Delhi Electricity Regulatory Commission

Viniyamak Bhawan, 'C' Block, Shivalik, Malviya Nagar, New Delhi – 110017.

F.11(2192)/DERC/2023-24/7986

Petition No. 05/2024

In the matter of: **Petition under DERC (Demand Side Management) Regulations, 2014 seeking approval of the Commission for Scheme for Replacement of conventional fan with Brush-Less Direct Current (BLDC) type ceiling fans.**

BSES Yamuna Power Limited **….Petitioner**

Coram:
Hon'ble Justice (Retd.) Jayant Nath, Chairperson

Appearance:
1. **Mr. Buddy A Ranganadhan, Advocate, Petitioner.**
2. **Mr. Dushyant Manocha, Advocate, Petitioner**
3. **Mr. Brian Moses, Advocate, Petitioner**

Order
(Date of Order: 05.08.2024)

1. The instant Petition has been filed by BSES Yamuna Power Limited (BYPL) under Delhi Electricity Regulatory Commission (Demand Side Management) Regulations, 2014 (hereinafter called "DSM Regulations") seeking approval of the Commission for Scheme of Replacement of Conventional ceiling fans with Super Energy Efficient Brush-Less Direct Current ceiling fans (hereinafter called "BLDC Fans"). The Petitioner has made the following prayers:
    a) Approve the Petitioner's Proposed Scheme in terms of its Detailed Project Report – Annexure-A;
    b) Allow the expenses incurred additionally in the Annual Revenue Requirement (ARR) of the Petitioner and to be recovered under the head of Demand Side Management (DSM) Budget or any other head as the Commission considers appropriate.

Petitioner's Submissions

2. The Petitioner has submitted the following:

    i. The Petitioner is a distribution licensee in terms of Section 14 of the Electricity Act, 2003 read with the Delhi Electricity Reforms Act, 2000 and operates in terms of the distribution license issued by the Commission.

ii. By way of the instant Petition, this is the first time that the Petitioner is proposing to replace conventional ceiling fans with 15,000 BLDC Fans in the Petitioner's licensed area over a period of 3 years.

iii. In support of the Proposed Scheme, the Petitioner has prepared a detailed project report (hereinafter called "DPR"). The salient features of the Proposed Scheme, as detailed in the DPR are as under:

a. The Petitioner intends to launch the program for replacing the existing conventional ceiling fans with BLDC Fans for its domestic consumers in its entire area of operation in Delhi.

b. The Petitioner proposes to install 15,000 BLDC Fans in its licensed area over the next 3 years, with a target of 5000 BLDC Fans per Financial Year w.e.f FY 2024-25 till FY 2026-27.

c. The estimated annual energy savings by use of BLDC Fans over conventional fans is expected to be around 162 units per fan. This would translate to an estimated monetary saving per fan per year of Rs 934/-.

d. On the above count, the estimated annual energy saving for consumers due to installation of 15,000 BLDC Fans is expected to be 2.43 MUs and expected annual monetary saving at consumer's end is Rs.1.40 Crore.

e. The expected annual avoidable power purchase at DISCOM periphery is 2.62 MUs and the expected annual avoidable marginal power purchase cost is Rs.2.23 Crore.

f. Total estimated cost of the project is Rs.1.58 Crore including administrative and implementation cost of Rs.0.21 Crore, for 3-year program.

iv. In view of the socio-economic benefits for consumers and the environment including the future benefits to the consumers, it is requested that the Commission allows the present Petition in terms of the Petitioner's DPR and may permit the following:

a) replacement of 15,000 conventional fans with BLDC Fans, over a period of three years;
b) Maximum of 10 fans to be offered per CA number under buyback mode for Non-residential Domestic Consumers (like Government schools, Government Trusts, Government hospitals, Community Centers, places of worship and RWAs); and
c) Maximum of 3 fans be offered per CA number (with or without buyback) for the domestic consumers which consists of residential consumers.

v. While making its aforesaid proposal the Petitioner has *inter alia* taken into consideration the Load Research Report of BYPL prepared in the year 2020 in association with Bureau of Energy Efficiency & Price Waterhouse Coopers, it goes on to *inter alia* unequivocally demonstrate that:

a. At the time of the study, BLDC Fans had a saving potential of 168.97 MUs for domestic category consumers and 46.39 MUs in the commercial sector;

b. As per the report, the BEE star rating penetration among the existing population at 16% for the domestic users, while the BEE star rating penetration among the commercial sector was almost nil.

c. Super-efficient fans, built on the brushless DC motor technology, consume 55% less power as compared to the conventional fans.

