



**ORDER
OF THE
WEST BENGAL ELECTRICITY REGULATORY
COMMISSION
IN CASE NO.
FPPCA – 59/12-13**

**IN RE APPLICATION OF THE CESC LIMITED
FOR FUEL & POWER PURCHASE
COST ADJUSTMENT (FPPCA) FOR
THE FINANCIAL YEAR 2011- 2012**

PRESENT:

**SRI PRASADRANJAN RAY, CHAIRPERSON
SRI SUJIT DASGUPTA, MEMBER**

DATE: 31.07.2013



CHAPTER – 1 INTRODUCTION

- 1.1 CESC Limited (in short “CESC”) submitted its application for ascertaining the fuel and power purchase cost adjustments (FPPCA) for the financial year 2011-12 on 10 September, 2012 in terms of regulation 2.8.7 of the West Bengal Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2011, as amended (hereinafter referred to as the ‘Tariff Regulations’). The instant application is to be dealt with as per the provisions of the Tariff Regulations along with the amendment thereof. Such 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 following formula specified in Schedule – 7A to the Tariff Regulations on the basis of normative parameters as was used in the tariff order for 2011-12 and also on the basis of regulation 5.8.1 of the Tariff Regulations.
- 1.2 The Fuel and Power Purchase Cost (FPPC) during the referred adjustment period, i.e., financial year 2011 – 2012, is to be admitted in terms of the following formula as specified by the Commission in schedule 7A to the Tariff Regulations.

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

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



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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

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

FC = FC_{Adm_d} + FC_{Adm_C}



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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 such expenses. (-A) shall be considered as the amount to be refunded



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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.”

1.3 The schedule – 9B to the Tariff Regulations, 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:

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

1.3.1 The referred schedule 9B to the Tariff Regulations also provides that in case availability of a generating station of the licensee falls below the availability norm, then the total gains meant to be passed on to the consumers under the items (i) to (iii) above, is first to be used to compensate the deficit in the recovery of the fixed charges, if any, by the licensee.

1.4 Before ascertaining the amount of admissible fuel and power purchase cost as well as the amount of gains to be shared with the consumers and other licensees under the provisions of the Tariff Regulations explained in earlier paragraphs, it needs to view the actual performances of CESC in comparison to the operational and fuel efficiency norms set by the Commission in the Tariff Order for the concerned year. Such comparisons are made here.



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SI No	Power Station	Particulars	Unit	As per Tariff Order / Norms	As per Actual
1	Budge Budge	Rate of Auxiliary Consumption	%	9.00	8.25
		Specific Consumption of Oil	MI/Kwh	1.30	0.39
		Station Heat Rate	kCal/kWh	2500	2075
2	Titagarh	Rate of Auxiliary Consumption	%	9.00	8.35
		Specific Consumption of Oil	MI/Kwh	2.20	1.17
		Station Heat Rate	kCal/kWh	2920	2883
3	Southern	Rate of Auxiliary Consumption	%	9.00	9.27
		Specific Consumption of Oil	MI/Kwh	2.20	1.06
		Station Heat Rate	kCal/kWh	2910	2849
4	New Cossipore	Rate of Auxiliary Consumption	%	10.00	12.03
		Station Heat Rate	kCal/kWh	5800	6301

- 1.5 As may be seen from the above statement, CESC succeeded in performing better than norms for auxiliary consumption in the generating stations at Budge Budge and Titagarh and oil consumption in the Budge Budge, Titagarh and Southern. Part of the benefits accrued to it in financial terms will, therefore, need to be passed on to its consumers and other licensees in terms of the provisions of Schedule 9B to the Tariff Regulations.
- 1.6 The actual performances of CESC in respect of gross station heat rates in Budge Budge, Titagarh and Southern generating stations are found better than the norms considered in the tariff order for the concerned year. It will, therefore, require to share the benefits (in the financial terms) accrued to it in that respect in the manner as provided in paragraph A3 of the Schedule 9B to the Tariff Regulations.
- 1.7 The norm for distribution loss of CESC for the year 2011 – 2012 was considered to be 14.60% in the tariff order. As it comes out from the data as



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provided by CESC for the year 2011 – 2012, the actual rate of distribution loss experienced by CESC on the quanta of sales to consumers, sales to WBSEDCL and on its own consumption works out at 12.14% as shown below:

Sl No	Particulars	Figures in Million Units
Inputs to System		
(a)	Gross Generation	8938.076
(b)	Less: Auxiliary consumption	759.047
(c)	Net Sent Out Energy [(a) – (b)]	8179.029
(d)	Sale to persons other than Consumers and WBSEDCL including Transmission loss to effect that sale	129.003
(e)	Net energy available from own generation for sale to consumer and WBSEDCL [(c) – (d)]	8050.026
(f)	Energy purchased during the year	1432.128
(g)	Unscheduled Interchange (Net)	7.675
(h)	Delivered to the system [(e)+(f)+(g)]	9489.829
Utilization		
(i)	Sales to Consumers and WBSEDCL	8317.519
(j)	Energy consumed in own premises	19.826
(k)	Distribution loss to effect sale to consumers, sale to WBSEDCL and own consumption.	1152.484
(l)	Distribution loss in % [(k/h)x100]	12.14

