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BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION,
BIDYUT NIYAMAK BHAWAN.
PLOT No-4, CHUNOKOLI, SHAILASHREE VIHAR, BHUBANESWAR-751021

Case No: ____ of 2023

IN THE MATTER OF: Application for approval of Energy Efficiency Program for Domestic Consumers for promotion of Demand Side Management in the State of Odisha

And

IN THE MATTER OF: M/s TP Central Odisha Distribution Ltd.(TPCODL), Corporate Office, Power House, Unit 8, Bhubaneswar- 751 012 on behalf of all four Discoms of Odisha viz. TPCODL , TP Western Odisha Distribution Ltd.(TPWODL),TP Southern Odisha Distribution Ltd (TPSODL) and TP Northern Odisha Distribution Ltd (TPNODL) represented by the Chief –Regulatory & Government Affairs of TPCODL.



.... *Petitioner*

IN THE MATTER OF: M/s GRIDCO, OPTCL, SLDC , Department of Energy, Govt. of Odisha and All Concerned Stakeholders.

.... *Respondents*

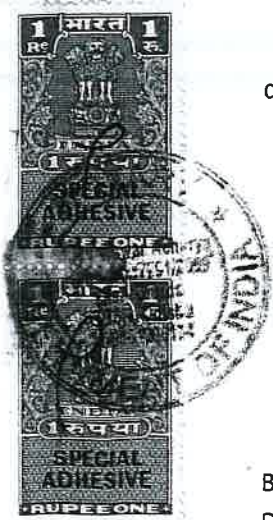
Affidavit

I, Puneet Munjal, aged about 59 son of late Jagdish Lal Munjal residing at Bhubaneswar do hereby solemnly affirm and say as follows:

1. I am the Chief-Regulatory & Government Affairs of TP Central Odisha Distribution Ltd., the Petitioner in the above matter. I am the authorized representative of the above applicants and duly authorized to swear this affidavit on their behalf.
2. The statements made in the submission herein shown to me are based on information provided to me and I believe them to be true.

Bhubaneswar.
Dated: 18.08.2023


Chief-Regulatory & Government Affairs



18.8.2023
Jagdesh Acharya
Notary, Govt Of India
Odisha, BBSR, Dist-Khord
Regd.No-7791/2009
Mch-9861006174



File No TPCODL/Regulatory /2023/ 194/S310

18th August, 2023

Secretary,
Odisha Electricity Regulatory Commission,
Bidyut Niyamak Bhawan
Plot No-4, Chunokoli,
Shailashree Vihar, Bhubaneswar-751021

Subject: Application for approval of Energy Efficiency Program for Domestic Consumers for promotion of Demand Side Management in the State of Odisha

Dear Sir,

We are through this letter submitting a combined Petition on behalf of all the four Discoms of Odisha for approval of Energy Efficiency Program for Domestic Consumers for promotion of Demand Side Management in the State of Odisha.

We trust the Hon'ble Commission shall find our above submission in order.

We shall be glad to provide any other information as may be required in the matter.

Yours faithfully

(Puneet Munjal)

Chief -Regulatory & Government Affairs

**BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION,
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IN THE MATTER OF: M/s GRIDCO, OPTCL, SLDC ,Department of Energy, Govt. of Odisha and All Concerned Stake Holders.

.... Respondents

1. Preamble – Objective of Demand Side Management (DSM)

Energy is the lifeblood of modern societies, and the efficient use of energy resources is of paramount importance to ensure sustainable development, reduce carbon emissions, and ensure energy security. Demand Side Management (DSM) represents a holistic approach to energy conservation and efficiency by addressing the consumption side of the energy equation. It encompasses a range of strategies, programs, and initiatives aimed at optimizing energy consumption, enhancing grid stability, and promoting a greener and more resilient energy future.

DSM recognizes that while the augmentation of energy supply is vital, equal emphasis must be placed on optimizing the consumption pattern of end consumers and thereby moderating demand growth. By engaging the end consumers, DSM endeavours to alter consumption patterns and peak demand behaviour, thereby reducing the strain on

existing infrastructure and deferring the need for additional generation and distribution capacity. The objectives of Demand Side Management include, but are not limited to:

- **Energy Conservation:** DSM measures encourage energy users to adopt energy-efficient practices and technologies, thereby reducing overall consumption and dependence on non-renewable energy sources.
- **Load Shifting:** DSM aims to redistribute peak electricity demand by incentivizing consumers to shift energy-intensive activities to off-peak hours. This helps in optimizing grid operations and reducing the need for costly peak-load power generation.
- **Demand Response:** Through DSM programs, consumers are empowered to actively participate in managing their energy usage. They can voluntarily curtail consumption during periods of high demand or in response to price signals, contributing to grid stability.
- **Environmental Benefits:** By promoting energy efficiency, DSM contributes to a reduction in greenhouse gas emissions and mitigates the environmental impact of energy production and consumption.
- **Financial Savings:** Effective DSM implementation can lead to reduced energy bills for consumers, encouraging them to adopt energy-efficient technologies and practices.

