



**ORDER
OF THE
WEST BENGAL ELECTRICITY REGULATORY
COMMISSION**

IN CASE NO:

FPPCA – 68 / 13 – 14

**IN RE APPLICATION OF THE DURGAPUR
PROJECTS LIMITED FOR
FUEL & POWER PURCHASE COST
ADJUSTMENT (FPPCA) FOR
THE FINANCIAL YEAR 2012- 2013.**

DATE: 30.04.2014



CHAPTER – 1 INTRODUCTION

- 1.1 The West Bengal Electricity Regulatory Commission (henceforth referred to as the 'Commission') determined the Aggregate Revenue Requirement (in short 'ARR') as well as tariff of the Durgapur Projects Limited (in short 'DPL') for the year 2012 – 2013 by an order dated 17.12.2012 in case no. TP-49/11-12. The fuel and power purchase cost as allowed in the tariff order dated 17.12.2012 is subject to adjustments in accordance with the West Bengal Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2011, as amended (hereinafter referred to as 'Tariff Regulations').
- 1.2 Accordingly, in terms of regulation 2.8.7 of the Tariff Regulations, DPL submitted its Fuel and Power Purchase Cost Adjustment (in short "FPPCA") application on 19.12.2013 for ascertaining the fuel and power purchase costs admissible to DPL for the financial year 2012-13. DPL, however, further submitted some documents and data / information on 26.02.2014 and 07.03.2014 in reply to Commission's letters dated 20.01.2014, 12.02.2014 and 19.02.2014. The FPPCA application submitted on 19.12.2013 along with further documents and data / information submitted on 26.02.2014 and 07.03.2014 are to be dealt with as per the provisions of the Tariff Regulations. Admissible fuel and power purchase costs are to be worked out with reference to the actual quantum of energy sold to its own consumers and to other licensee(s) during the concerned adjustment period applying the formula as specified in Schedule – 7A to the Tariff Regulations on the basis of normative parameters as were used in the tariff order for 2012 – 2013 and also on the basis of regulation 5.8.1 of the Tariff Regulations.
- 1.3 The applicable formula as specified in Schedule – 7A to the Tariff Regulations for the determination of FPPCA is as under:

$$\text{"FPPC (In Rs.)} = \{FC + (PPC - C_D) + (\pm A)\}$$

Where –

- i) The adjustment period for fuel and power purchase cost will normally be on annual basis, if not otherwise decided by the Commission.



- ii) FPPC: Re-determined Fuel and Power Purchase Cost against application of FPPCA.
- iii) FC: Fuel cost of own generation as per normative parameters fixed by the Commission or on actual basis in absence of any norm and UHV range as may be allowed under regulation 5.8 commensurate with actual level of energy sales to own consumers and / or licensee during the adjustment period in accordance with the following methodology:

t = Norms of Transmission and Distribution loss in % considered for sale of power from licensee to licensee

d = Norms of distribution loss in %

E_O = Admitted Energy for own consumption by licensee,

E_{SL} = Energy sale to other licensee in MU

E_{SC} = Energy sale to consumer in MU

Fuel-Cost = Fuel cost at generation bus of own generating stations
= Cost determined on the basis of normative parameters of SHR and oil consumption rate against actual level of energy sent out plus normative auxiliary energy consumption.

FC_{IUC} = Per unit of Fuel Cost at distribution input
= Fuel-Cost ÷ Actual overall energy available at input of the distribution system which includes power purchase from different services.

FC_{Adm_d} = Admitted Fuel Cost for sale to licensee

$$= \frac{E_{SL}}{(1 - t \times 0.01)} \times FC_{IUC}$$

FC_{Adm_C} = Admitted Fuel Cost for sale to consumer

$$= \frac{E_{SC} + E_O}{(1 - d \times 0.01)} \times FC_{IUC}$$



Order on FPPCA of DPL for the year 2012-13

$$FC = FC_{Adm_d} + FC_{Adm_C}$$

iv) PPC (Rs.): Total cost incurred including the cost for fuel for power purchase from different sources commensurate with actual level of energy sales during the adjustment period.

v) C_D (Rs.): Cost disallowable by the Commission as per following methods:

Let d = Norms of distribution loss in %

t = Norms of Transmission and Distribution loss in % considered for sale of power from licensee to licensee