- 1.8 The actual sale to consumer and WBSEDCL is 8317.519 MU. Energy consumed in the own premises is 19.826 MU as against the admitted energy of 20.00 MU in the Tariff order for the concerned year. The allowable quantum of distribution loss as per norms @ 14.60% on actual quanta of sales to consumers and WBSEDCL as well as the energy consumed in own premises works out at 1425.354 MU and actual quanta of distribution loss against that sale and own consumption works out at 1152.484 MU. The savings in this regard thus comes to 272.870 MU (1425.354 MU – 1152.484 MU). As provided in paragraph C of Schedule – 9B to the Tariff Regulations, CESC is entitled to retain the gains accruing to it in this regard.



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- 1.9 The amount of fuel and power purchase cost that can be allowed to CESC, after carrying out the adjustments towards gain sharing and the accrual of benefits for savings in the quanta of distribution loss, is being taken up in the next chapter.



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 CESC in terms of the formula in this regard as referred to in paragraph 1.2 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, commensurate with actual level of energy sales to own consumers and / or licensees during the adjustment period. The fuel costs to be allowed to CESC for the year 2011 – 2012 for its different power stations shall be based on the following fuel consumption norms:

Particulars	Unit	Budge Budge	Titagarh	Southern	New Cossipore
Station Heat Rate	Kcal/Kwh	2500.00	2920.00	2910.00	5800.00
Specific Oil Consumption	MI/Kwh	1.30	2.20	2.20	N.A.
Transit loss of Coal	%	0.75	0.75	0.75	0.75

2.2.2 On the basis of normative parameters as stated above and normative rate of auxiliary consumption as referred to in paragraph 1.4, the amount of fuel cost allowable to CESC for effecting sales to its consumers and WBSEDCL comes to Rs. 196630.82 lakh as per computations given in Annexure – 2A. The explanatory notes in this regard are as under:

2.2.2.1 Out of the total ex-bus generation of 8179.029 MU, CESC utilized 129.003 MU to effect sales to persons other than its consumers and WBSEDCL. This



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quantum has been reduced from ex-bus generation of Budge Budge generating station.

2.2.2.2 The weighted average calorific values of coal and oil are, however, 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 each generating station of CESC, as considered in the tariff order for the year 2011 – 2012, was based on the lower value of the range of the proposed grade mix of use. With reference to actual grade mix of coal and oil at different generating station, CESC computed and claimed heat value of coal and heat value of oil as under:

Generating Station	Heat Value of Coal (Kcal/Kg)	Heat Value of Oil (Kcal/Litre)
Budge Budge	3418.00	9724.00
Titagarh	4519.00	9645.00
Southern	4022.00	9603.00
New Cossipore	5603.00	N.A.

Above heat values of coal have been viewed with reference to the grade-wise coal consumption of the concerned generating stations, as per documents submitted by CESC, the declared heat value of different grades of coal varying within a range and the minimum allowable heat value in terms of provision of regulation 5.8 of the Tariff Regulations. The weighted average heat value of coal for each generating station as claimed by CESC has been compared with the station wise actual weighted average heat value of coal duly certified by the auditors and the minimum weighted average heat value of coal as per formula given in regulation 5.8.1 of the Tariff Regulations. The computations of the minimum allowable heat value of coal for different



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generating stations have been shown in Annexure – 2D to this chapter. In this context it is to be mentioned that the minimum allowable heat value of coal is considered as per provisions of the Tariff Regulations. As is observed from the computations in the aforesaid annexures, the actual heat value of coal received by CESC is lower than the minimum heat value that can be admitted in terms of the Tariff Regulations and thus the minimum heat value of coal for different generating stations as computed and claimed by CESC is admitted.

2.2.2.3 The weighted average price of coal and oil, as certified by the auditors, came as under:

Generating Station	Price of Coal (Rs/MT)	Price of Oil (Rs/KL)
Budge Budge	2274.76	62450.85
Titagarh	4194.94	53370.61
Southern	3419.84	61963.47
New Cossipore	7370.59	N.A.

The above prices are inclusive of freight charges which also includes payment made to Kolkata Port Trust for Southern generating station.