2. Background for Submission of the Petition

The Petitioners are Distribution Licensees under the provisions of the Electricity Act, 2003 (hereinafter "the 2003 Act") having their respective areas of supply in the State of Odisha.

The Electricity Act, 2003 and the OERC Demand Side Management Regulations 2011 require the Discoms to take up DSM initiatives in their area of Supply.

In view of the above, the Petitioners are filing this petition for implementation of certain DSM measures in their respective areas of supply. These measures while empowering the consumers to optimize their energy consumption will also contribute to the state's energy security and environmental sustainability.

The subsequent sections of this Petition elaborate on the specific DSM initiatives proposed by the Petitioners for the consumers of the State, their implementation strategy and anticipated benefits thereof.

3. Submission of the Petitioners

In order to promote Demand Side Management (hereinafter refer to as 'DSM'), the Petitioners are filing the present Petition seeking approval of the Hon'ble Commission for a cumulative funding of Rs. 51.5 Cr (in ARR) over five years for all the four Discoms towards following:

A. Partial subsidy/incentive of Rs. 41.5 Cr for replacement of energy inefficient appliances with Energy Efficient Appliances as mentioned below .

- (i) Replacement of 5,00,000 energy inefficient Induction Fans with Brush-Less Direct Current (BLDC) Fans (Maximum 2 per Household)

And

- (ii) Replacement of 50,000 Less energy efficient Air Conditioners (less than BEE 5 Star rating) with 5 star Bureau of Energy (BEE) rated Air Conditioners (One per Household) .

It is proposed that a Subsidy of 50% of the Cost of Replacement of Induction Fans with BLDC Fans and 25% of Cost of Replacement of energy inefficient Air Conditioners with 5 Star BEE Rated Air Conditioners be provided to House Hold Consumers to encourage transition to Energy Efficient Appliances. The Department of Energy has communicated its readiness to finance upto 60% of such subsidy. This Petition is being filed for approval of the DSM proposal with recovery of the Balance 40% Subsidy from ARR of the respective Discoms.

B. Rs. 10 Cr towards Information, Education and Communication (IEC) expenses and other related Expenditures for implementation of the Scheme

In addition to above amount of Rs. 41.5 Cr towards partial subsidy, Rs. 10 Cr. is sought towards incurrence of Information, Education and Communication (IEC) expenses together with expenditure of implementation of the Scheme including activities like: (i) design of website for demand aggregation, (ii) TV Spots, (iii) Media Advt. (iv) Standees, etc. at Divisions / Consumer Care Centers, printing on Bills, leaflets, etc. and (v) development and maintenance of mobile application.

The Rs. 10 Cr being sought is for all four Disoms together for five years and effectively works out to approximately 3% of the total Appliances Cost of Rs. 305 Cr¹ covered under the proposed Scheme. Further, average annual expenditure per Discom works out to Rs. 50 Lakhs each which is reasonable. It is further submitted that, this expenditure of Rs.10 Cr is an estimated amount and the actual expenditure incurred may kindly be allowed in the ARR of the Discoms.

The total proposed DSM expenditure for which approval is requested is presented in **Table-A** below and the year wise expenditure that is required to allowed in ARR of each Discom is provided as **Annexure-1** to this submission .

The details of the proposed scheme are enclosed as **Appendix** to this petition.

Table- A : Estimated DSM Expenditure requested to be allowed in ARR

Sr. No	Particular	UoM	Each DISCOM	Total for all 4 Discoms
A	Numbers of BLDC Fan Proposed to be installed for a Period of 5 Year (FY 24- FY 28)	No's	125000	500000
B	Cost of One BLDC Fan	Rs.	2200	2200
C	#Buy Back Cost of one (existing) Induction Fan	Rs.	0	0
D = B-C	Cost of Replacement of one (existing) Induction Fan with BLDC Fan	Rs.	2200	2200
E = 50 % X D	Total Proposed Subsidy/Incentive per BLDC fan	Rs.	1100	1100
E.1 = 30% X D	Total Proposed Subsidy/Incentive per BLDC fan by Govt. of Odisha	Rs.	660	660
E.2 = 20% X D	Total Proposed Subsidy/Incentive per BLDC fan by of Allowance as DSM Expenditure in ARR	Rs.	440	440
F = (A X E.2) /10^7	Total Cost of Subsidy/Incentive for BLDC Fan in ARR	Rs. Cr	5.5	22
G	Numbers of BEE 5 Star Rated to be installed for a Period of 5 Year (FY 24- FY 28)	No's	12500	50000
H	Cost of One BEE 5 Star AC	Rs.	39000	39000
I	#Buy Back Cost of one (existing) less than BEE 5 Star AC	Rs.	0	0
J = H-I	Cost of Replacement of one (existing) less than BEE 5 Star AC with BEE 5 Star AC	Rs.	39000	39000
K = 25% X J	Total Proposed Subsidy /Incentive per BEE 5 Star Rated AC	Rs.	9750	9750
K.1 = 15% X J	Total Proposed Subsidy /Incentive per BEE 5 Star Rated AC by Govt. of Odisha	Rs.	5850	5850
K.2 = 10% X J	Total Proposed Subsidy /Incentive per BEE 5 Star Rated AC by of Allowance as DSM Expenditure in ARR	Rs.	3900	3900
L = (G X K.2) /10^7	Total Cost of Subsidy / Incentive for BEE 5 Star AC in ARR	Rs. Cr	4.88	19.5
M = F+L	Total Cost of Subsidy / Incentive for BLDC Fan and BEE 5 Star AC in ARR	Rs. Cr	10.38	41.50
N	Expenditure towards Information, Education and Communication (IEC) expenses and other expenses for implementation of the Scheme as DSM Expenditure in ARR	Rs. Cr	2.50	10*
O = M+N	Total 'DSM Expenditure' to be allowed in ARR for a period of Five Year (FY 24 to FY 28)	Rs. Cr	12.88	51.50

