Plant Load Factor, the RoE for such year shall decrease by 0.25%.

9.50 For FY 2009-10, the petitioner proposes to maintain a PLF of 80.0%. Hence it has projected the rate of RoE (along with the incentive at 80% PLF) to be 22.85% and a cumulative RoE of Rs. 29.57 Cr for Unit II and Rs. 28.67 Cr for Unit III.

Commission's analysis

9.51 Keeping in mind the legal validity of the PPA between the petitioner and TSL, the Commission has approved the PLF-linked incentive on RoE as proposed by the petitioner. As per the Commission's own calculation of the RoE in accordance with the PPA's provisions and the PLF calculated by the Commission for two Units, it has approved Rs. 29.64 Cr and Rs. 28.74 Cr as the RoE for Unit II and Unit III respectively, for FY 2009-10.

Income Tax

Petitioner's submission

9.52 The petitioner has stated that both Unit II and Unit III enjoy a tax holiday under Section 80 IA of the Income Tax Act but the book profits of the two Units would be subject to MAT. In effect, the RoE plus incentive is grossed up for computation of MAT. The petitioner has considered the tax rate as 11.33% for tax calculations. Accordingly, the computation of MAT for FY 2009-10 is proposed by the petitioner to be Rs. 3.78 Cr for Unit II and Rs. 3.66 Cr for Unit III.

Commission's analysis

9.53 The Commission has calculated and approved the MAT payable by the petitioner in FY 2009-10 to be Rs. 3.79 Cr on Unit II and Rs. 3.67 Cr on Unit III.

Summary of Fixed Cost determinants and Generation Tariff

9.54 The table below shows the trued-up fixed cost determinants and Generation tariff for FY 2009-10, in terms of the petitioner's submission and the Commission's approved costs.

Table 23 Fixed cost determinants and Generation Tariff (Rs. Cr) (FY 2009-10)

Parameters	Units	Unit II		Unit III	
		Submitted by TPCL	Approved by JSERC	Submitted by TPCL	Approved by JSERC
O&M charges	Rs. Cr	22.49	22.23	20.38	20.14
Depreciation	Rs. Cr	32.54	32.54	32.19	32.19
Interest on Loan	Rs. Cr	2.82	2.00	6.85	5.88
Return on Equity	Rs. Cr	29.57	29.64	28.67	28.74
Interest on Working Capital	Rs. Cr	5.68	5.25	5.67	5.37
Income Tax	Rs. Cr	3.78	3.79	3.66	3.67
Total Fixed cost	Rs. Cr	96.88	95.46	97.42	96.00
Energy Cost	Rs. Cr	112.16	99.3	112.16	99.34
Total Cost	Rs. Cr	209.04	194.80	209.58	195.34
Net generation (MUs)	MUs	754	756	754	756
Generation Tariff	Rs./Unit	2.77	2.58	2.78	2.58