2.3 PPC: POWER PURCHASE COST:

2.3.1 The power purchase requirement of CESC during 2011 – 2012 was considered 1976.80 MU; vide the statement of Energy Balance at paragraph 4.7 of the Tariff order dated 06 March, 2012 for the concerned year. The total quanta of actual purchase and the cost incurred thereon are as under:

Sources	Quantum MU	Cost incurred (Rs in lakh)
WBSEDCL	998.269	46733.72
Indian Energy Exchange (IEX)	147.399	5416.80
RPGTCL	257.245	9889.88
National Energy Trading Services Limited (NETSL)	29.215	1564.88
Total	1432.128	63605.28



2.4 C_D : COST DISALLOWABLE:

2.4.1 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 the methodology specified in the FPPCA formula referred to in Chapter - 1. It has been observed that CESC succeeded in sending out generation from each of its generating stations except New Cossipore generating station a considerable quantum in excess of the target set for the concerned year. It also succeeded in keeping the rate of distribution loss much below the norm considered for the year. Paragraph 1.7 in the earlier chapter may be referred to in this regard. No part of the fuel and power purchase cost is found disallowable and hence, value of factor C_D is nil.

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

2.5.1 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. CESC did not ask for any such adjustment and no such adjustment is also found necessary. The value of this factor is, therefore, considered NIL.

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

2.6.1 The aggregate amount of fuel and power purchase cost, commensurate with the actual quantum of sale to the consumers and to the licensee (WBSEDCL), that can be allowed to CESC works out to Rs. 266054.37 lakh with the break-up as given hereunder. The detailed computations in this regard are shown in Annexure – 2B and Annexure – 2C. This amount, however, is inclusive of the amounts of gains derived to CESC on account of



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its better performances on different parameters of operations and fuel consumption norms:

SI No	Particulars/Factors	Rs. in Lakh
1	FC: Fuel cost	202449.09
2	PPC: Power purchase cost	63605.28
3	C _D : Cost disallowable	0.00
4	±A :Adjustment relating to earlier period	0.00
5	FC+(PPC-C_D) ± A	266054.37

Annexure - 2A
ADMISSIBLE FUEL COST

SI No	Particulars	Unit	Budge	Budge	Titagarh	Southern	New Cossipore	Total
1	Ex-bus Generation	MU	5449.710		1572.326	940.346	216.647	8179.029
2	Ex-bus Generation utilized to effect sales to persons other than consumers and WBSEDCL	MU	129.003		0.000	0.000	0.000	129.003
3	Energy sent-out from own generation for the consumers and WBSEDCL (1 - 2)	MU	5320.707		1572.326	940.346	216.647	8050.026
4	Rate of Normative Auxiliary Consumption	%	9.00		9.00	9.00	10.00	-
5	Normative Auxiliary Consumption	MU	526.224		155.505	93.001	24.072	798.802
6	Gross Generation to effect sales to consumers and WBSEDCL (3+5)	MU	5846.931		1727.831	1033.347	240.719	8848.828
7	Normative Station Heat Rate	Kcal/Kwh	2500.000		2920.000	2910.000	5800.000	-
8	Station Heat Rate Required (6x7)	M.Kcal	14617327.500		5045266.520	3007039.770	1396170.200	24065803.990
9	Specific Oil Consumption	MI/Kwh	1.30		2.20	2.20	0.00	-
10	Normative Oil Consumption on generation for sale to consumers and WBSEDCL (6x9)	KL	7601.010		3801.228	2273.363	0.000	13675.601
11	Weighted Average Heat Value of Oil	Kcal/Ltr	9724.00		9645.00	9603.00	0.00	-
12	Heat from Oil [(10X11)/1000]	M.Kcal	73912.221		36662.844	21831.105	0.000	132406.170
13	Heat from Coal (8-12)	M.Kcal	14543415.279		5008603.676	2985208.665	1396170.200	23933397.820
14	Weighted Average Heat Value of Coal	Kcal/Kg	3418.00		4519.00	4022.00	5603.00	-
15	Coal required for consumption [(13/14)*1000]	MT	4254948.882		1108343.367	742219.956	249182.616	-
16	Coal required with transit loss	MT	4287102.148		1116718.758	747828.671	251065.608	-
17	Weighted Average Price of Oil	Rs/KL	62450.85		53370.61	61963.47	0.00	-
18	Weighted Average Price of Coal	Rs/MT	2274.76		4194.94	3419.84	7370.59	-
19	Cost of Oil (10X17)	Rs. in Lakh	4746.90		2028.74	1408.65	0.00	8184.29
20	Cost of Coal ((16X18)	Rs. in Lakh	97521.28		46845.68	25574.54	18505.02	188446.53
21	Admissible Cost of fuel (19+20)	Rs. in Lakh	102268.18		48874.42	26983.20	18505.02	196630.82