Presently Considered Nil in view of Lack of Information on available Salvage value which shall be determined through bidding process

* Note: Estimated Amount , will be claimed as per Actuals

¹ Total Appliances Cost (Rs. 305 Cr) = Total No's of BLDC Fan (5,00,000) X Cos of One BLDC Fan (Rs. 2200.00) + Total No's of BEE 5 Star AC (50,000) x Cost of One BEE 5 Star AC (Rs. 39,000.00)

Prayers

TPCODL prays that the Hon'ble Commission may kindly be pleased to:

1. Admit the above petition, detailed proposed scheme for which is provided as **Appendix** to this submission.
2. Approve the Petitioners' Proposal for replacing (a) 500000 Energy Inefficient Induction Fan with BLDC Fan (i.e. 125000 by each Discom) and (b) Replacement of 50000 Less Energy efficient AC (less than BEE 5 Star rated) with BEE 5 Star rated AC (i.e. 12500 by each Discom) over a period of five years i.e. FY 24 to FY 28 in their respective license area of individual Discoms.
3. Allow the requested cumulative expenditure of Rs. 41.5 Cr. for all four Discoms over five years (FY 24 to FY 28) together with Rs. 10 Cr. towards Information, Education and Communication (IEC) and other related expenses for implementation of the Scheme as DSM Expenditure including any other amount incurred additionally, in the Annual Revenue Requirement (ARR) of the Petitioners. The Year wise break up of expenditure that may kindly be approved for Allowance in ARR of each Discom towards DSM expenditure is provided at **Annexure-1** to this submission.
4. Permit making additional submission required in this matter.
5. Grant any other relief as deemed fit and proper in the facts and circumstances of the case.
6. Any other direction as the Hon'ble Commission may think appropriate

1. This Petition is being filed as per enabling provisions defined under Section 42(1), 61, 86(2) of the Electricity Act 2003, clause 5.9.2, 5.9.4 and 5.9.6 of the National Electricity Policy and in accordance with the Regulation 10 of OERC (Demand Side Management) Regulations, 2011 and Provisions of OERC (Conduct of Business) Regulations, 2004.
2. The proposal is for introduction of a five year Scheme from FY 24-FY 28, for replacing (i) 5,00,000 Nos. energy inefficient Induction Fans with BLDC Fans and (ii) 50,000 Nos. of Non / Less than BEE 5 Star ACs with BEE 5 Star Rated Air Conditioners by the four Discoms over the period of five year.
3. While these Energy Efficient Home Equipment, are relatively more expensive than the conventional energy inefficient equipment, their capital cost is easily recoverable from Energy Savings over 2-5 years (depending on intensity of usage and capital cost).
4. In-order to promote residential households to transition to such Energy Efficient Home Appliances, a subsidy/incentive of 50% of Cost of Replacement of Induction Fans by BLDC Fans and 25% of Cost of Replacement of Energy Inefficient Air Conditioners by BEE 5 Star Rated Air Conditioners is proposed. 60% of the Subsidy/ Incentive shall be financed by the Government of Odisha from its Energy Efficiency Scheme and the balance 40% shall be financed by the Petitioners from the DSM Expenditure to be allowed as per this Petition, to the Petitioners in their respective ARR. The relevant extract of the Department of Energy's decision in this regard is reproduced below and the letter from the DoE, Govt. of Odisha in this regard is enclosed as **Annexure-2** to this submission.
3. *Some subsidy/ incentive shall also be provided under the scheme for Demand Side Management (DSM) program of DISCOMs approved by OERC for **residential households only**. It could be as follows:*
 - a. *DSM Incentive may cover 50% of the cost of replacement of maximum 2 conventional fans with 2 energy efficient BLDC fans. Out of this ,30% cost shall be met through this scheme and the rest 20% shall be provided in ARR of the DISCOM by OERC.*
 - b. *Incentive may cover 25% of the cost of replacement of 1 conventional AC with 1 energy efficient AC. Out of this ,15% cost shall be met through this scheme and the rest 10% shall be provided in ARR of the DISCOM by OERC.*
 - c. *DISCOM may approach OERC in this regard citing the DSM Regulations approved by other State Regulatory Commission. OERC may direct any modification to the incentive structure mentioned at (a) and (b) above as deemed fit.*