E_g = Actual energy sent out in MU from own generating station

E = Excess amount of auxiliary energy consumption in MU,

E_P = Total energy purchased in MU

E_O = Admitted Energy for own consumption by licensee

E_{SC} = Energy sale to consumer in MU

E_{SL} = Energy sale to other licensee in MU

E_{Adm} = Admitted amount of energy entitled for purchase

$$= \frac{E_{SC} + E_O}{(1 - d \times 0.01)} + \frac{E_{SL}}{(1 - t \times 0.01)} - E - E_g$$

E_E = Excess energy purchased = $E_P - E_{Adm}$

C_D = $E_E \times EP_{Avg}$

When EP_{Avg} = Average cost of power purchase.

vi) A: Adjustment, if any, to be made in the current period to account for any claim due to excess / shortfall in recovery of fuel and power purchase cost in the past adjustment period based on directions / orders of the Commission. (+A) shall be considered as the amount to be recovered from consumer and purchaser of electricity under the purview of the Commission when the licensee has already incurred



Order on FPPCA of DPL for the year 2012-13

such expenses. (-A) shall be considered as the amount to be refunded to the consumer and purchaser of electricity under the purview of the Commission because such amount of less expenses has been incurred by the licensee against any prior period adjustment.

- vii) Such re-determined fuel and power purchase cost (FPPC) of the licensee will be further adjusted for gain sharing as per Schedule – 9B for the parameters related to fuel cost to the extent it has impact in the fuel cost.”

1.4 DPL is a multi unit company fully owned by the Government of West Bengal. Besides functioning as a distribution licensee, it runs a thermal generating station, a coke oven plant and water works. Part of the generation of electricity at the generating station is being utilized by other sister units. The energy balance as was considered at the time of fixing tariff for the year 2012 – 2013 and as it came in actual were as under:

Sl No	Particulars	As per Tariff Order (Figure in MU)	As per Actual (Figure in MU)
Sources			
(a)	Gross Generation	4176.060	1819.204
	Less: Auxiliary consumption	386.070(9.24%)	188.470 (10.36%)
(b)	Ex-bus generation	3789.990	1630.734
(c)	Purchase of power during the year	75.219	362.064
(d)	Unscheduled Interchange (net)	0.000	29.936
(e)	Total energy available [(b)+(c)+(d)]	3865.209	2022.734
Utilization			
(f)	Sale of power to WBSEDCL at Bus	1025.375	162.045
(g)	Own consumption	28.210	15.904
	Inter Plant transfer		31.440
(h)	Energy available for local sale [(e)-(f)-(g)]	2811.624	1813.345
(i)	Sale to consumers (including supply to WBSEDCL in 11 kV)	2662.608	1714.682
(j)	Distribution Loss (as a %age on quantum available for local sale)	149.016(5.30%)	98.663 (5.44%)

1.5 The schedule – 9B to the Tariff Regulations, 2011 contains provisions for sharing the gains derived by the licensee, if any, on account of its better performances over the operating and fuel consumption norms set by the Commission for the concerned year. The operational parameters which are to be considered for such sharing the gains accrued to the licensees are:



Order on FPPCA of DPL for the year 2012-13

- i) Oil consumption rate,
- ii) Rate of Auxiliary Consumption,
- iii) Gross Station Heat Rate,

1.6 Before ascertaining the amount of admissible fuel and power purchase cost as well as the amount of gains to be shared, if any, with the consumers and other licensees under the provisions of the Tariff Regulations explained in earlier paragraph, it needs to view the actual performances of DPL in regard to above three fuel consumption efficiency parameters.

Actual quantum of oil consumption as per the audited accounts during the year 2012 – 2013 came to 10491.598 KL for generation of 1819.204 MU. The rate of oil consumption, thus, came to 5.77 ml/kWh which is much more than the norms set for different units of DPL and also more than the rate as allowed in the tariff order. The actual rate of auxiliary consumption came to 10.36% as against operating norm set for DPL at 9.30%. As per the computations shown in the Annexure 1A, actual station heat rate achieved during the year came to 3373.765 Kcal/kWh as against operating norm of 2747.00 Kcal/kWh. DPL, thus, did not succeed in making improvement in any of the operational parameters. No gain, therefore, accrued to it for sharing with the consumers and other licensees.

