



**ORDER**  
**OF THE**  
**WEST BENGAL ELECTRICITY REGULATORY**  
**COMMISSION**  
**IN CASE NO.**  
**FPPCA – 65/13-14**

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

**PRESENT:**  
**SRI SUJIT DASGUPTA, MEMBER**

**DATE: 04.03.2014**



## 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 2012-13 on 17 September, 2013 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 2012 – 2013, 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<sub>O</sub> = Admitted Energy for own consumption by licensee,

E<sub>SL</sub> = Energy sale to other licensee in MU

E<sub>SC</sub> = 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<sub>IUC</sub> = 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<sub>Adm\_d</sub> = Admitted Fuel Cost for sale to licensee

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

FC<sub>Adm\_C</sub> = Admitted Fuel Cost for sale to consumer

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

FC = FC<sub>Adm\_d</sub> + FC<sub>Adm\_C</sub>



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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	<b>Budge Budge</b>	Rate of Auxiliary Consumption	%	9.00	8.347
		Specific Consumption of Oil	ml/kWh	1.30	0.29
		Station Heat Rate	kCal/kWh	2480	2160.17
2	<b>Titagarh</b>	Rate of Auxiliary Consumption	%	9.00	8.23
		Specific Consumption of Oil	ml/kWh	2.15	0.78
		Station Heat Rate	kCal/kWh	2915	2629.64
3	<b>Southern</b>	Rate of Auxiliary Consumption	%	9.00	8.852
		Specific Consumption of Oil	ml/kWh	2.15	0.95
		Station Heat Rate	kCal/kWh	2905	2660.47
4	<b>New Cossipore</b>	Rate of Auxiliary Consumption	%	10.00	13.227
		Station Heat Rate	kCal/kWh	5800	6617.32

- 1.5 As may be seen from the above statement, CESC succeeded in performing better than norms for auxiliary consumption and for oil consumption in the generating stations at 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 the generating stations at Budge Budge, Titagarh and Southern are found better than the norms considered in the tariff order for the concerned year. Heat rate at New Cossipore generating station is however above the normative level. 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.



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1.7 The norm for distribution loss of CESC for the year 2012 – 2013 was considered to be 14.45% in the tariff order. As it comes out from the data as provided by CESC for the year 2012 – 2013, 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 11.87% as shown below:

Sl No	Particulars	Figures in Million Units
<b>Inputs to System</b>		
(a)	Gross Generation	8714.990
(b)	Less: Auxiliary consumption	740.600
(c)	Net Sent Out Energy [(a) – (b)]	7974.390
(d)	Sale to persons other than Consumers and WBSEDCL including Transmission loss to effect that sale	26.267
(e)	Net energy available from own generation for sale to consumer and WBSEDCL [(c) – (d)]	7948.123
(f)	Energy purchased during the year	1844.749
(g)	Unscheduled Interchange (Net)	16.356
<b>(h)</b>	<b>Delivered to the system [(e)+(f)+(g)]</b>	<b>9809.228</b>
<b>Utilization</b>		
(i)	Sales to Consumers and WBSEDCL	8625.610
(j)	Energy consumed in own premises	19.540
(k)	Distribution loss to effect sale to consumers, sale to WBSEDCL and own consumption. [(h) – (i) – (j)]	1164.078
(l)	Distribution loss in % [(k/h)x100]	11.87

1.8 The actual sale to consumer and WBSEDCL is 8625.610 MU. Energy consumed in the own premises is 19.540 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 @ 14.45% on actual quanta of sales to consumers and WBSEDCL as well as the energy consumed in own premises works out at 1460.227 MU  $\{[(8625.610 + 19.540) / (1.00 - 0.1445)] - (8625.610 + 19.540)\}$  and actual quanta of distribution loss against that sale and own consumption works out at 1164.078 MU. The savings in this regard thus comes to 296.149 MU (1460.227 MU – 1164.078 MU). As provided in



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paragraph C of Schedule – 9B to the Tariff Regulations, CESC is entitled to retain the gains accruing to it in this regard.