4. The Petitioners submit that the two energy efficient appliances identified for coverage under the proposed 'Energy Efficiency Scheme for Domestic Consumers', viz, BLDC Fans and 5 Star BEE Rated Air Conditioners, are based on the extent of usage, energy savings potential and ease of consumer acceptance for a lower payback period.
5. Further, for the initial rollout of the DSM scheme, a limited quantum of Energy Efficient Appliances are proposed in this Petition (i.e. total 500000 BLDC fan (125000 by each Discom) and 50,000 BEE 5 Star AC (12500 by each Discom) , depending upon the response to the scheme additional quantum will be requested before the Hon'ble Commission.
6. The Energy Savings potential for BLDC Fans as well as for 5 Star Air Conditioners is provided below:
 - a. **BLDC Fans:**
 - i. Fans are virtually available in each household, and unlike tube lights which are used only during late evening / night hours, fans are used virtually throughout the 24 hour day and hence have a significant energy savings potential
 - ii. BLDC fan reduces power consumption by up to 65% and in fact, it is more cost-efficient. One of the primary reasons is that these fans use less energy consumption but still generate the same amount of airflow.
 - iii. A typical induction based fan consumes around 75 watts while a BLDC fan consumes about 30 watts. If a fan runs for more than 15 hours on a daily basis, at an average energy cost of Rs. 5/ unit and an average price of BLDC fan at Rs. 2200 per fan, its full cost can be recovered in less than two years (Rs. 2200/Rs.1232=1.8 years) in the form of energy-savings with BLDC fans.
 - iv. The computation of Annual Savings from installation of BLDC vis-a vis induction fans is provided in table below.

Table-1: Annual Savings : BLDC vs Induction Fans

Type of Fan	Watt	Hourly consumption (Units)	Daily Consumption (Units)	Yearly Consumption (Units)	Yearly Cost at Average Energy Charges of Rs.5 per unit (Rs.)
A	B	C	D=Cx15 Hrs	E=Dx365	F=E x Rs. 5
Induction based fan	75	0.075	1.125	410.625	2053
BLDC fan	30	0.03	0.45	164.25	821
Annual Savings				246	1232

b. BEE Five Star Rated Air Conditioners :

- i. With economic upliftment of society and rapid change in life styles, Air Conditioning Loads are increasing significantly.
- ii. As per India Cooling Action Plan 2019, it has been estimated that room air conditioner sales will grow at a CAGR of 11% in the next 10 years and 8% in the following 10 years in a low growth scenario, the relevant extract of which is enclosed as **Annexure-3** to this submission.
- iii. The average daily operating hours for air conditioning appliances has increased with maximum usage of air conditioning appliances occurring during late-night hours, i.e. from 22:00 to 04:00 Hrs which signifies increase in average daily operating hours to 8 hours a day (including day time use).
- iv. For the purpose of analysis of Savings from replacement of existing ACs by 5 Star Rated Air Conditioners, we have assumed the existing 3 Star BEE Rated Air Conditioners. While a typical 3 Star BEE Rated Air conditioner (1.5 T, Split) would consume around 1600 watts , a 5 Star BEE Rated Air Conditioner (1.5T Split) would consumes about 900 watts. If an AC run for around 8 hours on a daily basis, at an average energy cost of Rs. 5/ unit and an average price of 5 Star Rated Air conditioners at Rs. 39,000, its full cost can be recovered in less than five years ($\text{Rs. } 39,000 / \text{Rs. } 8,400 = 4.6$ years) in the form of energy-savings with BEE 5 Star rated AC.
- v. The computation of Annual Savings from installation of 5 Star BEE Rated Air Conditioner vis-à-vis 3 Star Air Conditioner is provided in the Table below.

Table-2 : Annual Savings : BEE 5 Star rated AC vs BEE 3 Star rated AC

Type of fan	Watt	Hourly consumption (Units)	Daily Consumption (Units)	Yearly Consumption (Units)	Yearly Cost at Average Energy Charges of Rs.5 per unit (Rs.)
A	B	C	D=Cx8 hrs	E=Dx300	F=Ex5
3 Star Rated AC	1600	1.6	12.8	3840	19200
5 Star Rated AC	900	0.9	7.2	2160	10800
Annual Savings				1680	8400

7. As specified in Table-1 and Table-2 above, the estimated annual energy savings due to use of BLDC Fans and Energy Efficient Air Conditioners over induction fans and inefficient air conditioners (assuming avg. 3 Star Rated ACs) is estimated at 246 units and 1,680 units respectively with an annual monetary saving per Fan of Rs. 1,232 and Rs. 8,400 per AC.
8. As a result, estimated cumulative annual energy saving for consumers participating in this DSM program for a total of 5,00,000 Fans shall be 123 MUs per year and annual monetary saving at consumers end would be Rs. 62 crore. Similarly, estimated cumulative annual energy saving for a total of 50,000 ACs shall be 84 MUs per year and annual monetary saving at consumers end would be Rs. 42 crore.
9. Based on the above, the Total Savings in terms of MUs and monetary Savings to Consumers for the above referred DSM Program works out to 207 Mus (123 MU + 84 MU) with a monetary value of Rs. 104 crore (Rs. 62 Cr + Rs.42 Cr).
10. With savings in terms of consumption, the power requirement to meet demand shall also correspondingly reduce. Based on the target T&D Loss for FY 23-24, the expected annual avoidable power purchase works out to 259.88 MUs with expected avoidable marginal power purchase cost (including Transmission Charges) per annum of Rs. 86.17 Cr.