ANNEXURE – 2B COMPUTATIONS OF ALLOWABLE FUEL AND POWER PURCHASE COST

Factor Notation	Nomenclature	Unit	Value
t	Norms of Transmission and Distribution loss considered for sale to licensee	%	14.60
d	Norms of distribution loss for sale to consumers	%	14.60
E _O	Admitted energy for own consumption	MU	19.826
E _{SL}	Energy sale to licensee (WBSEDCL)	MU	46.821
E _{SC}	Energy sale to consumer	MU	8270.698
Fuel Cost	Fuel cost for generation on normative parameters (Refer Annexure – 2A)	Rs. in Lakh	196630.82
FC _{IUC}	Per unit Fuel Cost at distribution input (Refer para A of Annexure – 2C)	Paise/Kwh	207.37
FC _{Adm_d}	Admissible Fuel Cost for sale to licensee (Refer para B of Annexure – 2C)	Rs. in Lakh	1136.92
FC _{Adm_C}	Admissible Fuel Cost for sale to consumer (Para – C of Annexure 2C)	Rs. in Lakh	201312.17
FC	Allowable fuel cost (Refer para D of Annexure 2C)	Rs. in Lakh	202449.09
PPC	Power Purchase Cost (Refer Para 2.3)	Rs. in Lakh	63605.28



ANNEXURE – 2C

A. Fuel Cost per Unit (Kwh) at Distribution			
	Input	Unit	Amount
(i)	Fuel Cost (As per Annexure – 2A)	Rs. in Lakh	196630.82
(ii)	Energy sent out from own generation for the consumers and licensee	MU	8050.026
(iii)	Purchase	MU	1432.128
(iv)	$FC_{IUC} [(i)/\{(ii)+(iii)\}]$	Paise/Kwh	207.37

B. Admissible Fuel Cost for Sale to Licensee			
		Unit	Amount
(i)	$\frac{E_{SL}}{(1-t \times 0.01)} \times FC_{IUC} = \frac{46.821 \text{ MU}}{0.854} \times 207.37$	Rs. in Lakh	1136.92

C. Admissible Fuel Cost for sale to Consumers			
		Unit	Amount
(i)	$\frac{E_{sc} + E_o}{(1-d \times 0.01)} \times FC_{IUC} = \frac{(8270.698+19.826) \text{ MU}}{0.854} \times 207.37$	Rs. in Lakh	201312.17

D. Allowable Fuel Cost for Sale to Licensee and to Consumers			
		Unit	Amount
(i)	B + C	Rs. in Lakh	202449.09

E. Excess/Savings (in Auxiliary Consumption)						
Figures in MU						
Generating Station	Energy sent out for Licensee and Consumers	Normative Rate of Auxiliary Consumption	Normative Auxiliary Consumption	Actual Rate of Auxiliary Consumption	Actual Auxiliary Consumption	Savings
Budge Budge	5320.707	9.00%	526.224	8.2497%	478.409	47.815
Titagarh	1572.326	9.00%	155.505	8.3514%	143.276	12.229
Southern	940.346	9.00%	93.001	9.2748%	96.131	0.000
New Cossipore	216.647	10.00%	24.072	12.0319%	29.632	0.000
Total	8050.026	-	798.802	-	747.448	60.044



ANNEXURE – 2D

COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE			
Name of Generating Station:		BUDGE BUDGE TPS	
Period :		April '2011	to December '2011
Grade of Coal	Grade wise coal consumption in (%) for the period April, 2011 to December, 2011	Lower UHV value of Grade (Kcal/ Kg)	Product = UHV X Quantity
(1)	(2)	(3)	(4) = (2) X (3)
A	0.07	6200	434.00
B	2.24	5600	12544.00
C	3.84	4940	18969.60
D	2.19	4200	9198.00
E	2.61	3360	8769.60
F	6.22	2400	14928.00
WIII	4.80	4714	22627.20
WIV	14.34	3854	55266.36
Non CIL Indigenous	42.43	2747	116555.21
Non CIL Indigenous Washed	13.00	3520	45760.00
Imported	8.26	4804	39681.04
Sub Total : (A)	100.00		344733.01
Weighted Average / Minimum Allowable Heat Value for the period (A)			3447
Period :		January '2012	to March, 2012
Grade of Coal	Grade wise coal consumption in (%) for the period January, 2012 to March, 2012	Lower UHV value of Grade as Per Regulation 5.8.15 of Tariff Regulations (Kcal/ Kg)	PRODUCT = UHV X QUANTITY
(1)	(2)	(3)	(4) = (2) X (3)
G3	0.10	5926	592.60
G4	0.04	5648	225.92
G5	6.53	5120	33433.60
G6	2.95	4540	13393.00
G7	1.61	4293	6911.73
G13	6.48	1421	9208.08
WIII	2.54	4714	11973.56
WIV	7.17	3854	27633.18
Non CIL Indigenous	43.06	2503	107779.18
Non CIL Indigenous Washed	17.66	3514	62057.24
Imported	11.86	4863	57675.18
Sub Total : (B)	100.00		330883.27
Weighted Average / Minimum Allowable Heat Value for the period (B)			3309
Period	Consumption during the period as a % of total consumption during the year		Heat Value (Kcal/Kg)
April, 2011 to December, 2011 (A)	78.65		3447
January, 2012 to March, 2012 (B)	21.35		3309
Weighted Average / Minimum Allowable Heat Value for the year	100.00		3418
Value of 'X'			3418
Actual Weighted average Heat value of coal as per auditor's certificate			2991
Allowable heat value of coal			3418



