

CHAPTER-IV

Optimisation of cost of power purchase

Summary

UDAY envisaged reduction of the cost of power generation by improving efficiency of the State Generating units.

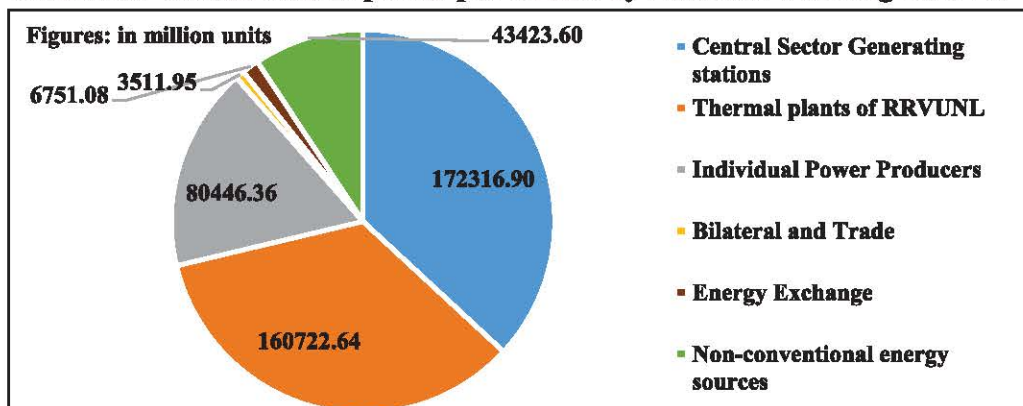
We noticed that the performance of power plants of Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) was not satisfactory as the Station Heat Rate (SHR) was in excess of the determined norms whereas the Plant Load Factor (PLF) remained low during 2015-21.

Rajasthan Urja Vikas Nigam Limited (RUVNL) was incorporated in December 2015 to streamline and bring together all the processes related to power purchases including PPA management, power trading and to focus on power purchase efficiencies. However, RUVNL could not be made operational as envisaged as it was incorporated without foreseeing the requisite operational modalities. Resultantly, the purpose of its incorporation was defeated.

Sources of power purchase

4.1 The DISCOMs purchase power from the Central Sector generating stations, State-owned thermal power plants of Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL), Non-Conventional Energy Sources (NCES) and Individual Power Producers (IPPs) through long-term Power Purchase Agreements (PPAs). Besides, the DISCOMs purchase power through Captive Power Producers (CPPs), bilateral and trade deals, and energy exchange on short-term basis. Source-wise break-up of power purchased by the DISCOMs during 2015-21 (as shown in the chart below) indicated that 98 *per cent* of the power was purchased by the DISCOMs under long-term PPAs.

Chart No. 4.1: Sources of power purchased by DISCOMs during 2015-21



Source: Information provided by DISCOMs/RUVNL.

Steps to reduce/optimize the power cost

4.2 As per Clause 5.3 of UDAY and the Action Plan annexed with the MoUs, the States/ DISCOMs/ RRVUNL/ Rajasthan Urja Vikas Nigam Limited (RUVNL) were required to take the following steps to reduce the cost of power and power purchase cost optimisation:

- i. Prospective power purchase through transparent competitive bidding by DISCOMs;
- ii. Improving efficiency of State Generating units;
- iii. Power purchase cost optimization through power purchase management;
- iv. Purchase of short-term power; and
- v. Strict enforcement of merit order.

The shortcomings noticed in reduction of cost of power and power purchase cost optimization are discussed hereunder.

Cost of purchase of power and efficiency of State Generating Units

4.3 Audit noticed that per unit purchase cost from RRVUNL (total share 34.40 *per cent* during 2015-21¹) was costlier as compared to those from other sources, except NCES, during 2015-16 to 2020-21, as given in **Annexure-11**.

The per unit generating cost of all the four thermal power generating stations of RRVUNL is depicted in **Annexure-12**.

As can be seen from the **Annexure-12**, the Station Heat Rate (SHR) of all the four thermal power generating stations², except at KSTPS in 2016-17, 2019-20 and 2020-21, and SSTPS during 2016-19, was always in excess of the norms fixed by RERC. The SHR in excess of the norms caused excess consumption of coal in these thermal stations and correspondingly the cost of generation was higher. Besides, the Plant Load Factor (PLF) of all the four generating stations except CTPP in FY 2018-19 was less than the targeted PLF during 2015-21. The low PLF indicated that the plants were not utilised to their optimal capacity and thus the per unit cost of power generated was increased. Audit also observed that due to non-achievement of the targeted PLF during 2015-21, all the power plants of RRVUNL were deprived from getting any incentive (except incentive of ₹ 4.82 crore to CTPP under the true-up order of 2018-19) prescribed under RERC (Terms and Conditions for Determination of Tariff) Regulations 2014 and 2019 (Regulations 2014/2019).

The Government stated (October 2022) that power from RRVUNL and Central Sector is scheduled in accordance with the merit order dispatch (MOD³). It further stated that the fixed charges are to be paid in case if plants are available but not scheduled in MOD.

