

**Appellate Tribunal for Electricity
(Appellate Jurisdiction)**

Appeal No. 152 of 2013

Dated: 18th December, 2014

**Present: Hon'ble Mr. Rakesh Nath, Technical Member
Hon'ble Mr. Justice Surendra Kumar, Judicial Member**

In the matter of:

Kalyanpur Cements Limited,

Maurya Centre,

1, Fraser Road,

Patna-800 001

... Appellant (s)

Versus

- 1. The Secretary,
Bihar Electricity Regulatory Commission,
Vidyut Bhawan-II,
Jawahar Lal Nehru Marg,
Patna-800 021**
- 2. The Chairman cum Managing Director,
Bihar State Power Holding Company Limited,
Vidyut Bhawan-II,
Jawahar Lal Nehru Marg,
Patna-800 021**
- 3. Managing Director,
South Bihar Power Distribution Co. Ltd.,
Vidyut Bhawan-II,
Jawahar Lal Nehru Marg,
Patna-800 021**

...Respondent(s)

Counsel for the Appellant(s) : Mr. Amit Kapoor
Mr. Apporva Misra,
Mr. Vishal Anand
Ms. Radhika Gupta

Counsel for the Respondent(s) : Mr. Mohit Kumar Shah
Ms. Shilpi Shah for R-2
Mr. Nand Sharma (Rep.) for BERC

JUDGMENT

RAKESH NATH, TECHNICAL MEMBER

This Appeal has been filed by M/s. Kalyanpur Cements Ltd. against the order dated 15.3.2013 passed by the Bihar State Electricity Regulatory Commission("State Commission") in determination of ARR for the FY 2013-14 to 2015-16 and tariff for FY 2013-14 for the State Power Generation, Transmission and Distribution Companies.

2. The Appellant is an industrial consumer. In the Appeal four issues were raised. However, it was submitted by the learned counsel for the Appellant during the hearing that the three issues had been covered by the judgment of this Tribunal in Appeal no. 123 of 2013 and hence were not being pressed. The only issue that was argued by the learned counsel for

the Appellant was relating to determination of voltage-wise cost of supply. According to the Appellant the State Commission failed to determine the voltage-wise cost of supply in terms of the directions contained in the judgment of this Tribunal in Tata Steel Ltd. vs. Orissa Electricity Regulatory Commission & Anr. 2011 ELR (APTEL) 1022 (being referred to as Tata Steel judgment) and Bihar Industries Association vs. Bihar Electricity Regulatory Commission & Anr. in Appeal Nos. 14, 26 and 27 of 2011 passed on 10.5.2012.

3. The only question that is required to be considered by us is whether the State Commission has erred in determining the voltage-wise cost of supply leading to incorrect loading of costs for consumers receiving power at higher voltage in violation of the findings of this Tribunal in Tata Steel judgment?

4. The learned counsel for the Appellant has given detailed calculation for voltage-wise cost of supply as per the Appellant's interpretation of the judgment of this Tribunal in Tata Steel case to emphasize that the State Commission has not determined the voltage-wise cost of supply correctly and since then tariff has to be $\pm 20\%$ of the voltage-wise cost of supply for their category, the tariff as determined by the State Commission has to be set aside and has to be re-determined.

5. Before we examine the computation of voltage-wise cost of supply as carried out by the State Commission in the impugned order let us examine the findings of the Tribunal in the Appeals referred to by the Appellant.

6. In the order dated 10.5.2012 in Appeal Nos. 14, 26 & 27 of 2011, this Tribunal directed the State Commission to determine the cross subsidy based on cost of supply at different voltage levels within next 6 months and to ensure that in future tariff orders beginning from FY 2013-14, the cross-subsidies and tariffs are determined based on the principles laid down by this Tribunal in Tata Steel judgment.

7. In the Tata Steel judgment, this Tribunal had recognized the difficulty in determination of cost of supply to different categories of consumers. However, instead of waiting indefinitely for availability of the entire data, the Tribunal had suggested a simple method which would take into account the major cost element. The Tribunal had suggested determination of voltage-wise cost of supply taking into account the

major cost element which would be applicable to all the consumers connected at a particular voltage level.

8. The main features of the calculation of voltage-wise cost of supply as laid down in the Tata Steel judgment are as under:

(i) Ideally, the network costs can be split into the partial costs of different voltage levels and the cost of supply at a particular voltage-level is the cost of supply at that voltage level and upstream network. However, in the absence of segregated network costs, it would be prudent to work out voltage-wise cost of supply taking into account the distribution losses at different voltage levels as a first major step in the right direction. As power purchase cost is a major component of tariff, the power purchase cost can be apportioned at different voltage levels taking into

account the distribution losses at the relevant voltage level and the upstream system. It will be a simple and practical method to reflect the actual cost of supply.