- 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 2012 – 2013 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	2480	2915	2905	5800
Specific Oil Consumption	MI/Kwh	1.30	2.15	2.15	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. 205453.56 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 7974.390 MU, CESC utilized 26.267 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 2012 – 2013, 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 stations, CESC computed and claimed heat value of coal and heat value of oil as under:

<b>Generating Station</b>	<b>Heat Value of Coal (Kcal/Kg)</b>	<b>Heat Value of Oil (Kcal/Litre)</b>
Budge Budge	3535.00	9517.26
Titagarh	4190.00	9406.39
Southern	3867.00	9511.40
New Cossipore	5813.00	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 vis-à-vis the actual heat value of coal 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 aforesaid annexures, the actual heat value of coal received by CESC is lower than the minimum allowable heat value in terms of the Tariff Regulations and thus the Commission consider the minimum allowable heat value of coal for different generating stations as computed.

2.2.2.3 The weighted average price of coal and oil, as certified by the auditors in Annexure C3 of the application, came as under:

Generating Station	Price of Coal (Rs/MT)	Price of Oil (Rs/KL)
Budge Budge	2781.34	68798.87
Titagarh	3606.49	60519.64
Southern	3222.15	71368.59
New Cossipore	7846.12	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 2012 – 2013 was considered 2419.80 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	1575.452	82255.89
RPGTCL	269.297	12259.65
<b>Total</b>	<b>1844.749</b>	<b>94515.54</b>



**2.4 C<sub>D</sub> : COST DISALLOWABLE:**

2.4.1 Factor C<sub>D</sub>, 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<sub>D</sub> 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. 306526.35 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:

<b>SI No</b>	<b>Particulars/Factors</b>	<b>Rs. in Lakh</b>
1	FC: Fuel cost	212010.81
2	PPC: Power purchase cost	94515.54
3	C <sub>D</sub> : Cost disallowable	0.00
4	±A :Adjustment relating to earlier period	0.00
5	<b>FC+(PPC-C<sub>D</sub>)+( ± A)</b>	<b>306526.35</b>

**Annexure - 2A**  
**ADMISSIBLE FUEL COST**

SI No	Particulars	Unit	Budge Budge	Titagarh	Southern	New Cossipore	Total
1	Ex-bus Generation	MU	5321.490	1513.870	966.170	172.86	7974.390
2	Ex-bus Generation utilized to effect sales to persons other than consumers and WBSEDCL	MU	26.267	0.000	0.000	0.000	26.267
3	Energy sent-out from own generation for the consumers and WBSEDCL [(1) - (2)]	MU	5295.223	1513.870	966.170	172.860	7948.123
4	Rate of Normative Auxiliary Consumption	%	9.00	9.00	9.00	10.00	-
5	Normative Auxiliary Consumption	MU	523.703	149.723	95.555	19.207	788.188
6	Gross Generation to effect sales to consumers and WBSEDCL [(3)+(5)]	MU	5818.926	1663.593	1061.725	192.067	8736.311
7	Normative Station Heat Rate	Kcal/Kwh	2480.000	2915.000	2905.000	5800.000	-
8	Total Heat Required [(6)x(7)]	M.Kcal	14430936.480	4849373.595	3084311.125	1113988.600	23478609.800
9	Specific Oil Consumption	MI/Kwh	1.30	2.15	2.15	0.00	-
10	Normative Oil Consumption on generation for sale to consumers and WBSEDCL [(6)x(9)]	KL	7564.604	3576.725	2282.709	0.000	13424.038
11	Weighted Average Heat Value of Oil	Kcal/Ltr	9517.26	9406.39	9511.40	0.00	-
12	Heat from Oil [{"(10)X(11)}/1000]	M.Kcal	71994.303	33644.070	21711.758	0.000	127350.131
13	Heat from Coal [(8)-(12)]	M.Kcal	14358942.177	4815729.525	3062599.367	1113988.600	23351259.669
14	Weighted Average Heat Value of Coal	Kcal/Kg	3535.00	4190.00	3867.00	5813.00	-
15	Coal required for consumption [{"(13)}/(14)]*1000]	MT	4061935.552	1149338.789	791983.286	191637.468	-
16	Coal required with transit loss @ 0.75%	MT	4092630.279	1158023.969	797968.046	193085.610	-
17	Weighted Average Price of Oil	Rs/KL	68798.87	60519.64	71368.59	0.00	-
18	Weighted Average Price of Coal	Rs/MT	2781.34	3606.49	3222.15	7846.12	-
19	Cost of Oil [{"(10)X(17)}/100000]	Rs. in Lakh	5204.36	2164.62	1629.14	0.00	8998.12
20	Cost of Coal [{"(16)X(18)}/100000]	Rs. in Lakh	113829.96	41764.02	25711.73	15149.73	196455.44
21	Admissible Cost of fuel [(19)+(20)]	Rs. in Lakh	119034.32	43928.64	27340.87	15149.73	205453.56
22	Cost of Generation [{"(21)}/(6)]x10]	Paise/kWh	204.56	264.06	257.51	788.77	235.17