1.7 The norm for distribution loss of DPL for the year 2012 – 2013 was considered 5.30% in the tariff order. As it comes out from the energy balance drawn under paragraph 1.4 above, the actual rate of distribution loss experienced by it on the quanta of sales to consumers including sales to West Bengal State Electricity Distribution Company Limited (in short “WBSEDCL”) in 11 KV works out to 5.44%. Thus, there was no improvement in distribution loss. No gain, therefore, was derived from it.



Order on FPPCA of DPL for the year 2012-13

- 1.8 The amount of fuel and power purchase cost that can be allowed to DPL, after carrying out the necessary adjustments towards cost disallowable, if any, is being taken up in the next chapter.



ANNEXURE - 1A COMPUTATION OF ACTUAL AVERAGE STATION HEAT RATES ACHIEVED IN 2012 -2013

SI No	Particulars	Unit	Value
1	Generation (Actual)	MU	1819.204
2	Consumption of Oil (As per audited accounts)	KL	10491.598
3	Consumption of Coal (As per audited accounts)	MT	1767426.980
4	GCV of Oil	Kcal/Lit	9200.000
5	Heat value of Coal (Actual as given)	Kcal/Kg	3417.988
6	Heat from Oil (2X4/1000)	M.Kcal	96522.702
7	Heat from Coal (3X5/1000)	M.Kcal	6041044.209
8	Total Heat used (6+7)	M.Kcal	6137566.911
9	Station Heat Rate achieved (8/1)	Kcal/kWh	3373.765



CHAPTER – 2 COMPUTATION OF THE ALLOWABLE AMOUNT OF FUEL & POWER PURCHASE COST

2.1 The Commission now proceeds to determine the fuel and power purchase costs allowable to DPL in terms of the formula in this regard as referred to in paragraph 1.3 in the earlier chapter.

2.2 F.C.: FUEL COST:

2.2.1 Fuel cost of own generation is to be allowed as per normative parameters fixed by the Commission, or on actual basis in absence of any norms, and heat value of coal as may be allowed under regulation 5.8.1 of the Tariff Regulations, commensurate with actual level of energy sales to own consumers and / or licensees during the adjustment period. The fuel costs allowed to DPL for the year 2012 – 2013 for its generating stations were based on the weighted average fuel consumption norms in respect of Units III to Unit VII as under:

Particulars	Unit	Norms
Station Heat Rate	Kcal/Kwh	2747.00
Specific Oil Consumption	MI/Kwh	1.81
Auxiliary Consumption	%	9.30
Transit and handling loss of Coal	%	0.50

2.2.2 The weighted average calorific values of coal and oil are variable factors for assessing the quantity of coal and oil requirements and depend on the actual grade mix of their use in the power stations. Moreover, the declared Heat Value of each grade of coal varies between ranges. The weighted average heat value of coal for generating station consisting of five units of DPL, as considered in the tariff order for the year 2012 – 2013, was based on declared minimum heat value of the proposed grade mix of use. The minimum average heat value of coal computed in terms of regulation 5.8.1 of the Tariff Regulations with actual grade mix of coal, as per audited data comes at 3418.066 Kcal/Kg and is found



Order on FPPCA of DPL for the year 2012-13

admissible as the same is higher than the actual average heat value of 3322.99 Kcal/Kg. The computations shown in Annexure – 2A in this regard may be referred to. The Gross Calorific Value (in short “GCV”) of oil, as claimed by DPL based on actual consumption as per auditor’s certificate, is 9200.00 Kcal/lit and the same is admitted.

2.2.3 The weighted average price of coal and oil, as per Note 13(i) of audited annual accounts 2012 – 2013 of DPL, came to Rs. 2252.80 per M.T. and Rs. 51374.54 per K.L. respectively. The above prices are inclusive of freight charges.

2.2.4 The admissible amount of fuel cost for generation has been computed and shown in Annexure – 2B. The computations therein are based on normative rate of auxiliary consumption, station heat rate, oil consumption rate and transit loss of coal. The weighted average heat value of coal and GCV of oil are considered on the basis as stated above. The average price of Coal and that of Oil are considered on the basis of actuals. The computed fuel cost of generation of electricity for sales to own consumers, WBSEDCL and others including inter plant transfer works out to Rs. 34189.06 lakh.

