

STAFF PAPER

POWER PURCHASE COST /FUEL COST ADJUSTMENT MECHANISM

1. INTRODUCTION

- 1.1 The National Capital Territory of Delhi receives power from central generating stations, state generating stations through the long-term power purchase agreements and short term purchases. The Distribution Licensees procure power from various available sources and supply power to consumers at retail tariffs determined by the Commission. The power purchase cost accounts for about 80% of Annual Revenue Requirement of the distribution licensees and includes the cost paid for procurement of power, transmission charges, UI charges, SLDC/ RLDC charges and is netted off with revenue earned from sale of surplus power.
- 1.2 The cost of long term power being procured by the distribution licensees is being fixed by the Central Electricity Regulatory Commission (CERC) for plants supplying power to more than one state and by the Delhi Electricity Regulatory Commission (DERC) for plants located within the State of Delhi. The charges for unscheduled interchanges and Inter State transmission charges including RLDC charges are being fixed by the CERC. The charges for purchase / sale of intra state power and intra state transmission charges are fixed by the DERC. The short term purchase/ sale are through traders, bilateral contracts, banking, and power exchanges at market determined prices.
- 1.3 Thus, it can be seen that power purchase cost are uncontrollable in nature and are volatile making it difficult to accurately estimate power purchase costs at the time of annual tariff fixation. The power purchase cost is beyond the control of distribution licensees and dependent upon following factors:
- (a) Price of Fuel (Coal /Gas) which are highly unpredictable as has been seen from past few years.
 - (b) Availability of Power from New Sources.
 - (c) Weather conditions such as extreme harsh summers/ cold which have direct impact on the demand.
 - (d) Demand Supply Gap of the power within the country.

2. LEGAL PROVISIONS

- 2.1 The provisions of various Acts, Regulations and Policy documents, which enable the Commission to devise, adopt and implement a power purchase/ fuel price adjustment mechanism are as follows:-

(a) Delhi Electricity Reforms Act, 2000:

Section 28 (8)

No tariff or part of any tariff required by sub-section (6) may be amended more frequently than once in any financial year except in respect of any changes expressly permitted under the terms of any fuel surcharge formula prescribed.

(b) DERC 2001 Regulation (Conduct of Business Regulations, 2001)

Clause 27 (15)

In the event of variation in the fuel cost, the Board/utilities may make application to the Commission in terms of Section 28(8) of the Act for the amendment in the last tariff so as to adjust the same provisionally from the date of such application subject to final adjustment as per finalized accounts of the Board/Utility.

(c) Indian Electricity Act, 2003

Section 62 (4)

No tariff or part of any tariff may ordinarily be amended more frequently than once in any financial year, except in respect of any changes expressly permitted under the terms of any fuel surcharge formula as may be specified.”

(d) National Tariff Policy notified by Ministry of Power, Government of India

Clause-5 (h-4): Multi Year Tariff

Uncontrollable costs should be recovered speedily to ensure that future consumers are not burdened with past costs. Uncontrollable costs would include (but not limited to) fuel costs, costs on account of inflation, taxes and cess, variation in power purchase unit costs including on account of hydro-thermal mix in case of adverse natural events.

Clause 8.2.1: Framework for revenue requirements and costs

The following aspects would need to be considered in determining tariffs:

(1)..... Actual level of retail sales should be grossed up by normative level of T&D losses as indicated in MYT trajectory for allowing power purchase cost subject to justifiable power purchase mix variation (for example, more energy may be purchased from thermal generation in the event of poor rainfall) and fuel surcharge adjustment as per regulations of the SERC.

3. PETITIONS OF THE DISCOMS

3.1 In the Petition filed by DISCOMs in Dec. 2009, regarding True-up for FY 2008-09 and ARR for FY 2010-11, the DISCOMs had prayed for implementation of the Power Purchase Adjustment. The Public hearing regarding same was held in the Commission’s office from 23 to 25 February 2010, wherein stakeholders put forth their comments/suggestions before the Commission.

3.2 The DISCOMs have filed a Petition in June, 2010 (Additional Information submitted in October, 2010) again seeking implementation of Power Purchase Adjustment on a quarterly basis for timely true-up of variance between estimated and actual power purchase cost. The same has been admitted in the hearing on 08.10.10.

3.3 The DISCOMs have submitted that they are faced with an imminent cash-flow crunch due to unrecovered expenses primarily on account of uncontrollable increase in the power purchase cost. In the petition, they have prayed to allow a pass-through of the uncontrollable increase in the power purchase cost and sought the approval for the power purchase adjustment formula, with adjustments provided on quarterly basis.