## 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	%	14.45
d	Norms of distribution loss for sale to consumers	%	14.45
E <sub>O</sub>	Admitted energy for own consumption	MU	19.540
E <sub>SL</sub>	Energy sale to licensee (WBSEDCL)	MU	48.51
E <sub>SC</sub>	Energy sale to consumer	MU	8577.10
Fuel Cost	Fuel cost for generation on normative parameters (Refer Annexure – 2A)	Rs. in Lakh	205453.56
FC <sub>IUC</sub>	Per unit Fuel Cost at distribution input (Refer para A of Annexure – 2C)	Paise/Kwh	209.80
FC <sub>Adm_d</sub>	Admissible Fuel Cost for sale to licensee (Refer para B of Annexure – 2C)	Rs. in Lakh	1189.64
FC <sub>Adm_C</sub>	Admissible Fuel Cost for sale to consumer (Para – C of Annexure 2C)	Rs. in Lakh	210821.17
FC	Allowable fuel cost (Refer para D of Annexure 2C)	Rs. in Lakh	212010.81
PPC	Power Purchase Cost (Refer Para 2.3)	Rs. in Lakh	94515.54



## ANNEXURE – 2C

A. Fuel Cost per Unit (Kwh) at Distribution Input		Unit	Amount
(i)	Fuel Cost (As per Annexure – 2A)	Rs. in Lakh	205453.56
(ii)	Energy sent out from own generation for the consumers and licensee (refer sl. No. 3 in Annexure-2A)	MU	7948.123
(iii)	Purchase (refer para 1.7)	MU	1844.749
(iv)	$FC_{IUC} [(i)/\{(ii)+(iii)\} \times 10]$	Paise/Kwh	209.80

B. Admissible Fuel Cost for Sale to Licensee		Unit	Amount
(i)	$\frac{E_{SL}}{(1-t \times 0.01)} \times FC_{IUC} = \frac{48.510 \text{ MU} \times 10}{0.8555} \times \frac{209.80}{100}$	Rs. in Lakh	1189.64

C. Admissible Fuel Cost for sale to Consumers		Unit	Amount
(i)	$\frac{E_{SC} + E_o}{(1-d \times 0.01)} \times FC_{IUC} = \frac{(8577.100+19.540) \text{ MU} \times 10}{0.8555} \times \frac{209.80}{100}$	Rs. in Lakh	210821.17