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COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE			
Name of Generating Station:		TITAGARH TPS	
Period :		April '2011	to
		December '2011	
Grade of Coal	Grade wise coal consumption in (%) for the period April, 2011 to December, 2011	Lower UHV value of Grade (Kcal/ Kg)	Product = UHV X Quantity
(1)	(2)	(3)	(4) = (2) X (3)
A	3.72	6200	23064.00
B	54.17	5600	303352.00
C	3.35	4940	16549.00
D	0.30	4200	1260.00
E	0.15	3360	504.00
F	0.01	2400	24.00
WIV	0.84	3854	3237.36
Non CIL Indigenous	27.72	2816	78059.52
Non CIL Indigenous Washed	8.51	3520	29955.20
Imported	1.23	4685	5762.55
Sub Total : (A)	100.00		461767.63
Weighted Average / Minimum Allowable Heat Value for the period (A)			4618
Period :		January '2012	to
		March, 2012	
Grade of Coal	Grade wise coal consumption in (%) for the period January, 2012 to March, 2012	Lower UHV value of Grade as Per Regulation 5.8.15 of Tariff Regulations (Kcal/ Kg)	PRODUCT = UHV X QUANTITY
(1)	(2)	(3)	(4) = (2) X (3)
G3	1.22	5926	7229.72
G4	21.56	5648	121770.88
G5	26.25	5120	134400.00
G6	1.29	4540	5856.60
Non CIL Indigenous	34.98	2739	95810.22
Non CIL Indigenous Washed	14.70	3514	51655.80
Imported			0.00
Sub Total : (B)	100.00		416723.22
Weighted Average / Minimum Allowable Heat Value for the period (B)			4167
Period	Consumption during the period as a % of total consumption during the year	Heat Value (Kcal/Kg)	
April, 2011 to December,2011 (A)	78.07	4618	
January,2012 to March,2012 (B)	21.93	4167	
Weighted Average / Minimum Allowable Heat Value for the year	100.00	4519	
Value of 'X'		4519	
Actual Weighted average Heat value of coal as per auditor's certificate			3930
Allowable heat value of coal			4519



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COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE			
Name of Generating Station:		SOUTHERN TPS	
Period :		April '2011	to
		December '2011	
Grade of Coal	Grade wise coal consumption in (%) for the period April, 2011 to December, 2011	Lower UHV value of Grade (Kcal/ Kg)	Product = UHV X Quantity
(1)	(2)	(3)	(4) = (2) X (3)
A	2.23	6200	13826.00
B	33.11	5600	185416.00
C	5.20	4940	25688.00
D	1.06	4200	4452.00
E	0.12	3360	403.20
F	2.37	2400	5688.00
WIII	1.28	4714	6033.92
WIV	6.46	3854	24896.84
Non CIL Indigenous	34.71	2838	98506.98
Non CIL Indigenous Washed	9.84	3520	34636.80
Imported	3.62	4880	17665.60
Sub Total : (A)	100.00		417213.34
Weighted Average / Minimum Allowable Heat Value for the period (A)			4172
Period :		January '2012	to
		March, 2012	
Grade of Coal	Grade wise coal consumption in (%) for the period January, 2012 to March, 2012	Lower UHV value of Grade as Per Regulation 5.8.15 of Tariff Regulations (Kcal/ Kg)	PRODUCT = UHV X QUANTITY
(1)	(2)	(3)	(4) = (2) X (3)
G3	1.92	5926	11377.92
G4	13.35	5648	75400.80
G5	2.58	5120	13209.60
G9	0.36	3575	1287.00
G13	5.07	1421	7204.47
WIV	2.47	3854	9519.38
Non CIL Indigenous	50.44	2793	140878.92
Non CIL Indigenous Washed	21.32	3514	74918.48
Imported	2.49	4810	11976.90
Sub Total : (B)	100.00		345773.47
Weighted Average / Minimum Allowable Heat Value for the period (B)			3458
Period	Consumption during the period as a % of total consumption during the year	Heat Value (Kcal/Kg)	
April, 2011 to December,2011 (A)	78.93	4172	
January,2012 to March,2012 (B)	21.07	3458	
Weighted Average / Minimum Allowable Heat Value for the year	100.00	4022	
Value of 'X'		4022	
Actual Weighted average Heat value of coal as per auditor's certificate			3453
Allowable heat value of coal			4022