The computation of Savings in terms of Power Purchase MUs and its corresponding marginal cost is provided at **Annexure-4** to this Petition.

11. It is submitted that the DSM Budget as sought in this Petition as part of ARR for FY 24 till FY 28, is estimated to be tariff positive (favourable) in view of the savings in power purchase cost due to transitioning to energy efficient devices. A computation of the Savings in Power Purchase Cost vis-à-vis the proposed DSM Expenditure (inclusive of

Information, Communication and Education (ICE) expenses and Other expenses related to Scheme implementation) is provided at **Annexure-5** to this submission.

12. It is further submitted that ,the annual energy saving of 207 MU after implementation of the scheme will cause reduction of CO2 emission of about 1.89 Lakhs ton per annum². The year wise CO2 emission reduction is provided at **Annexure-6** to this submission.

13. The Petitioners respectfully submit below, the salient features of proposal:

(a) **Scope of the Scheme:** The Scheme is applicable for Domestic Consumers

Under this proposal, the Petitioners would collectively target to replace over a period of five years (FY 24 to FY 28)

- (i) 5,00,000 Nos. induction Fans with BLDC Fans over Five year period by all the four Discoms (i.e. 1,25,000 Nos. Fans by each Discom over 5 years)
- (ii) 50,000 Nos of less energy efficient Air Conditioners (less than BEE 5 Star rated) with BEE 5 Star rated Energy Efficient Air Conditioner over Five year period by all the four Discoms (i.e. 12,500 No. ACs by each Discom over 5 years)

(b) **Eligibility :**

- i. The Consumer must be a Domestic Consumer.
- ii. The Consumer should have a valid consumer connection / CA number.
- iii. There shall be no outstanding dues as on date of application.
- iv. Replacement of maximum 2 conventional Induction Fan with 2 BLDC Fan per Consumer (CA number).
- v. Replacement of one energy inefficient AC (less than BEE 5 Star rated) with BEE 5 Star rated AC per consumer (CA number).
- vi. The Scheme shall be applicable on first come first serve basis for the eligible consumers.

² Conversion factor of 0.91 kg/kwh for CO2 taken based on Co2 Baseline Database for the Indian Power Sector user Guide version 18.0 ,Dec'22.

(c) **Tenure / Validity of the Scheme** : The Scheme will be implemented over 5 Year period i.e. FY 24 to FY 28

Considering the balance months available in FY'24 for approval and rolling out of the Scheme, the Discom wise schedule for replacement is proposed as follows:

Table -3: Schedule for Roll out (Installation of BLDC Fan and BEE 5 Star AC)

Expected approval from the Hon'ble Commission	Aug-23
Tendering and onboarding of Fans / AC OEMs	Dec-23
Launch of AC Replacement Program	Jan-24

Table -4: Discom wise Schedule

FY	Equipment	TPCODL	TPSODL	TPWODL	TPNODL	Total
FY 23-24	BLDC Fans	5,000	5,000	5,000	5,000	20,000
	5 Star BEE Rated ACs	500	500	500	500	2,000
FY 24-25	BLDC Fans	30,000	30,000	30,000	30,000	120,000
	5 Star BEE Rated ACs	3,000	3,000	3,000	3,000	12,000
FY 25-26	BLDC Fans	30,000	30,000	30,000	30,000	120,000
	5 Star BEE Rated ACs	3,000	3,000	3,000	3,000	12,000
FY 26-27	BLDC Fans	30,000	30,000	30,000	30,000	120,000
	5 Star BEE Rated ACs	3,000	3,000	3,000	3,000	12,000
FY 27-28	BLDC Fans	30,000	30,000	30,000	30,000	120,000
	5 Star BEE Rated ACs	3,000	3,000	3,000	3,000	12,000
Total	BLDC Fans	125,000	125,000	125,000	125,000	500,000
	5 Star BEE Rated ACs	12,500	12,500	12,500	12,500	50,000

(d) **Buy Back Arrangement** :

The scheme shall be operated under 100% buy back arrangement so that the inefficient ACs and Fans must be taken out of the Grid and disposed-off in an environmental friendly manner.

(e) Implementing Agency :

The Petitioners' shall engage implementing agencies discovered through competitive bidding process or as decided by the Hon'ble Commission. The price to be quoted by the implementing agency in the bid process shall be net of the quoted price of new Appliance minus the salvage value of the old Appliance , which shall be indicated separately as part of the bid. The implementing agency shall be responsible for the safe disposal of old Appliances.