D. Allowable Fuel Cost for Sale to Licensee and to Consumers		Unit	Amount
(i)	B + C	Rs. in Lakh	212010.81

E. Excess/Savings (in Auxiliary Consumption)						
Generating Station	Figures in MU					
	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	5295.223	9.00%	523.703	8.347%	482.245	41.458
Titagarh	1513.870	9.00%	149.723	8.230%	135.765	13.958
Southern	966.170	9.00%	95.555	8.852%	93.831	1.724
New Cossipore	172.860	10.00%	19.207	13.227%	26.349	0.00
<b>Total</b>	<b>7948.123</b>	<b>-</b>	<b>788.188</b>	<b>-</b>	<b>738.190</b>	<b>57.140</b>





## ANNEXURE – 2D

<b>COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE</b>			
<b>Name of Generating Station:</b>		<b>BUDGE BUDGE TPS</b>	
Grade of Coal	Grade wise coal consumption in (%)	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	0.03	6437.00	193.11
G3	0.77	5926.00	4563.02
G4	3.40	5648.00	19203.20
G5	3.14	5120.00	16076.80
G6	2.07	4540.00	9397.80
G7	0.52	4293.00	2232.36
G12	2.72	1546.00	4205.12
G13	2.47	1421.00	3509.87
WIII	6.60	4714.00	31112.40
WIV	13.23	3854.00	50988.42
Non CIL Indigenous	40.12	2795.00	112135.40
Non CIL Indigenous Washed	13.95	3249.00	45323.55
Imported	10.98	4969.00	54559.62
<b>Total :</b>	<b>100.00</b>		<b>353500.67</b>
<b>Weighted Average Minimum Allowable Heat Value for the year</b>			<b>3535.00</b>
<b>Value of 'X'</b>			<b>3535.00</b>
<b>Actual Weighted average Heat value of coal as per auditor's certificate</b>			<b>3007.00</b>
<b>Allowable heat value of coal</b>			<b>3535.00</b>

<b>COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE</b>			
<b>Name of Generating Station:</b>		<b>TITAGARH TPS</b>	
Grade of Coal	Grade wise coal consumption in (%)	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	0.25	6437.00	1609.25
G3	6.48	5926.00	38400.48
G4	35.61	5648.00	201125.28
G5	3.80	5120.00	19456.00
G6	0.15	4540.00	681.00
WIII	0.15	4714.00	707.10
WIV	0.04	3854.00	154.16
Non CIL Indigenous	39.45	2816.00	111091.20
Non CIL Indigenous Washed	14.07	3254.00	45783.78
<b>Total :</b>	<b>100.00</b>		<b>419008.25</b>
<b>Weighted Average Minimum Allowable Heat Value for the year</b>			<b>4190.00</b>
<b>Value of 'X'</b>			<b>4190.00</b>
<b>Actual Weighted average Heat value of coal as per auditor's certificate</b>			<b>3571.00</b>
<b>Allowable heat value of coal</b>			<b>4190.00</b>



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<b>COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE</b>			
<b>Name of Generating Station:</b>		<b>SOUTHERN TPS</b>	
Grade of Coal	Grade wise coal consumption in (%)	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	0.54	6437.00	3475.98
G3	4.65	5926.00	27555.90
G4	26.22	5648.00	148090.56
G5	2.42	5120.00	12390.40
G6	0.29	4540.00	1316.60
G13	0.49	1421.00	696.29
WIII	0.32	4714.00	1508.48
WIV	2.25	3854.00	8671.50
Non CIL Indigenous	45.96	2803.00	128825.88
Non CIL Indigenous Washed	16.86	3212.00	54154.32
<b>Total :</b>	<b>100.00</b>		<b>386685.91</b>
<b>Weighted Average Minimum Allowable Heat Value for the year</b>			<b>3867.00</b>
<b>Value of 'X'</b>			<b>3867.00</b>
<b>Actual Weighted average Heat value of coal as per auditor's certificate</b>			<b>3356.00</b>
<b>Allowable heat value of coal</b>			<b>3867.00</b>