Therefore, the replacement of conventional fans with BLDC Fans have a huge potential for demand side savings.

vi. The following market insights may be relevant for the Proposed Scheme:

a. According to a report by IMARC Group, the Indian ceiling fan market size reached 41.2 Million Units in 2022. The report also predicts that the market will reach 47.5 Million Units by 2028, exhibiting a growth rate (CAGR) of 2.3% during 2023-2028.

b. The ceiling fan market is majorly being driven by rapid urbanization and the increasing construction of new multi-storey residential buildings. This is further supported by several initiatives undertaken by the Government of India to expand housing projects and develop smart cities across the country. In line with this, the improving availability of electricity, especially in the rural areas, is further catalyzing the market growth.

c. Additionally, the inflating disposable incomes are creating a significant demand for fans with aesthetically appealing designs and smart features, such as voice control and remote connectivity through smart devices, which is accelerating the overall product sales. Other factors responsible for the market growth include significant expansion in the retail and hospitality sectors, along with the easy availability of premium product variants, like lighting fans, through online retail channels

vii. The Petitioner has requested the Commission to accord approval for the present proposed scheme which is towards the benefit of all the stakeholders and the expenses incurred be allowed additionally in the Annual Revenue

Requirement (ARR) of the Petitioner and to be recovered under the head of DSM budget or any other head as the Commission considers appropriate.

3. In compliance of the Commission's Order dated 05.04.2024, a meeting of the Officers of BYPL and Commission was held on 15.04.2024, wherein certain queries were raised by the Officers of the Commission. In response thereof, the Petitioner filed an Affidavit dated 07.06.2024 before the Commission and submitted the following:

S.No.	QUERY	PETITIONER'S RESPONSE
a)	Justification for proposal of 15,000 BLDC Fan i.e. 7500 nos. with Buy Back & 7500 Nos. without buyback mode over a period of 3 years.	• The CAGR for input energy across the Petitioner over the last 10 years (FY 2013-14 to FY 2023-24) is approximately 1.20%, and whereas the peak load is 1.17%. In other words, there has been an increasing trend which is *inter alia* due to an increase in specific consumption of new consumers and appliances. That being the case, it would be beneficial if there is an option for supply of BLDC fans without the buyback option. • The Petitioner currently has around 1.5 million domestic consumers (including both residential and non-residential consumers) and it plans to install 5000 energy-efficient BLDC fans per year for domestic consumers over a period of 3 years, which is less than 1% of the total consumer base. • Consumers have requested the implementation of energy-efficient fans/BLDC fans in the Petitioner's area. The estimated number is based on feedback received during various meetings with consumer representatives, such as RWAs at the circle/division level. The proposed numbers are based on these requests. Accordingly, the Petitioner has included fans with and without replacement as part of the scheme to promote energy-efficient equipment in the Petitioner's area. • Energy-efficient BLDC fans offered without a buyback option will help manage the energy demand from new consumers. Fans provided under the buyback mode will replace existing less efficient fans, directly reducing both energy consumption and peak demand • During RWAs meetings as mentioned above, there was also a significant demand for energy-efficient ceiling fans without the buyback option, indicating a preference for upgrading without necessarily replacing existing fans. • Based on these observations, the proposed three-year program includes 7500 fans under the buyback mode and 7500 fans without the buyback mode.