2.3 PPC: POWER PURCHASE COST:

2.3.1 The actual quanta of power purchase and the cost incurred as per data submitted by DPL and as also seen from the audited accounts for the year 2012 – 2013 are 362.064 MU and Rs. 15361.78 Lakh respectively with an average rate of purchase of 424.28 paise / kWh. The power purchases were made from WBSEDCL, RPG, IEX. The break up of such purchase is given below:

Name of Agency	Quantity (in MU)	Amount (Rs. in lakh)
WBSEDCL	210.786	10666.97
RPG	22.328	975.50
IEX	128.950	3719.31
Total	362.064	15361.78



Order on FPPCA of DPL for the year 2012-13

Besides, DPL drew power under Unscheduled Interchange (UI) during the year. The payable amount against drawal under UI mode was Rs. 696.65 lakh. It is also seen from the note 11 (b) to audited accounts that an amount of Rs. 694.10 lakh was receivable under UI. Since the UI payable amount is higher than the UI receivable amount, net UI charges of Rs. 2.55 lakh (Rs. 696.65 lakh – Rs. 694.10 lakh) is considered as expenditure in terms of regulation 5.12.2 of the Tariff Regulations. Thus the total expenditure on account of purchase of power comes at Rs. 15364.33 lakh (Rs. 15361.78 lakh + Rs. 2.55 lakh). The Average power purchase cost thus works out at 424.28 paise / kWh.

2.4 FUEL AND POWER PURCHASE COST:

2.4.1 In terms of the FPPCA formula as referred to in paragraph 1.3, the admissible fuel and power purchase cost of DPL works out as under. This admissible amount is subject to disallowance of a part of such cost on account of excess auxiliary consumption in the power plant and excess distribution loss:

SI No	Factor Notation	Nomenclature	Unit	Value
1	t	Norms of Transmission and Distribution loss considered for sale of power to licensee	%	0.000
2	d	Norms of distribution loss for sale to consumers	%	5.300
3	E _O	Energy for own consumption	MU	15.904
4	E _{SL}	Energy sale to licensee and interplant transfer [(f)+(g) of table in paragraph 1.4]	MU	193.485
5	E _{SC}	Energy sale to consumer [vide (i) of table in paragraph 1.4]	MU	1714.682
6	Fuel Cost	Fuel cost for generation on normative parameters (Refer Annexure – 2B)	Rs. in Lakh	34189.06
7	FC _{IUC}	Per unit Fuel Cost at distribution input for sale to consumers (Refer A(v) below)	Paise/kWh	169.024
8	FC _{Adm_d}	Admissible Fuel Cost for sale to WBSEDCL and inter plant transfer (Refer B(ii) below)	Rs. in Lakh	3270.36
9	FC _{Adm_C}	Admissible Fuel Cost for sale to consumer and for own consumption [Refer B(i) below]	Rs. in Lakh	30888.13
10	FC	Admissible fuel cost [(8)+(9)]	Rs. in Lakh	34158.49
11	PPC	Power Purchase Cost including net UI charges (vide para 2.3)	Rs. in Lakh	15364.33
12	FC + PPC	Admissible Fuel and Power Purchase Cost [(10)+(11)]	Rs. in Lakh	49522.82



Order on FPPCA of DPL for the year 2012-13

A. Fuel Cost per Unit (kWh) at Distribution Input		Unit	Amount
(i)	Fuel Cost for sale to consumers (As per Annexure – 2B)	Rs. in Lakh	34189.06
(ii)	Energy sent out from own generation for the consumers and licensee [(b) of table in paragraph 1.4]	MU	1630.734
(iii)	Power Purchase (vide paragraph 2.3.1)	MU	392.000
(iv)	Total energy available for sale [(ii)+(iii)]	MU	2022.734
(v)	$FC_{IUC} [(i)/(iv)]$	Paise/kWh	169.024
B. Admissible Fuel Cost for sale to Consumers and Licensee		Unit	Amount
(i)	$\frac{E_{SC} + E_O}{(1 - d \times 0.01)} \times FC_{IUC} = \frac{1714.682 \text{ MU} + 15.904 \text{ MU}}{0.947} \times 169.024 \text{ paise/kWh}$	Rs. in Lakh	30888.13
(ii)	$\frac{E_{SL}}{(1 - t \times 0.01)} \times FC_{IUC} = \frac{193.485 \text{ MU}}{1} \times 169.024 \text{ paise/kWh}$	Rs. in Lakh	3270.36

2.5 C_D : COST DISALLOWABLE:

2.5.1 Factor C_D, as referred to in the FPPCA formula mentioned in paragraph 1.2 in the earlier chapter, stands for cost as to be found disallowable by the Commission as per methodology specified in the FPPCA formula.