<b>COMPUTATION OF UHV OF COAL BASED GENERATING STATION ON MINIMUM OF DECLARED HEAT VALUE</b>			
<b>Name of Generating Station:</b>		<b>NEW COSSIPORE TPS</b>	
Grade of Coal	Grade wise coal consumption in (%)	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	8.12	6437.00	52268.44
G3	36.38	5926.00	215587.88
G4	55.50	5648.00	313464.00
<b>Total :</b>	<b>100.00</b>		<b>581320.32</b>
<b>Weighted Average Minimum Allowable Heat Value for the year</b>			<b>5813.00</b>
<b>Value of 'X'</b>			<b>5813.00</b>
<b>Actual Weighted average Heat value of coal as per auditor's certificate</b>			<b>4991.00</b>
<b>Allowable heat value of coal</b>			<b>5813.00</b>



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

3.1 The amount of fuel and power purchase cost of Rs. 306526.35 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	0.29	1.01
Titagarh	2.15	0.78	1.37
Southern	2.15	0.95	1.20

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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SI No	Particulars	Unit	Budge Budge	Titagarh	Southern	Total
1	Gross generation for consumers and WBSEDCL with normative auxiliary consumption (refer table in Annexure 2A)	MU	5818.926	1663.593	1061.725	
2	Normative Oil consumption rate	MI/kwh	1.30	2.15	2.15	
3	Oil Consumption at normative rates for consumers and WBSEDCL	KL	7564.604	3576.725	2282.709	
4	Actual Oil Consumption for consumers and WBSEDCL	KL	1698.760	1286.78	1011.76	
5	Actual Oil consumption rate (refer table under paragraph 1.4)	MI/kwh	0.29	0.78	0.95	
6	Savings / difference	KL	5865.84	2289.95	1270.95	
7	Category		B	C	C	
8	Percentage of gain sharing attributable to consumers and WBSEDCL	%	26%	26%	30%	
9	Average price of Oil	Rs./KL	68798.87	60519.64	71368.59	
10	Gains accrued on saving of Oil	Rs. in Lakh	4035.63	1385.87	907.06	
11	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	1049.26	360.33	272.12	1681.71

**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. 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



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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)	Category	Share to consumers & WBSEDCL	
					Percentage	Amount (Rs. in Lakh)
Budge Budge	41.458	204.56	848.06	B	30.00	254.42
Titagarh	13.958	264.06	368.57	B	25.00	92.14
Southern	1.724	257.51	44.39	B	40.00	17.76
New Cossipore	0.000	788.77	0.00	-	0.00	0.00
<b>Total</b>	<b>57.140</b>		<b>1261.02</b>			<b>364.32</b>

**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 2012 – 2013 for different generating stations of CESC Limited 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 Budge	2480.00
Titagarh	2915.00
Southern	2905.00
New Cossipore	5800.00

3.4.2 The allowable cost of fuel at different generating stations, as per computations shown in Annexure – 2A, was ascertained based on such normative station heat rates. It has been seen that CESC Limited succeeded in achieving better Station Heat Rates in all the generating stations except New Cossipore generating station as already explained in paragraph 1.4. CESC Limited, 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 Limited 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 Limited 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 Limited 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 Limited 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 each of Titagarh and Southern generating stations is 14%. The total amount so to be passed on to consumers comes to Rs. 4107.70 lakh with the following station wise break-up:

	<b>Rs. in Lakh</b>
Budge Budge	3152.42
Titagarh	634.17
Southern	321.11
<b>Total</b>	<b>4107.70</b>

- 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 Limited saved 296.149 MU by making improvements in the extent of distribution loss. In terms of paragraph C of the Schedule 9B to the Tariff Regulations, CESC is



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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)	7948.123	205453.56
2	Purchase of Energy (vide paragraph 2.3 of Chapter 2)	1844.749	94515.54
3	<b>Total</b>	<b>9792.872</b>	<b>299969.10</b>
4	Average cost per unit in the Distribution System	-	306.31 Paise/kWh
5	Cost of quantity saved (vide paragraph 1.8 of Chapter 1)	296.149	9071.34