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COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE			
Name of Generating Station:		NEW COSSIPORE TPS	
Period :		April '2011 to December '2011	
Grade of Coal	Grade wise coal consumption in (%) for the period April, 2011 to December, 2011	Lower UHV value of Grade (Kcal/ Kg)	Product = UHV X Quantity
(1)	(2)	(3)	(4) = (2) X (3)
A	7.85	6200	48670.00
B	90.88	5600	508928.00
C	1.17	4940	5779.80
D			0.00
E			0.00
F			0.00
WIII			0.00
WIV			0.00
Non CIL Indigenous			0.00
Non CIL Indigenous Washed			0.00
Imported	0.10	4797	479.70
Sub Total : (A)	100.00		563857.50
Weighted Average / Minimum Allowable Heat Value for the period (A)			5639
Period :		January '2012 to March, 2012	
Grade of Coal	Grade wise coal consumption in (%) for the period January, 2012 to March, 2012	Lower UHV value of Grade as Per Regulation 5.8.15 of Tariff Regulations (Kcal/ Kg)	PRODUCT = UHV X QUANTITY
(1)	(2)	(3)	(4) = (2) X (3)
G2	5.05	6437	32506.85
G3	8.24	5926	48830.24
G4	36.16	5648	204231.68
G5	50.41	5120	258099.20
Imported	0.14	5002	700.28
Sub Total : (B)	100.00		544368.25
Weighted Average / Minimum Allowable Heat Value for the period (B)			5444
Period	Consumption during the period as a % of total consumption during the year	Heat Value (Kcal/Kg)	
April, 2011 to December,2011 (A)	81.36	5639	
January,2012 to March,2012 (B)	18.64	5444	
Weighted Average / Minimum Allowable Heat Value for the year	100.00	5603	
Value of 'X'		5603	
Actual Weighted average Heat value of coal as per auditor's certificate			5404
Allowable heat value of coal			5603



CHAPTER – 3 SHARING OF GAINS WITH THE CONSUMERS AND LICENSEE (WBSEDCL)

3.1 The amount of fuel and power purchase cost of Rs. 266054.37 lakh, as shown in paragraph 2.6 in the previous chapter, computed as per FPPCA formula specified in Tariff Regulations is inclusive of the amounts of gains derived by CESC on account of its better performances on different parameters of operational and fuel consumption norms. As mentioned in paragraphs 1.5 and 1.6, CESC is required to pass on part of such gains derived by it to its consumers and WBSEDCL. The amounts of gains attributable to the consumers and WBSEDCL are being viewed and ascertained hereafter.

3.2 Gain Sharing for better Oil Consumption Rate:

3.2.1 The actual specific oil consumption rates for Budge Budge, Titagarh and Southern generating stations are found better than the normative rate as considered in tariff order. The actual rate of oil consumption vis-à-vis rate of specific oil consumption as per tariff order / norms for the respective year for Budge, Titagarh and Southern Generation Stations are given hereunder:

Figures in MI/kWh

Generating Station	As per Tariff Order/ Norms	Actual as per submission	Savings
Budge Budge	1.30	0.39	0.91
Titagarh	2.20	1.17	1.03
Southern	2.20	1.06	1.14

3.2.2 With reference to actual generation for effecting supply to the consumers and to WBSEDCL, the normative and actual consumption of oil at above mentioned specific consumption rate works out as under:



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Sl No	Particulars	Unit	Budge Budge	Titagarh	Southern	Total
1	Energy sent-out for the consumers and WBSEDCL	MU	5320.707	1572.326	940.346	
2	Actual rate of Auxiliary Consumption	%	8.2497	8.3514	9.2748	
3	Gross generation for consumers and WBSEDCL	MU	5799.116	1715.602	1036.477	
4	Normative Oil consumption rate	MI/kwh	1.30	2.20	2.20	
5	Oil Consumption at normative rates	KL	7538.85	3774.32	2280.25	
6	Oil Consumption at actual	KL	2274.15	2014.51	1100.39	
7	Oil consumption rate at actual	MI/kwh	0.39	1.17	1.06	
8	Category		B	C	C	
9	Percentage of gain sharing attributable to consumers and WBSEDCL	%	30%	30%	30%	
10	Average rate of Oil	Rs./KL	62450.85	53370.61	61963.47	
11	Cost of Oil on normative consumption (5X10)	Rs. in Lakh	4708.08	2014.38	1412.92	
12	Actual Cost of Oil (6X10)	Rs. in Lakh	1420.23	1075.16	681.84	
13	Gains accrued on saving of Oil (11-12)	Rs. in Lakh	3287.85	939.22	731.08	
14	Share of gains attributable to consumers and WBSEDCL (In terms of categorization and criteria as per para A1 of Schedule 9B to Tariff Regulations)	Rs. in Lakh	986.35	281.77	219.32	1487.44

3.3 Gain Sharing for Better Rate of Auxiliary Consumption:

3.3.1 As shown in paragraph E in Annexure – 2C to the previous chapter, the savings arising out of difference between normative quanta of auxiliary consumption on generation meant for supply of power to the consumers and WBSEDCL and actual such consumption were found as given hereunder. The entire benefits of savings in the quanta of auxiliary consumption have been passed on to CESC while computing the amount of allowable fuel and power purchase cost as shown in Annexure – 2B in the previous chapter.