3.4 **Power purchase adjustment formulas proposed by the licenses:**

3.4.1 **Formula Suggested by NDPL**

$$\text{PPPACn (Rs/Unit)} = (\text{PPPA}_n \times 10) / \text{Units Billed (MU)}$$

Where

PPPACn = Power Purchase Price Adjustment Charge (Rs/Unit) to be levied in current quarter (nth quarter) for recovery of PPPAn to consumers in licensed area during the previous quarter,

PPPA_n = The total amount of Power Purchase Price Adjustment (Rs Cr) required in current quarter for the variation in actual vis a vis average net power purchase rate approved in the Tariff Order for the year.

$$\text{PPPA}_n = C_n + A_n \text{ (Rs. Cr)}$$

Where

C_n = Change in cost of power purchase (Rs Cr) due to variation in the power purchase rate during the previous quarter vis-à-vis average net power purchase rate approved in the Tariff Order for the year.

$$C_n = Q_{n-1} \times (AAPP_{n-1} - APP_{appd}) / 10$$

Where

Q_{n-1} = Quantum of Power received (MUs) at NDPL periphery for meeting requirements of NDPL licensed area (i.e. power purchased including Central / State allocation, bilateral, exchange, UI etc. and net off transmission losses & sale of power outside licensed area) during the previous quarter.

AAPP_{n-1} = Actual Average Power Purchase Rate (Rs. /unit) for the previous quarter

APPappd = Average Power Purchase Rate (Rs. /unit) approved in Tariff Order

An = Adjustment factor for over-recovery / under-recovery i.e. difference between the amount actually recovered through PPPAC and amount recoverable.

$$A_n = \text{PPPA (Recovered)}_n - \text{PPPA}_{n-1}$$

PPPA (Recovered)_n = PPPA recovered in current quarter for previous quarter

3.4.2 Formula Suggested by BYPL

Power Surcharge Component (PSC), (Rs. /kWh) = Z - R

Where,

Z= Average Power Purchase Cost (Rs/kWh) incurred by the Distribution Licensee (excluding the UI Purchase and surplus power sales (UI/bilateral/otherwise))

Note 1: Both short term as well as Long-term sources to be included.

Note 2: The UI power is excluded from the computations as it takes more than 8 weeks for the distribution licensee to receive the final settlement. Hence, the distribution licensee will not be in a position to submit this set of information in the time stipulated in next section for submission of PSC. Further, the net quantum (over drawl v/s under drawl) may not aggregate to a substantial amount during the quarter to alter the PSC significantly.

Note 3: The UI/ bilateral/other external sales by the distribution licensee has been excluded as there will not be any motivation for the distribution licensee to maximize the quantum and price of these surplus power sales, otherwise. Such exclusion will push the distribution licensee to manage and economize these sales to the best of consumer interest, as this may help the licensee in optimizing its own cash-flow position in the short-term. However, the ultimate benefit of these external sales and variations on account of UI over drawl/ under drawl will be passed on to the consumers at the time of truing-up of revenue gap.

R = Average Power Purchase Rate (Rs. /kWh) approved in the Tariff Order for that year.

Provided, the average power purchase cost and the subsequent variations shall be allowed to be computed at the distribution end (T-D Interface) and include the inter-state and intra-state transmission charges and the SLDC and RLDC charges.

Further, the PSC shall be allowed to be applicable only if the variation is positive i.e. the actual power purchase cost per unit is higher than the base cost estimated in the approved ARR.

The PSC may be capped at Rs. 0.50/kWh. Any positive variation above that may be ignored and be considered in the next quarter.

$$0 \leq PSC \leq 0.50 \text{ (in Rs./kWh)}$$

The PSC shall be allowed to be applicable on the entire sale of Distribution Licensee at the consumer end, without exemption to any consumer.

and,

$$Z = \frac{(C_1 + C_2 + \dots + C_{N-1} + C_{N-2} + TC + SC) * 10}{P_1 + P_2 + \dots + P_{N-1} + P_N}$$

Where,

C_N = Cost of Power Procured (Rs Crore) from Source (N) as billed to the Distribution licensee (excluding, any Procurement through Unscheduled interchange (UI) and any external sales (UI/Bilateral/otherwise))

TC = Inter-State and Intra-state Transmission Charges (Rs Crore)

SC = SLDC and RLDC charges (Rs Crore)

P_N = Power Input (MU) to the Distribution System (T-D Interface) from source(N).

or,

$$P_1 = G_1 * (1 - T_1)$$

$$P_N = G_N * (1 - T_N)$$

Where,

G_N = Power dispatched at Generator End (MU) from the source (N)

T_N = Actual Inter-state and Intra-state transmission losses (%age) as applicable for the source (N)

3.4.3 Formula suggested by BRPL

$$PPPA = C + A$$

The PPPA may be capped at 15% of the Average Billing Rate (ABR) approved for the year in the Tariff Order. Any variation both positive/negative, if not absorbed within the cap of 15% may be passed onto the subsequent quarter(s).