(f) Proper and Safe Disposal of Old replaced Appliances (Fans and ACs) :

Petitioners shall ensure proper and environment friendly disposal of old replaced Air-Conditioners and Fans by the implementation agency to avoid misuse as well as safety hazards.

The disposal certificate shall also be issued by such agency.

(g) Maintenance of Records :

The Petitioners 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 Appliances;
- (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.

14. In view of the evident benefits for the consumers including the future benefits , it is requested that the Hon'ble Commission may kindly allow the present proposal as explained above and may :

- (a) Permit replacement of 5,00,000 Nos. inefficient induction fans by BLDC fans over a period of five years
- (b) Permit replacement of 50,000 Nos. inefficient ACs by 5 Star Rated Air Conditioners over a period of five years
- (c) Permit Inclusion of Window and Split type Air Conditioners with rating 1T, 1.5T and 2T in the scheme so that the positive impact on the load curve of the Petitioners can be maximized.
- (d) Approve as part of Petitioners ARR over a period of five years, DSM Expenditure of Rs. 41.50 Cr. towards Partial Subsidy / Incentive to Consumers for replacement of over a period of five years. Additionally, expenditure of Rs. 10 Cr. for all four Petitioners towards meeting information/ communication/ demand aggregation through development and deployment of applications may kindly be approved. A tentative annual breakup of the same from FY 24 to FY 28 is provided in **Annexure-1**.
- (e) It may kindly be noted that the present BEE star rating of air conditioners is valid till December, 2024. If the Star rating of air conditioners undergo a change then the Petitioner will seek for quotation for new 5 Star rated Air conditioner models from on-boarded OEMs and revised price (if any) of the Air Conditioners will be notified to the Hon'ble Commission.

Annexure-1: Year wise Allowance of DSM Expenditure in ARR of each DISCOMs

Sr No	Particular	UoM	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	Total
A	Numbers of BLDC Fan Proposed to be installed (replacing existing Induction fans) by each DISCOM	No's	5000	30000	30000	30000	30000	125000
B	Cost of One BLDC Fan	Rs.	2200	2200	2200	2200	2200	2200
C	#Buy Back Cost of one (existing) Induction Fan	Rs.	0	0	0	0	0	0
D= (B-C)	Cost of Replacement of one (existing) Induction Fan with BLDC Fan	Rs.	2200	2200	2200	2200	2200	2200
E= 20% X D	Subsidy/ Incentive per BLDC fan by each DISCOM by of Allowance as DSM Expenditure in ARR	Rs.	440	440	440	440	440	440
F= 4 X (A X E) / 10⁷	Total Cost of Subsidy/Incentive for BLDC Fan in ARR of all Four DISCOMs	Rs. Cr	0.88	5.28	5.28	5.28	5.28	22
G	Numbers of BEE 5 Star Rated to be installed (replacing existing less than 5 Star rated AC) by each DISCOM	No's	500	3000	3000	3000	3000	12500
H	Cost of One BEE 5 Star AC	Rs.	39000	39000	39000	39000	39000	39000
I	#Buy Back Cost of one (existing) less than BEE 5 Star AC	Rs.	0	0	0	0	0	0
J=H-I	Cost of Replacement of one (existing) less than BEE 5 Star AC with BEE 5 Star AC	Rs.	39000	39000	39000	39000	39000	39000
K= 10% X J	Subsidy/Incentive per BEE 5 Star Rated AC by each DISCOM by of Allowance as DSM Expenditure in ARR	Rs.	3900	3900	3900	3900	3900	3900
L= 4 x (G X K) / 10⁷	Total Cost of Subsidy/Incentive for BEE 5 Star AC in ARR of all Four DISCOMs	Rs. Cr	0.78	4.68	4.68	4.68	4.68	19.5
M= F + L	Total Subsidy/Incentive Cost towards BLDC Fan and BEE Star AC in ARR of all Four DISCOM	Rs. Cr	1.66	9.96	9.96	9.96	9.96	41.50
N	*Expenditure towards Information, Education and Communication (IEC) expenses and other expenses for implementation of the Scheme as DSM Expenditure in ARR	Rs. Cr	2	2	2	2	2	10
O= M+N	Total 'DSM Expenditure' to be allowed in ARR of all Four DISCOMs	Rs. Cr	3.66	11.96	11.96	11.96	11.96	51.5
P= O/4	Total 'DSM Expenditure' to be allowed in ARR each DISCOM	Rs. Cr	0.92	2.99	2.99	2.99	2.99	12.88

Presently Considered Nil in view of Lack of Information on available Salvage value which shall be determined through bidding process

* Note: Estimated Amount, will be claimed as per Actuals



GOVERNMENT OF ODISHA
ENERGY DEPARTMENT

No. 8496 /En., dated, 17/08/2023
ENG-ESIEC-EC-0001-2023

From

Shri Sambit Parija, OFS,
FA-cum-Additional Secretary to Govt.