3.5.2 Out of the amount of Rs. 9071.34 lakh computed above, a total amount of Rs. 6557.25 lakh (Rs. 212010.81 lakh – Rs. 205453.56 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. 2514.09 lakh (Rs. 9071.34 lakh – Rs. 6557.25 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	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 <sub>n</sub> )	Kcal/Kwh	2480	2915	2905	5800	-
3	Ratio of SHR <sub>n</sub> to D	-	1.104	1.096	1.073	1.986	-
4	Categorization of Generating Stations as per Regulations	-	C	B	B	C	-
5	SHR	Kcal/Kwh	2160.17	2629.64	2660.46	6617.32	-
6	SHR/SHR <sub>n</sub>	-	Less than 0.90	Less than 0.96	Less than 0.96	greater than 1.00	-
7	Generation (net of units used for sale to persons other than own consumers and WBSEDCL vide Annexure – 2A)	MU	5818.926	1663.593	1061.725	192.067	8736.311
8	Cost of Coal for sale to own consumers and WBSEDCL (Vide Annexure – 2A)	Rs in Lakh	113829.96	41764.02	25711.73	15149.73	196455.44
9	Proportionate actual use of coal in generation for supply to consumers and WBSEDCL (As per audit certification)	MT	3525921.81	1032424.00	726784.00	226774.00	5511903.81
10	Actual cost of Coal used for supply to consumers and WBSEDCL	Rs. in Lakh	98067.87	37234.27	23418.07	17792.96	176513.17
11	Savings in cost of Coal for achieving better Station Heat Rate (8-10)	Rs. in Lakh	15762.09	4529.75	2293.66	0.00	22585.50
12	Share of Savings in cost attributable to consumers and WBSEDCL	%	20.00	14.00	14.00	-	
13	Share of Savings in cost attributable to consumers and WBSEDCL	Rs. in Lakh	3152.42	634.17	321.11	0.00	4107.70





## 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. 212010.81 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		212010.81
2	Less: Shares of gains attributable to consumers and WBSEDCL		
	i) cost saving on use of Oil	1681.71	
	ii) on improvement in the rate of Auxiliary Consumption	364.32	
	iii) for achieving better Station Heat Rate	4107.70	6153.73
3	Net amount of allowable fuel cost		205857.08

- 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	122833.41	45330.67	28213.48	15633.25	212010.81
2	Less: Share of Gains attributable to Consumers and WBSEDCL					
	i) Cost saving on use of OIL	1049.26	360.33	272.12	0.00	1681.71
	ii) On improvement in the rate of Auxiliary Consumption	254.42	92.14	17.76	0.00	364.32
	iii) For achieving better Station Heat Rate	3152.42	634.17	321.11	0.00	4107.70
	<b>Total (2)</b>	<b>4456.10</b>	<b>1086.64</b>	<b>610.99</b>	<b>0.00</b>	<b>6153.73</b>
3	Net amount of allowable fuel cost (1-2)	118377.31	44244.03	27602.49	15633.25	205857.08

- 4.3 Actual amount of power purchase cost incurred by CESC for purchasing 1844.749 MU from different sources, as enumerated in paragraph 2.3.1 is Rs. 94515.54 lakh.



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- 4.4 An additional amount of Rs. 2514.09 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 2012 – 2013 comes as under:

	<b>Rs. in Lakh</b>
Fuel Cost (net of shares attributable to persons other than consumers and WBSEDCL).	205857.08
Power Purchase Cost	94515.54
Additional amount on account of savings in the rate of Distribution loss	2514.09
<b>Re-determined Fuel and Power Purchase Cost</b>	<b>302886.71</b>

- 4.6 The Commission decides, in terms of regulation 2.8.7.1 of the Tariff Regulations, to consider this amount of Rs. 302886.71 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.
- 4.7 CESC is to take note of this order.

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

**Dated: 04.03.2014**