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- 1 Power purchased from all the power plants of RRVUNL during 2015-21/Total power purchase by DISCOMs during 2015-21*100.
 - 2 Kota Super Thermal Power Station (KSTPS), Suratgarh Super Thermal Power Station (SSTPS), Chhabra Thermal Power Plant (CTPP) and Kalisindh Thermal Power Plant (KTPP).
 - 3 MOD is the order in which plants are ranked based on their variable charges.

Further, the PLF was low due to non-scheduling of power by the State Load Dispatch Center (SLDC).

The reply was not convincing as generation schedule for plants is decided by SLDC on the basis of variable charges. However, RRVUNL could not ensure operational efficiency to control the variable charges. Further, it was silent in respect of high SHR.

Recommendation 14: RRVUNL may take suitable steps for the improvement in performance of its power plants with respect to keeping SHR within norms and enhancing PLF.

Power Purchase Management

Incorporation of new utility for power purchase management

4.4 For improvement of efficiency, and streamlining of all the processes related to power purchase (including PPA management), power trading, increasing the focus on power purchase efficiency, better institutional arrangement through long-term staffing arrangement and enabling hiring of experts, the Government of Rajasthan incorporated (December 2015) a new company-Rajasthan Urja Vikas Nigam Limited (RUVNL). Previously, the DISCOMs carried out the power purchase activity through a common cell called Rajasthan DISCOMs Power Procurement Centre.

Audit noticed that RUVNL filed an application (March 2017) to obtain a trading license as per provision of CERC Regulation 2009. Subsequently, the GoR amended (July 2019) the Rajasthan Power Sector Reforms Transfer Scheme, 2000 enabling RUVNL to transact business of bulk power purchase and sale without the necessity of trading license. The GoR also directed (August 2019) the DISCOMs to transfer PPAs/Transmission Service Agreements (TSAs) to RUVNL and intimate power generators/ transmission service providers to raise bills in the name of RUVNL from October 2019 onwards. RUVNL approved (August 2019) the Action Plan for taking over functions related to power procurement in its name as a deemed licensee⁴.

As per the approved Action Plan, the DISCOMs were to transfer fund to RUVNL on daily basis through escrow management, based on certain percentage of their daily remittances, to cover the current liability of power generators. Audit, however, noticed that the GoR deferred (October 2019 and January 2020) implementation of the Action Plan upto March 2020 as the DISCOMs were not able to provide escrow to RUVNL on daily remittance because of substantial gap in their cash flow and inability in meeting the critical payment liabilities as debt service on due date.

Audit observed that RUVNL was made operational without foreseeing the operational modalities of fund flow to the company. Further, RUVNL was not operationalised in true spirit and all the transactions of power purchases were

⁴ Being engaged in the business of supply of electricity under the Rajasthan Power Sector Reforms Transfer Scheme, 2000 (as per Section 14 of the Electricity Act 2003).

carried out in the name of DISCOMs till March 2021 as the Action Plan was deferred. Besides, the administrative expenses of ₹ 101.42 crore was recovered by RUVNL from the DISCOMs which also attracted the liability of service tax (up to June 2017) and Goods and Service Tax (from July 2017 onwards) to the tune of ₹ 12.51 crore during 2016-22.

Thus, the very purpose of incorporating RUVNL to streamline and bring together all the processes related to power purchases, including PPA management, power trading and focus on power purchase efficiencies, was defeated.

The DISCOMs accepted (October 2022) the facts and stated that GST would not be charged on sale of electricity as and when RUVNL would start working in its name as an independent power trading company. The Government endorsed (October 2022) the reply furnished by the DISCOMs.

Recommendation 15: RUVNL may take suitable steps to achieve the objectives of its incorporation.

Disallowance of expenditure by RERC

4.5 The RERC finalised (February 2015) trajectory for reduction of distribution losses for the period 2015-19. Further, RERC revised (November 2017) the trajectory for distribution losses for the period 2016-19 in compliance with the losses committed by the DISCOMs under UDAY/MoUs (as depicted in Para 5.3.1). .

Audit observed that RERC disallowed expenditure of the DISCOMs worth ₹ 11,980.98 crore⁵ for 2015-21 towards excess purchase of power due to increase in distribution loss over the target given by RERC. RERC, while disallowing the expenditure, stated that despite making substantial investment under various loss reduction schemes, the DISCOMs could not reduce the losses as per the loss reduction trajectory approved/ revised under UDAY. Further, the DISCOMs could not ensure requisite improvement in metering, billing & collection activities, *etc.* and therefore, consumers should not be burdened on account of non-achievement of targets by DISCOMs despite being allowed requisite investment. Accordingly, RERC allowed energy requirement based on targeted losses approved by it instead of actual losses incurred by the DISCOMs. Thus, non-improvement in operational efficiency and non-reduction of losses as per trajectory decided by RERC/UDAY adversely impacted DISCOMs' financial turnaround.

The Government accepted (October 2022) the facts and stated that the DISCOMs were trying their best to achieve the loss targets as specified by the RERC and several measures and schemes have been initiated in this regard.