To


State Project Director, OSEPA, Bhubaneswar/
Director, ICDS & Social Welfare/
Director, Health Services/
EIC (Elec)-cum-PCEI, Odisha/
CMD, OPTCL, Bhubaneswar/
MD, GRIDCO, Bhubaneswar/
CEOs, All DISCOMs

Sub: Minutes of the Monitoring and Implementation Committee meeting held under chairmanship of Additional Chief Secretary, Energy Department on 10.08.2023 at 10.30 AM in the 2nd Floor Conference Hall of Kharvel Bhawan for the implementation of the CMECP-Household Energy Efficiency Program.

Sir,


I am directed to enclose herewith approved minutes of the Monitoring and Implementation Committee meeting held under chairmanship of Additional Chief Secretary, Energy Department on 10.08.2023 at 10.30 AM in the 2nd Floor Conference Hall of Kharvel Bhawan for the implementation of the CMECP-Household Energy Efficiency Program for your kind information and taking necessary action.

Yours faithfully,


FA-cum-Additional Secretary to Govt.

Memo No. 8497 /En dated, 17/08/2023

Copy forwarded to PS to Additional Chief Secretary, Energy Deptt. for kind information of ACS.


FA-cum-Additional Secretary to Govt.

Minutes of the Meeting held under the Chairmanship of Additional Chief Secretary, Dept. of Energy to discuss about implementation of CMECP-Household Energy Efficiency Program (CMECP-HEEP) on 10.08.2023 at 10.30 AM in the 2nd Floor Conference Hall of Kharvel Bhawan.

A meeting was convened under the Chairmanship of Additional Chief Secretary, Energy Department on 10.08.2023 at 10.30 AM to examine and discuss the implementation of CMECP-Household Energy Efficiency Program (CMECP-HEEP).

The list of participants is placed at Annexure-A

At the outset, Additional Chief Secretary, Energy Department explained the background of the said program, i.e. Chief Minister's Energy Conservation Program-Household Energy Efficiency Program (CMECP-HEEP) and highlighted that Energy Efficiency is essential for achieving energy transition as we can not afford adding on huge capacity to meet the growing demand in the "AS IS" scenario. Energy consumption need to be decoupled from economic growth in a gradual manner. Hence use of energy efficient appliances need to be encouraged in Government buildings and residential households.

EIC (Elecy)-cum-PCEI was called upon to make a presentation on the proposed scheme and explain the modalities of the same.

After detailed deliberations, the following decisions were taken.

1. The tenure of the scheme shall be 5 years.
2. **Brush Less DC (BLDC) fans** shall be provided to all Medical Colleges, District Head Quarter Hospitals (DHHs) and SDHs, CHCs, PHCs, health sub-centres, High Schools, Upper Primary and Primary schools and AWCs in the State **as replacement against existing conventional fans which are more than 5 years old.** New fans may also be provided in schools and AWCs where it is not available. All **energy inefficient AC units** installed in important government offices, all Medical Colleges, District Head Quarter Hospitals (DHHs) and SDHs which are **more than five years old, shall be replaced** with energy efficient AC units in a phased manner. No new ACs shall be provided under this scheme.
3. Some subsidy/incentives shall also be provided under the scheme for the Demand Side Management (DSM) program of the DISCOMs approved by OERC for residential households only. It could be as follows:
 - a. DSM Incentive may cover 50% of the cost of replacement of maximum 2 conventional fans with 2 energy efficient BLDC fans. Out of this, 30% cost shall be met through this scheme and the rest 20% shall be provided in the ARR of the DISCOM by the OERC.

- b. Incentive may cover 25% of the cost of replacement of 1 conventional AC with 1 energy-efficient AC. Out of this, 15% cost shall be met through this scheme and the rest 10% shall be provided in the ARR of the DISCOM by the OERC.
 - c. DISCOMs may approach OERC in this regard citing the DSM Regulations approved by other State Regulatory Commissions. OERC may direct any modifications to the incentive structure mentioned at (a) and (b) above as deemed fit.
4. The name of the scheme may be changed to Energy Efficiency Program by dropping the word "household" as it is proposed to cover government buildings apart from residential households.
 5. The procurement of energy efficient fans and ACs could be made through EESL/OPTCL/any other agency preferably from the OEMs as decided by the Government on the recommendation of EFC. Installation charges shall also be covered.
 6. The scheme shall be implemented through the DISCOMs in a transparent manner. For tracking the receipt of appliances by the beneficiaries, TPCODL shall develop a mobile application. GPS of the site of installation of the energy efficient appliance, time and date stamping among other things shall be captured through the application. The data shall be stored in OPTCL Data Center for at least 3 years.
 7. The Monitoring and Implementation Committee headed by SPD (OSEPA) shall redesign the scheme accordingly.

The meeting ended with a vote of thanks to the Chair and the participants.