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Such benefits have been valued in monetary terms at the average rate of cost of generation of the respective generating station. In terms of paragraph A2 of Schedule 9B to the Tariff Regulations, part of the gains so derived by CESC requires to be passed on to the consumers and WBSEDCL. Share to be passed on works out as under:

Generating Station	Savings in Auxiliary Consumption (MU)	Cost of Generation (Paise / kWh)	Monetary value of Savings (Rs. in Lakh)	Share to consumers & WBSEDCL	
				Percentage	Amount (Rs. in Lakh)
Budge Budge	47.815	174.91	836.33	25%	209.08
Titagarh	12.229	282.87	345.92	30%	103.77
Southern	0.000	261.12	0.00	0.00	0.00
New Cossipore	0.000	768.74	0.00	0.00	0.00
Total	60.044		1182.25		312.85

3.4 Share of Savings in Cost of Coal for achieving better Station Heat Rates:

3.4.1 The normative Station Heat Rates considered in the tariff order for 2011 – 2012 for different generating stations of CESC with reference to their respective design station heat rates and vintages were as under:

Generating Station	Station Heat Rates as per Norm set (Kcal/kWh)
Budge	2500.00
Titagarh	2920.00
Southern	2910.00
New Cossipore	5800.00

3.4.2 The allowable cost of fuel at different generating stations, as computations shown in Annexure – 2A, was ascertained based on such normative station heat rates. It has been seen that CESC succeeded in achieving better Station Heat Rates in all the generating stations except at New Cossipore where the rate exceeded the rate considered in tariff order for the concerned year. CESC, thus, could derive some gains by way of saving the fuel cost in the generating stations at Budge Budge, Titagarh and Southern. In terms of Schedule 9B to the Tariff Regulations, part of such gains derived on account



of the savings in the cost of coal are to be passed on to the consumers and to WBSEDCL. However, CESC experienced higher station Heat Rate than the norms in the generating station at New Cossipore and suffered loss due to higher station heat rate. CESC in their petition prayed to pass on 50% of the loss suffered by them at New Cossipore generating station due to higher station heat rate to the consumers as a portion of the gain achieved in the other generating stations are to be passed on to the consumers. In their application CESC has also given the justification for running the old power station at New Cossipore during peak hours. Since any losses suffered by the licensee in any generating station for achieving operating norms, are on the account of the licensee the loss suffered by CESC at New Cossipore Generating Station cannot be passed on to the consumer.

- 3.4.3 Following the methodology enunciated by the Commission in paragraph A3 of Schedule 9B to the Tariff Regulations, share of such gains attributable to the consumers and WBSEDCL is 20% for Budge Budge. The same for Titagarh and Southern generating stations comes to 30% and 25% respectively. The total amount so to be passed on to consumers comes to Rs. 3995.89 lakh with the following station wise break-up:

	Rs. in Lakh
Budge Budge	3524.12
Titagarh	332.67
Southern	139.10
Total	3995.89

- 3.4.4 The computations in these regards may be seen at Annexure – 3A.

3.5 **Benefits for savings in Distribution Loss:**

- 3.5.1 As analyzed in paragraph 1.7 and 1.8 in Chapter – 1, CESC could save 272.870 MU by making improvements in the extent of distribution loss. In



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terms of Section – D of the Schedule 9B to the Tariff Regulations, CESC is allowed to retain the entire benefits for such savings. Such benefits in monetary terms work out as under:

Sl. No.	Particulars	Quantum (MU)	Amount (Rs. in Lakh)
1	Ex-bus generation for sale to consumers and WBSEDCL and Fuel cost thereon (Vide Annexure 2A)	8050.026	196630.82
2	Purchase of Energy (vide paragraph 2.3 of Chapter 2)	1432.128	63605.28
3	Total	9482.154	260236.10
4	Average cost per unit in the Distribution System	-	274.45 Paise/kWh
5	Cost of quantity saved (vide paragraph 1.8 of Chapter 1)	272.870	7488.92

3.5.2 Out of the amount of Rs. 7488.92 lakh computed above, a total amount of Rs. 5818.27 lakh (Rs. 202449.09 lakh – Rs. 196630.82 lakh) has already been passed on to CESC while computing the allowable fuel costs for sales to WBSEDCL and the consumers by way of adopting the normative rate of distribution loss in the denominator of the fraction for such computation. The balance amount of Rs. 1670.65 lakh (Rs. 7488.92 lakh – Rs. 5818.27 lakh) is now being allowed.