(ii) The technical distribution losses in the distribution network can be assessed by system studies and field studies. As the loss level allowed in the ARR which includes some commercial loss will be more than the assessed technical loss, the difference between the two has also to be apportioned to different voltage levels in proportion to the annual gross energy consumption at the respective voltage level.

(iii) The annual gross energy consumption at a voltage level will be sum of energy consumption of all the consumers categories connected to that voltage level plus the technical distribution loss corresponding to that voltage level.

(iv) In this manner the total losses as allowed in ARR can be apportioned at different voltage levels.

(v) The consumer connected to 220/132 kV may have zero distribution loss but will have a component of apportioned commercial distribution loss.

(vi) Power purchase cost can be apportioned for different voltage levels taking into account the total loss apportioned to the consumer categories connected to respective voltage levels.

(vii) As segregated network costs are not available, all the other costs such as Return on Equity, Interest on loan, Depreciation, interest on working capital and O&M costs can be pooled and apportioned equitably, on pre-rata basis, to all appellant's category to determine the cost of supply.

(viii) Further, refinements can be done as and when more data is available.

(ix) The cross subsidy will be the difference between the average revenue realization per unit from a consumer category and the voltage-wise cost of supply for that category.

9. It is to be pointed out that the Appellant in Tata Steel case was an EHT consumer connected directly to the intra-State transmission system.

10. Let us now examine the method adopted by the State Commission to determine voltage-wise cost of supply in the impugned order.

11. We find that the State Commission has discussed the methodology for determination of voltage-wise cost of supply as given in the Tata Steel judgment of this

Tribunal. We find from the paragraph 9.2 of the impugned order that the State Commission has correctly interpreted the method given in the said judgment. The State Commission has considered the voltage-wise technical loss levels for FY 2013-14. The Appellant has not disputed the voltage-wise technical loss levels.

12. The State Commission has then worked out the technical losses by the following method:

Voltage Level	Sales (MU)	Volt. Wise Tech. Loss (%)	Energy Input (MU)	Tech. Losses (MU)
1	2	3	4	5
132/220 kV	A	W	$=A/(1-w\%)$	$=(4)-(2)$
33 kV	B	x	$=B/(1-x\%) (1-w\%)$	$=(4)-(2)$
11 kV	C	y	$=C/(1-y\%) / (1-x\%) (1-w\%)$	$=(4)-(2)$
LT	D	z	$=D/(1-z\%)(1-y\%) (1-x\%) (1-w\%)$	$=(4)-(2)$
Total	A+B+C+D			

The total commercial losses have been worked out as difference between the total losses allowed by the State Commission less the technical losses calculated

above. The total commercial losses have been apportioned to each voltage level in proportion to sales plus technical losses each voltage level as under:

Apportionment of losses

Voltage Level (KV)	Energy Sale (MU)	Voltage wise Technical losses(%)	Cumulative Loss (%)	Technical Losses (MU)	Sales + Tech. losses (MU)	Commercial Loss (MU)	Total Loss (MU)	Energy Input (MU)
1	2	3	4	5	6(2+5)	7	8(5+7)	9
220/132	744	4.00	4.00	31	775	100	131	875
33	1292	5.00	8.80	125	1417	183	307	1599
11	747	6.00	14.27	125	872	112	237	984
LT	4810	7.00	20.30	1225	6035	779	2004	6814
Total	7593			1505	9098	1174	2679	10272

13. The power purchase cost has been allocated to each voltage level in proportion to the sales including technical and commercial losses as under:

Sl. No.	Voltage Level (KV)	Energy Sale(MU)	Sales+ Technical loss + Comml. Losses (MU)	Unit cost of purchase approved by the Commission (Rs./Unit)	Total Power Purchase Cost (Rs. crore)	Cost of Power per unit sale (Rs./unit)
1	2	3	4	5	6 (4*5)	7 (6+3)
1	220/132 kV	744	875	3.86	338	4.54
2	33	1292	1599	3.86	617	4.78
3	11	747	984	3.86	380	5.09
4	LT	4810	6814	3.86	2630	5.47
	Total	7593	10272		3965	5.22

14. The total network cost has been worked out taking into account the O&M costs, depreciation, interest and finance charges, interest on working capital, return on equity and transmission cost.