Where

PPPA = Total Power Purchase Price Adjustment (Rs.Crore)

C= Change in power purchase cost (including Transmission and SLDC charges) due to variation in power purchase rate during the previous quarter vis-à-vis rate approved in Tariff Order for the year

$$[C=[Q*(Actual PPCost -PPCost approved)]/10$$

A = Adjustment Factor for over-recovery / under recovery i.e. difference between the amount actually recovered through PPAC and amount recoverable (subject to the cap as mentioned above).

Q = the Actual Energy Input (MU during the previous quarter) available at BRPL's Periphery PP Cost is the average Power Purchase rate in Rs./ unit

The calculation of PPPA to be charged for the quarter will be

$$PPPA_{j-2} = C_{j-2} + A_{j-2}$$

Where j and j-1 shows the current Quarter and the previous quarter respectively and j-2 shows that the PPPA would be applicable from the quarter after the quarter in which the additional costs are calculated. Thus, increase in costs during Qj-2 will be calculated by the mid of Qj-1 and would be included in the PPPA applicable for the quarter, Qj.

$$C_{j-2} = Q_{j-2} * (PPC_{j-2} - PPC \text{ approved})$$

The adjustment for over-recovery / under-recovery 'A', should be calculated as:

$$A_{j-2} = [(B_{j-4} - R_{j-2})]$$

Where

Bj-4 = Incremental cost in Qj-4

Rj-2 = Incremental cost in Qj-4 actually recovered in Qj-2

Calculation of PPPA per unit

The total PPPA recoverable, as per the allowed expenses discussed earlier should be recovered from all the metered consumers on the basis of the actual consumption in that period, on the basis of Rs./unit.

$$PPPA/kWh = (\text{Total PPPA in Rs. Crore}) * 10 / (\text{Energy Sales})$$

Where,

$$PPPA / kWh = PPPA (\text{Rs./kWh})$$

Energy Sales = Actual energy sold in MU

The PPPA shall be allowed to be applicable on the entire sale of Distribution Licensee at the consumer end, without exemption to any consumer.

4. PREVALENT PRACTICE IN OTHER STATES

The Power Purchase/ Fuel Price Cost adjustment mechanism is already in place in many states. The mechanism and frequency of adjustment in some of the States is given in the following Table:

State	Power Purchase Cost Adjustment	Fuel Price Adjustment	Frequency of Adjustment
Kerala	Yes	Yes	Quarterly
Bihar	Yes	Yes	Half Yearly
Chhattisgarh	No	Variable Cost Adjustment	Time to Time
Gujarat	Yes	Yes	Quarterly
Haryana	Yes	Yes	Quarterly
Jharkhand	Yes	Yes	Quarterly
Andhra Pradesh	No	Yes	Quarterly
Punjab	No	Yes	Quarterly
Madhya Pradesh	Yes	Yes	Half Yearly
Tripura	Yes	Yes	Time to Time
West Bengal	Yes	Yes	Yearly
Assam	Yes	Yes	Quarterly
Maharashtra	Yes	Yes	Quarterly
Orissa	Yes	Yes	Quarterly
Uttar Pradesh	Yes	Yes	Quarterly

5. ISSUES:

5.1 Any fluctuation in the cost of fuel is a pass through for the generator through a fuel surcharge adjustment formula and is payable by the distribution licensees in the subsequent bills.

5.2 The power purchase cost being uncontrollable is pass-through to the consumers but the difference in actual cost of procurement of power and the estimated cost of purchase of power gets tried up only after 2 years. The time lag of two years puts additional burden on consumers by way of carrying cost.

5.3 In view of the above deliberations, the relevant issues, which emerge for consideration, are,

- (i) Whether the adjustment mechanism may cover adjustment on account of fuel cost for power procured on long term contract basis or it may cover adjustment on

account of power purchase cost for power procured under long term contract and on short-term basis?

(ii) What should be periodicity of such adjustment?