ANNEXURE – 3A

COMPUTATIONS OF THE SHARE OF SAVINGS IN COST OF COAL ON ACCOUNT OF ACHIEVING BETTER STATION HEAT RATE

SI No	Particulars	Factor Notation	Unit	Budge Budge	Titagarh	Southern	New Cossipore	Overall
1	Design Station Heat Rate	D	Kcal/Kwh	2247	2659	2707	2920	-
2	Gross Station Heat Rate considered for the year	SHR _n	Kcal/Kwh	2500	2920	2910	5800	-
3	Ratio of SHR _n to D	-	-	1.112	1.098	1.075	1.986	-
4	Categorization of Generating Stations as per Regulations	-	-	C	B	B	C	-
5	SHR/SHR _n	-	-	Less than 0.96	Less than 0.99 and greater than 0.98	Less than 0.98 and greater than 0.97	More than 1.00	-
6	Generation (net of units used for sale to persons other than own consumers and WBSEDCL vide Annexure – 2A)	-	MU	5846.931	1727.831	1033.347	240.719	8848.828
7	Cost of Coal for sale to own consumers and WBSEDCL (Vide Annexure – 2A)	-	Rs in Lakh	97521.28	46845.68	25574.54	18505.02	188446.52
8	Proportionate actual use of coal in generation for supply to consumers and WBSEDCL (As per audit certification)	-	MT	3512487.54	1090284.59	731558.38	276840.39	5611170.90
9	Actual cost of Coal used for supply to consumers and WBSEDCL	-	Rs. in Lakh	79900.66	45736.78	25018.13	20404.77	171060.34
10	Savings in cost of Coal for achieving better Station Heat Rate (7-9)	-	Rs. in Lakh	17620.62	1108.90	556.41	0.00	19285.93
11	Share of Savings in cost attributable to consumers and WBSEDCL	-	%	20.00	30.00	25.00	0.00	
12	Share of Savings in cost attributable to consumers and WBSEDCL	-	Rs. in Lakh	3524.12	332.67	139.10	0.00	3995.89



CHAPTER – 4 ORDER

- 4.1 The analyses in the earlier chapters show that the amount of fuel cost computed on the basis of normative parameters and in terms of the specified FPPCA formula comes to Rs. 202449.09 lakh. The amount is inclusive of the gains accrued on to CESC for its better performances in regard to fuel consumption norms. In terms of Schedule 9B to the Tariff Regulations, a part of such gains is to be passed on to the consumers and WBSEDCL. Such shares attributable to them have been worked out in chapter – 3. The net amount of fuel cost allowable to CESC after carrying out adjustments of the shares of gains attributable to the consumers and WBSEDCL comes as under:

Sl. No.	Particulars	Amount (Rs. in Lakh)	Amount (Rs. in Lakh)
1	Fuel Cost on normative basis		202449.09
2	Less: Shares of gains attributable to consumers and WBSEDCL		
	i) cost saving on use of Oil	1487.44	
	ii) on improvement in the rate of Auxiliary Consumption	312.85	
	iii) for achieving better Station Heat Rate	3995.89	5796.18
3	Net amount of allowable fuel cost		196652.91

- 4.2 Station-wise break-up of the allowable fuel cost is given below:

Sl. No.	Particulars	Amount (Rs. in Lakh)				Total
		Budge Budge	Titagarh	Southern	New Cossipore	
1	Fuel cost on normative basis	105294.28	50320.61	27781.63	19052.58	202449.09
2	Less: Share of Gains attributable to Consumers and WBSEDCL					
	i) Cost saving on use of OIL	986.35	281.77	219.32	0.00	1487.44
	ii) On improvement in the rate of Auxiliary Consumption	209.08	103.77	0.00	0.00	312.85
	iii) For achieving better Station Heat Rate	3524.12	332.67	139.10	0.00	3995.89
	Total (2)	4719.55	718.21	358.42	0.00	5796.18
3	Net amount of allowable fuel cost (1-2)	100574.73	49602.40	27423.21	19052.58	196652.91

- 4.3 Actual amount of power purchase cost incurred by CESC for purchasing 1432.128 MU from different sources, as enumerated in paragraph 2.3.1 is Rs. 63605.28.



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- 4.4 An additional amount of Rs. 1670.65 lakh is found admissible to CESC on account of savings in the rate of distribution loss as shown in paragraph 3.5.2.
- 4.5 Summing up the findings as stated above, the net amount of fuel and power purchase cost allowed to CESC for the year 2011 – 2012 comes as under:

	Rs. in Lakh
Fuel Cost (net of shares attributable to persons other than consumers and WBSEDCL).	196652.91
Power Purchase Cost	63605.28
Additional amount on account of savings in the rate of Distribution loss	1670.65
Re-determined Fuel and Power Purchase Cost	261928.84

- 4.6 The Commission decides, in terms of regulation 2.8.7.1 of the Tariff Regulations, to consider this amount of Rs. 261928.84 lakh allowable towards fuel and power purchase cost along with the Annual Performance Review for the year 2011 – 2012 or that for any other ensuing year or through a separate order, as may be decided by the Commission.
- 4.7 CESC is to take note of this order.

Sd/-
(SUJIT DASGUPTA)
MEMBER

Sd/-
(PRASADRANJAN RAY)
CHAIRPERSON

Dated: 31.07.2013