b)	Breakup of Total Cost of Project including computation for Admin. and Implementation Charges.	The breakup of total Cost of Project including administrative and promotional expenses is annexed as Annexure-B to the Affidavit.
c)	Component wise breakup of landed cost to Consumer such as Expected Cost, 10% salvage value, Optional charges such as delivery charges, Installation charges etc.	The component-wise breakup of the landed cost to the consumer, including expected cost, 10% salvage value, and optional charges such as delivery charges and installation charges, has been tabulated and annexed as Annexure-C to the Affidavit.
d)	Justification for providing 10 Fans per CA No. under Buy-back mode for Non Residential Domestic Consumers i.e. Govt. Schools, Trust, Govt. Hospitals, community Centre, Place of Worship, RWAs etc.	The Petitioner would like to extend the scheme to all domestic consumers assigned a domestic tariff by the Commission, including both residential and non-residential consumers. This inclusive approach ensures that government schools, trusts, government hospitals, community centres, places of worship, and RWAs also benefit from energy-efficient BLDC fans. These institutions often have significant energy consumption and can greatly benefit from reduced energy costs and improved efficiency. Providing up to 10 fans per CA number under the buy-back mode will help these non-residential domestic consumers lower their energy usage, directly contributing to overall energy efficiency and peak load reduction in the Petitioner's area.
e)	Justification for considering power rating of 75 W Non-star rated ceiling fan, operating hours per day and operating days in a year for BLDC fans.	This is based on BEE Impact Assessment report 2021-22 and is annexed as Annexure-D to the Affidavit
f)	Computation for average weighted energy charges for domestic consumers. i.e. Rs. 5.76/kWh	Computation of average weighted energy charges for domestic consumers is annexed as Annexure-E to the Affidavit.
g)	Details of Energy Efficient BLDC Fan Models i.e. Make & Model no. proposed in Fan Replacement Scheme in following formats:	The Petitioner shall conduct the competitive bidding process after obtaining approval from the Commission. The make and model of the fans will be finalized through the tendering process and will be communicated to the Commission. We further seek liberty to update the Commission if there are any changes to make and model of the fans. The details of the make and model no. proposed are annexed as Annexure-F to the Affidavit
h)	Based on above, Petitioner to submit revised computations for Energy Savings & Cost benefit analysis.	Although the make and model of the fans is yet to be finalized through the tendering process, most 5-star energy-efficient fans typically have a wattage of around 28W. The revised computations for Energy Savings and cost benefit analysis is

		tabulated as per the provided format is as Annexure-G to the Affidavit.
i)	Further, Petitioner to confirm disposal of inefficient fans through designated agency in Environmental friendly manner.	The Petitioner confirms that the disposal of inefficient fans will be conducted through a designated agency in an environmentally friendly manner.

Commission Analysis

4. BYPL has submitted a target of replacing 15,000 nos. of traditional ceiling fans with BLDC fans over a period of 3 years. Further, 50% of the BLDC fans are proposed under buyback mode & remaining 50% fans are under non-buyback mode.

5. In compliance to the Interim Orders dated 05/04/2024, a meeting with BYPL was held in the Office of the Commission between Officers of the Petitioner and Officers of DERC on 15/04/2024. Based on discussion, queries were sought from BYPL related to justification of proposal cost, component wise breakup and computations of rebate etc. vide DERC emails dated 16/04/2024. BYPL filed Additional Submissions on 07/06/2024.

6. The Petition along with Additional Submissions have been scrutinized and major findings are as follows:

   I. **No. of fans per CA for Domestic Consumer**

      a) BYPL has submitted that they are participating in Fan Replacement Scheme for the first time and has proposed maximum of 10 nos. fans to be offered per CA to Non-residential Domestic Consumers like Govt. Schools, Govt. Colleges, Govt. Trust, Govt. Hospitals, Community Centre, Place of Worship, RWAs etc.

      b) However, the survey data, as conducted by BRPL indicates much larger Energy Savings potential with such Non-residential Domestic Consumers. Also, in the previous Fan Replacement Scheme in FY 2020-22 launched by BRPL, BRPL could only replace 3998 Nos. of fans against their own proposed target of 50,000 fans. Hence, ceiling limit on number of fans per CA for Non-residential Domestic Consumers should be higher so that consumers can take benefit of it given large no. of fans installed in Institutional buildings.

      c) Further, Private Schools and Private Colleges can be included in Fan Replacement Scheme so that the benefit of Energy Savings can be extended effectively among the participating Consumers.

d) Accordingly, BLDC fans shall be offered per CA number, as follows:

i. Maximum of 393 nos. fans for Non-residential Domestic Consumers like Govt. / Private School, Govt. / Private College & Govt. University.

ii. Maximum of 32 nos. fans to be offered per CA for Non-residential Domestic Consumers like Registered Trust, Hospitals, Community Centre, Place of Worship and RWAs.

iii. Maximum of 3 fans to be offered per CA for Domestic Consumer other than mentioned at (i) & (ii) above.

II. **Option of Buyback Mode/ Non- Buyback under Fan Replacement Scheme**

a) The Petitioner has submitted that Peak Demand is growing at a faster pace which is likely due to new appliances being added to the system. Fans without buy-back option will help in managing the Energy Demand for new consumers. Further, fans provided under Buy-back mode will replace existing less efficient fans directly reducing both Energy Consumption and Peak Demand.

b) In this regard, Regulation 4 of *DERC (Demand Side Management) Regulations, 2014* related to DSM objectives is stipulated as follows:

> *"4.0* ***DSM Objectives***
> *Every Distribution Licensee shall undertake/implement DSM related policy/activity/programmes with an objective to lower the overall cost of electricity to the consumers of the Distribution Licensee as well as the Distribution Licensee, by economical and efficient use of resources, which shall include the measures/principles to:*
>
> *(1)* ***control, reduce and influence electricity demand****;*
>
> *(2) encourage consumers to amend their electricity consumption pattern both with respect to timing and level of electricity demand for efficient use of energy;*
>
> *(3) complement supply side strategies to help the utilities to avoid or reduce or postpone a) costly capacity (generation, transmission & distribution network) additions b)* ***costly power purchases***
>
> *(4)* ***reduce the environmental damage by reducing the emission of green house gases****;…"*

c) Further, Regulation 2 (7) of *DERC (Demand Side Management) Regulations, 2014* stipulates as follows:

> *"2 (7) "Demand side management" (DSM) means the actions of a Distribution Licensee to facilitate change in the pattern of end-use i.e., the demand side of electricity, and shall include any increase/decrease in the demand, shifting the demand between high and low peak periods, managing the intermittent load demands, etc.,* ***with the objective of reducing the power purchase and/or Distribution Licensee's costs****;"*

d) Under BLDC Fan scheme buyback arrangement, inefficient Fans are taken out of the Grid and replaced with efficient BLDC Fans which consume less Power thereby reducing Power Purchase and Distribution Licensee's cost. Accordingly, rebate is granted for ceiling fan offered under 'buy-back' mode.

e) Since inefficient device is not taken out of the Grid in non-buyback mode rather a new load will be added to Grid which may add to Peak demand and increase Power Purchase Cost, therefore rebate due to savings in Power Purchase Cost is not granted on Ceiling fans offered under 'Without-buyback mode'.

7. Considering the above factors, the Commission approves BLDC fan replacement scheme as under:

a) **Expenses in ARR**: The expenses on account of Admn & Implementation charges including floating tender, hiring of implementation agency, Promotional Charges and the Rebate Cost along with interest thereon are allowed additionally in the Aggregate Revenue Requirement (ARR) of the Petitioner to be recovered under the head of Demand Side Management (DSM) budget or any other head, subject to prudence check. Such expenses to be mentioned separately in the Audited Books of Accounts.

b) **Eligibility of Consumers**:

i. The Scheme shall be valid for Domestic Consumers as specified in DERC Tariff Schedule as applicable from time to time.

ii. BLDC fans shall be offered per CA number as stipulated at Sr. no. 6 (I) (d) above.

c) **Procedural aspects:**

i. The Consumer should have a valid consumer connection number/CA number.

ii. There shall be no outstanding dues on CA number as on date of application.

iii. The scheme shall be applicable on first come first serve basis for the eligible consumers

d) **<u>Rebate offered to Consumers in buyback mode:</u>**

i. The Petitioner has considered rebate of Rs.815 of previous Fan Replacement scheme and applied inflation of 6.5% on the same.

ii. Since the Petitioner has not submitted Rebate calculations based on expected Energy savings, the Rebate equivalent to Annual

Energy savings expected during useful life of the BLDC Fan, is as follows:

Sr. No.	Fan Type	Mode	Rebate (Rs.)
			BYPL
1	Ceiling Fan - 28 W	Buy-back	1057
2	Ceiling Fan -26 W		1102

e) **Implementing Agency:** The Petitioner shall engage at least three implementing agencies discovered through competitive bidding process. The price to be quoted by the implementing agency in the bid process shall be net of the quoted price of new Fan *minus* the salvage value of the old fan, which shall be indicated separately as part of the bid. Service Charges for Delivery & Installation shall be offered under optional charges to consumers. The implementing agencies shall be responsible for the safe removal/handling of inefficient fans.

f) **Maintenance of Records:** The Petitioner shall keep all the records related to this scheme separately. The Petitioner will submit following details related to the implementation of the scheme:

i. Final price discovered through competitive bidding for the specified Fans;
ii. Saving of energy due to implementation of this scheme;
iii. Administrative cost incurred under this scheme; and
iv. Any other record relevant to the scheme.

g) **Proper and Safe Disposal of Old replaced Fan**: Petitioner shall ensure proper disposal of old replaced Fans through a designated agency in an environmental friendly manner. The disposal certificate shall also be issued by such agency.

h) **Validity of the Scheme**: The scheme shall be valid for a period of 36 months from the date of issuance of this Order. Further, the Scheme shall be initiated for usage of Consumers within 30 days from issuance of this Order. The Petitioner shall expedite the above process accordingly.

8. The Petition is disposed of in terms of above. Ordered accordingly.

Sd/-
(Justice (Retd.) Jayant Nath)
Chairperson