15. The cost of supply at different voltage levels has been worked out as under:

Sl. No.	Supply Voltage	Cost of power purchase cost (Rs./Unit)	Network cost (Rs./Unit)	Cost of supply (Rs./Unit)
1	220/132	4.54	1.68	6.22
2	33	4.78	1.68	6.46
3	11	5.09	1.68	6.77
4	LT	5.47	1.68	7.15

16. We find that the Appellant has worked out the total technical and commercial losses at 2679 MU i.e. same as decided by the State Commission. However, there is difference in the methodology for determination of technical losses as adopted by the Appellant resulting in a higher technical losses compared to that worked out by the State

Commission. The comparative position is given as under:

<u>All figures in 'Million Units'</u>			
S.No.	Particulars	As worked out by the Appellant	As decided by the State Commission
1.	Technical Loss	1741.51	1505.05
2.	Commercial loss	937.49	1174.00
3.	Total Loss	2679.00	2679.00
4.	Total Sales	7593	7593
5.	Total input energy	10272	10272

17. According to the Appellant, the power input in the 132 kV power system would be total power available to the Board for sale to all the consumers of the State including 132 kV, 33 kV and 11 kV and also 0.4 kV. The electricity at LT point will be available only after it has passed through 132 kV, 33 kV and 11 kV voltage systems. Similarly, the electricity at 11 kV point would have to pass through 132 kV and 33 kV voltage system and electricity at 33 kV point will have to pass

through 132 kV voltage system. Therefore, the technical loss has to be determined on the basis of total power recommended by the licensee at the entry point bus bars which is 10272 MU.

18. The Appellant has worked out the technical losses as under:

**STATE MENT OF POWER INPUT IN THE
VOLTAGE SYSTEMS AND TECHNICAL LOSS**

Sr. No.	Voltage system	Power input	TECHNICAL LOSS	DISTB. MU	Sale of Energy (MU)	Power consumption in the system (MU)	Power sent out to next voltage system
1	2	3	4	5	6	7	8
1	132 KV	10272.00	4.00	410.88	744.00	1154.88	9117.12
2	33 KV	9117.12	5.00	455.86	1292.00	1747.86	7369.26
3	11 KV	7369.29	6.00	442.16	747.00	1189.16	6180.10
4	LT KV	6180.10	7.88	432.61	4810.00	5242.61	937.49
	Total		16.95	1741.51	7593.00	9334.51	

Thus, the Appellant has worked out total technical loss of 1741.51 MU and the balance energy left after consumption at LT i.e. 937.49 MU as commercial loss.

19. We have carefully examined both the methodologies and find that the methodology used by

the State Commission is correct. If there had been no commercial losses the result by both the methodologies would have been the same. In the methodology used by the Appellant the component of commercial loss has been subjected to total loss for the system whereas the commercial loss may also be at different voltage levels. In the methodology used by the State Commission the technical distribution losses caused by the consumers of a particular voltage level at different voltage system has been worked out and the total losses have been worked out as a sum of distribution losses caused by the consumers connected at different voltage levels. The commercial loss has been worked as on a difference of total distribution loss and the technical loss. This method is absolutely correct and in consonance with the methodology given in the Tata Steel judgment.

20. The networking cost has been as 1278.63 crores as approved by the State Commission in the ARR. In working out the per unit cost the State Commission has divided the total cost by 7593 MU, which is sold to various consumes. The network cost has to be recovered from all the consumers for their respective consumption. The State Commission has correctly worked out the average network cost to be recovered by the consumers.

21. According to the Appellant, the network cost for different consumer categories should be worked out based on the actual use of distribution network i.e. the network cost should also be worked out voltage-wise. This Tribunal have already stated in the Tata Steel judgment that till the network costs are seggregated, the average network cost may be considered for working out the voltage-wise cost of supply. Thus, we

cannot find fault with the State Commission's approach to determine the voltage-wise cost of supply. However, the State Commission may in future attempt to distribute the voltage-wise network costs to further refine the voltage wise cost of supply as and when the requisite data is available.

22. The Appellant has also stated that the tariff should be re-determined on the basis of voltage-wise cost of supply. We do not find any merit in this contention as this Tribunal in Tata Steel judgment and various other judgments has held that tariffs may not be mirror image of the actual cost of supply and no consumer category shall be aggrieved if the tariff of the category is within $\pm 20\%$ of the overall average cost of supply as per the Tariff Policy. In the present case, the tariff of the Appellant's category has been set out less than the average cost of supply.

23. Summary of our findings:

The State Commission has correctly determined the technical and commercial losses and apportioned the power purchase cost to different voltage levels as per the findings of this Tribunal in the Tata Steel case. The State Commission has determined the voltage-wise cost of supply as per the directions given by this Tribunal in the above judgment.

24. In view of above, the Appeal is dismissed as devoid of any merit. No order as to costs.

25. Pronounced in the open court on this
18th day of December, 2014.

**(Justice Surendra Kumar)
Judicial Member**

**(Rakesh Nath)
Technical Member**

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REPORTABLE/NON-REPORTABLE

Vs