5 Jaipur DISCOM: ₹ 5918.47 crore, Ajmer DISCOM: ₹ 2172.67 crore and Jodhpur DISCOM: ₹ 3889.84 crore.

Fuel Surcharge

4.6 Clause 88 of RERC's Regulation (Terms and Conditions for Determination of Tariff) 2014/2019 specified a formula for computing the Fuel Surcharge (FS) chargeable by DISCOMs from their consumers for any quarter. Further, the total fuel surcharge recoverable, as per the specified formula, is to be recovered from the actual sales and in case of un-metered consumers, it is to be recoverable based on estimated sales to such consumers.

Review of records for the period 2015-21 related to computation and charging of fuel surcharge disclosed that:

- In seven to ten quarters⁶, the DISCOMs issued orders for charging the fuel surcharge with a delay ranging between 4 and 226 days;
- The fuel surcharge was to be recovered on the consumption of previous quarter. Ajmer DISCOM, however, recovered fuel surcharge for quarter I and IV of 2016-17 on the basis of current quarters consumption, instead of previous quarters and thus recovered excess amount of ₹ 2.31 crore from the consumers as detailed below:

Table 4.1: Details of excess amount recovered from consumer

Year (Quarter)	FS rate	Order date	Previous quarter consumption	Current quarter consumption	Difference	Excess recovery
2016-17	₹ per unit		(MU)	(MU)	(MU)	(₹ in crore)
I	0.01	17 November 2016	3406.95	3434.34	27.39	0.03
IV	0.11	25 October 2017	3403.87	3611.87	208.00	2.28
Total						2.31

Source: Records of Ajmer DISCOM

The Government, while accepting the facts (October 2022) stated that the DISCOMs tried their best to issue orders in time. However, the time taken in collection, vetting and verification of data for removing anomalies in data led to delay in issue of orders.

The fact however remained that the delay in issue of orders caused delay in recovery of fuel surcharge.

Renewable Purchase Obligations

4.7 As per Clause 9 of UDAY, the DISCOMs were required to comply with the Renewable Purchase Obligations (RPO⁷) outstanding since 1 April 2012, within a period to be decided in consultation with the MoP, GoI.

The regulatory framework for RPO is described below:

Regulation	Clause	Provisions
RERC (RPO) Regulation 2007	4	Minimum (4.88 per cent) purchase obligation of Renewable Energy (RE) for 2007-08 and further increased to 9.50 per cent for the year 2011-12.

6 Jaipur DISCOM: 10 quarters, Ajmer DISCOM: 9 quarters and Jodhpur DISCOM: 7 quarters.

7 RPO mandates that all DISCOMs should purchase or produce a minimum specified quantity of their requirements from Renewable Energy Sources.

	5	Any shortfall to meet the RE obligation shall be subject to RE surcharge to be paid by DISCOMs @ ₹ 3.59/kWH for 2007-08 and to be continued until revised.
RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010	4(a)	Obligated Entity shall procure electricity generated from renewable energy sources as per obligation.
	9	If the obligated entity does not fulfil the specified RPO, the Commission may direct the obligated entity to deposit into a separate fund an RPO charge determined by it on the basis of the shortfall in units of RPO and forbearance price ⁸ decided by the Central Commission
	9 modified	The obligated entities in default shall pay, by 30 th November of the Assessment Year, the RPO charges assessed equivalent to the product of shortfall and forbearance price of solar or non-solar REC, as applicable on 31 st March of the relevant Financial Year,

Audit noticed that the DISCOMs could not achieve the targets of purchase of renewable energy, except in case of solar energy during 2019-20, during 2011-21 as given in Annexure-13. The overall shortfall of 13,105.02 MUs was required to be met either through purchase of RPO worth ₹ 1,310.50 crore or deposit the amount at the current forbearance price in separate account as per Regulation.

The RERC directed (November 2017) the DISCOMs to make up the shortfall in the next five years by buying renewable energy through reverse bidding⁹. Audit observed that the DISCOMs did not initiate any action on the order passed by RERC. The RERC again directed (October 2020) the DISCOMs to make up the shortfall in the next three years. However, again no action was found on the records of the DISCOMs regarding to purchase of RPO or depositing of the designated amount at the current forbearance price in separate account as per Regulation.

Thus, the DISCOMs did not adhere to the provision of UDAY as regards to outstanding RPO.

The Government accepted (October 2022) the facts and stated that on behalf of the DISCOMs, the RUVNL had filed a petition before RERC to waive off the shortfall of RPO. The RERC in its order (December 2021) has directed to meet the RPO backlog accumulated till date along with future RPO targets upto 2023-24. The RUVNL/DISCOMs had signed a Power Sale Agreement with Solar Energy Corporation of India Limited for purchasing requisite quantity of renewable energy to achieve the RPO targets.

8 ₹ 1000/MWh for solar and non-solar REC from July 2020

9 A reverse bidding is a method in which sellers bids for the prices at which they are willing to sell their goods and services.