2.5.2 In accordance with methodologies, as specified in FPPCA formula, the amount of cost disallowable works out as under:

Sl. No.	Factor Notation	Nomenclature	Unit	Value
1	E _{SC}	Quanta of energy sold to consumers	MU	1714.682
2	E _O	Energy allowable for own consumption	MU	15.904
3	d	Normative distribution loss	%	5.300
4	-	$\frac{E_{SC} + E_O}{(1 - d \times 0.01)} = \frac{1714.682 + 15.904}{0.947}$	MU	1827.44
5	E _{SL}	Quanta of energy sold to licensee and interplant transfer	MU	193.485
6	t	Normative T&D loss for E _{SL}	%	0.00
7	-	$\frac{E_{SL}}{(1 - t \times 0.01)} = \frac{193.485}{1}$	MU	193.485
8	E	Auxiliary consumption in excess of norms (Refer A below)	MU	19.284
9	E _g	Energy sent out from own generating station net of UI [refer paragraph 1.4, Sl. No. (b)]	MU	1630.734
10	E _{Adm}	Purchase of energy admitted [(4)+(7)-(8)-(9)]	MU	370.907
11	E _P	Total energy purchased including UI	MU	392.000



Order on FPPCA of DPL for the year 2012-13

12	E_E	Excess energy purchased ($E_P - E_{Adm}$)	MU	21.093
13	EP_{Avg}	Average power purchase cost (refer paragraph 2.3.1)	Paise/kWh	424.28
14	C_D	Cost disallowed ($E_E \times EP_{Avg}$)	Rs. in Lakh	894.92

A. Excess Auxiliary Consumption:		Unit	Amount
(i)	Actual Gross Generation	MU	1819.204
(ii)	Actual Auxiliary Consumption	MU	188.470
(iii)	Normative rate of Auxiliary Consumption	%	9.300
(iv)	Auxiliary Consumption at normative rate	MU	169.186
(v)	Auxiliary Consumption in excess of norms	MU	19.284

2.6 (+) A: PRIOR PERIOD'S ADJUSTMENTS:

2.6.1 Factor A in the referred FPPCA formula signifies the adjustment, if any, to be made in the current period to account for any excess / shortfall in the recovery of fuel and power purchase cost for the past period. Being aggrieved by the tariff order dated 9 June 2004 of the Commission relating to the financial years 2002 – 2003, 2003 – 2004 and 2004 – 2005, DPL filed an appeal before the Hon'ble High Court, Calcutta, numbered as AST 1134 of 2004. As the case is still sub-judice, DPL could not claim FPPCA for the aforesaid period. No prior period adjustment, if any, in this regard has been claimed by DPL presently. However, as per Note 19 of the financial statements for the year ended 31st March, 2013, it is observed that an income of Rs. 865.02 lakh has accrued to DPL on account of purchase of power relating to prior period purchase. Such adjustment is, therefore, taken as Rs. 865.02 lakh being less expenses incurred against earlier period(s).

2.7 Computations of the aggregate allowable amount of fuel and power purchase cost:

2.7.1 Based on the analyses done in the foregoing paragraphs, the amount of allowable fuel and power purchase cost for DPL for the year 2012 – 2013 works out as under:



Order on FPPCA of DPL for the year 2012-13

Rs in lakh

SI No	Particulars/Factors	As admitted
1	FC: Fuel cost (10 of table in para 2.4.1)	34158.49
2	PPC: Power purchase cost (11 of table in para 2.4.1)	15364.33
3	C _D : Cost disallowable (para 2.5.2)	(-) 894.92
4	±A :Adjustment relating to earlier period (para 2.6.1)	(-) 865.02
5	Allowable fuel and purchase cost = FC+(PPC - C _D)+(± A)	47762.88

2.8 Benefits for savings in Distribution Loss:

- 2.8.1 As referred in paragraph 1.6, DPL could not achieve any gains from distribution loss and the same is treated as nil.
- 2.9 Summing up the findings stated above, the amount of fuel and power purchase cost allowed to DPL for the year 2012 – 2013 are as under:

Particulars	Cost (Rs. in Lakh)
Fuel and Power Purchase cost as computed in para 2.7 above.	47762.88
Additional amount on account of savings in rate of distribution loss.	0.00
Re-determined Fuel and Power Purchase cost	47762.88



ANNEXURE - 2A

COMPUTATION OF HEAT VALUE OF COAL BASED ON MINIMUM OF DECLARED HEAT VALUE

SUPPLIER	GRADE OF COAL	GRADEWISE CONSUMPTION (MT)	DECLARED MINIMUM UHV OF THE GRADE (K.CAL/KG)	PRODUCT (K.CAL/KG) (5) = (3X4)
(1)	(2)	(3)	(4)	(5)
ECL	G3	17054.29	6200.00	105736598.00
	G4	62506.88	5600.00	350038528.00
	G5	87317.11	4940.00	431346523.40
	G6	48674.05	4940.00	240449807.00
	G7	28790.91	4200.00	120921822.00
BCCL	G3	388.70	6200.00	2409940.00
	G4	551.86	5600.00	3090416.00
	G5	2316.72	4940.00	11444596.80
	G7	48054.43	4200.00	201828606.00
	G8	54454.35	3360.00	182966616.00
	G9	48626.60	3360.00	163385376.00
BECML	G6	477976.00	4940.00	2361201440.00
MCL	G9	65588.44	3360.00	220377158.40
	G11	85614.81	2400.00	205475544.00
	Washed	435585.21	2400.00	1045404504.00
	G13	303926.62	1300.00	395104606.00
	TOTAL	1767426.98		6041182081.60
	Average			3418.066
	Actual			3322.99
	Allowable			3418.066



ANNEXURE – 2B COMPUTATION OF FUEL COST OF GENERATING STATIONS

SI No	Particulars	Unit	Overall
1	Ex-Bus Generation	MU	1630.734
2	Rate of Auxiliary Consumption	%	9.300
3	Auxiliary consumption on ex-bus generation	MU	167.209
4	Admissible Generation for sale (1+3)	MU	1797.943
5	Station Heat Rate (Normative)	Kcal/kWh	2747.000
6	Total Heat Required (4x5)	M.Kcal	4938949.421
7	Specific Oil consumption (Normative)	ml/kWh	1.810
8	Oil consumption (4x7)	KL	3254.277
9	Average GCV of Oil (Actual)	K.cal/lit	9200.000
10	Heat from oil (8x9)/1000	M.Kcal	29939.348
11	Heat from coal (6-10)	M.Kcal	4909010.073
12	Average UHV of coal	K.cal/Kg	3418.066
13	Coal consumption (11/12) x1000	MT	1436195.226
14	Coal requirement at 0.50% transit loss (Normative)	MT	1443412.287
15	Average price of oil (Actual)	Rs/KL	51374.54
16	Average price of coal	Rs/MT	2252.80
17	Cost of oil (8x15)/100000	Rs in lakh	1671.87
18	Cost of coal (14x16)/100000	Rs in lakh	32517.19
19	Cost of Fuel (17+18)	Rs in lakh	34189.06



CHAPTER – 3 ORDER

- 3.1 The analyses in the earlier chapter show that the aggregate amount of fuel and power purchase cost that can be allowed to DPL for the year 2012 – 2013 comes to Rs 47762.88 lakh.
- 3.2 The Commission decides, in terms of regulation 2.8.7.1 of the Tariff Regulations, to consider this amount of Rs. 47762.88 lakh allowable towards fuel and power purchase cost along with the Annual Performance Review for the year 2012 – 2013 or that for any other ensuing year or through a separate order, as may be decided by the Commission.
- 3.3 DPL is to take a note of this order.

**Sd/-
(SUJIT DASGUPTA)
MEMBER**

DATED: 30.04.2014