D 16/8/23

**Additional Chief Secretary,
Energy Department**

Annexure - A

List of Participants

Sl. No.	Name	Designation/Department
1	Sri. Nikunja Bihari Dhal, IAS	Additional Chief Secretary, Energy Department
2	Sri Anupam Saha, IAS	State Project Director, OSEPA
3	Sri Lingaraj Panda, IAS	Director, ICDS&Social Welfare
4	Sri Suresh Chandra Maharana	EIC (Electy.)-cum-PCEI, Odisha
5	Sri Aravind Singh	CEO, TPCODL
6	Sri. Gagan Bihari Swain	Director (F&CA), GRIDCO
7	Sri Sambit Parija, OFS	FA-cum-Additional Secretary to Govt., Energy Department
8	Sri B.C. Padhary	CGM(F) GRIDCO
9	Sri Chandan Singh	Head (Customer Services) TPCODL
10	Sri. Sanjay Kumar Dutt	CGM (CPC) OPTCL

3.3.2. Inputs and Assumptions

Overarching growth drivers: The following growth drivers will have a significant bearing on the sales of new comfort cooling equipment, especially room air conditioners, in the following decades:

- Growth in per-capita income: Per IESS, per capita income is like to double between 2017 (INR 90,922) and 2027 (INR 178,534) (over the 2017 baseline) and then again double between 2027 and 2037 (INR 361,195) (over the 2027 baseline).
- Purchasing power of urban and rural population: There is a considerable gap in the per capita income of rural and urban population; the per capita income in 2011-12 was INR 1,01,313 and INR 40,772 respectively for urban and rural population¹⁸
- Rate of Urbanisation: Per IESS, India is presently 33% urbanised and will be 39% and 45% urbanised in 2027 and 2037, respectively.

Room Air conditioners: According to the manufacturing data of star labelled appliances published by BEE¹⁹, three important trends have been observed:

- Since 2010, manufacturing of room air conditioners has grown at a CAGR of 13%.
- There has been a sharp rise in the adoption of inverter room air conditioners since 2015 alongside a significant decline in the uptake of fixed-speed room air conditioners. Considering the trends in the uptake of fixed-speed and inverter room air conditioners observed in the past few years, it is anticipated that the share of fixed-speed room air conditioners in the future room air conditioners stock will decline rapidly.
- Growth in room air conditioner manufacturing tends to show a sharp rise every alternate year followed by almost constant or very small rise in subsequent year. Room air conditioner production peaked in 2012-13, 2014-15 and 2016-17 showing around 20-30% growth over the preceding year; the alternate years saw only 1-7% growth.

The current and future room air conditioner stock were estimated using BEE data described above along with the following underlying assumptions:

- BEE data can be used as a proxy for room air conditioner sales
- Room air conditioner life = 10 years²³
- Room air conditioner sales will grow at a CAGR of 11% in the next 10 years and 8% in the following 10 years in a low growth scenario; and at a CAGR of 15% in the next 10 years and 12% in the following 10 years in a high growth scenario.
- A non-trivial share of room air conditioners is used in commercial spaces; it is possible that such commercial spaces and apartment complexes might transition to central air-conditioning, which might have a bearing on the room air conditioner stock – however, this has not been incorporated in this analysis.

Per a recent AEEE survey of approximately 1000 households using air conditioning, room air conditioner of 1.5 TR is the most popular consumer choice, 61% of the data-set. Previous studies by LBNL²⁹ and CEEW²⁰ also mention similar value for a typical room air conditioner. The average consumer preference for different star-rated fixed-speed and inverter room air conditioner is skewed towards 3 stars. Per inputs from room air conditioner manufacturers, responses from room air conditioner distributors and retailers, the point of deployment of room air conditioner is shifting towards the residential sector – from a share of 60-70% currently to 80-90% in 2037-38. There will be variations in room air conditioner usage depending on the climate and type of use.

BEE revises the efficiency level of room air conditioner every 3 years. If these revisions in room air conditioner efficiency level is annualised, a steady growth of 3% p.a. in room air conditioner efficiency levels (previously EER, now ISEER) can be observed.

Annexure-4: Computation of Saving in Power Purchase

Sr.No	Description	UoM	TPCODL	TPSODL	TPWODL	TPNODL	Total	Remark /Reference
A	BLDC Fans	Nos.	125,000	125,000	125,000	125,000	500,000	Table-4
B	Savings in Energy Consumption	Units/Fan	246	246	246	246	246	Table-1
C=A*B/1E^6	Total Savings in Energy Consumption	MUS	30.80	30.80	30.80	30.80	123.19	
D	Average Domestic Tariff	Rs./ Unit	5	5	5	5	5	
E=C/10*D	Total Savings at Consumer end	Rs. Cr.	15.40	15.40	15.40	15.40	61.59	
F	5 Star ACs	Nos.	12,500	12,500	12,500	12,500	50,000	Table-4
G	Savings in Energy Consumption	Units/AC	1680	1680	1680	1680	1,680	Table-2
H=F*G/1E^6	Total Savings in Energy Consumption	MUS	21.00	21.00	21.00	21.00	84.00	
I=D	Average Domestic Tariff	Rs./ Unit	5	5	5	5	5	
J=H*I	Total Savings at Consumer end	Rs. Cr.	10.50	10.50	10.50	10.50	42.00	
K=C+H	Total Savings in Energy Consumption	MUS	51.80	51.80	51.80	51.80	207.19	
L=E+J	Total Savings at Consumer end	MUS	25.90	25.90	25.90	25.90	103.59	
M	T&D Losses (FY 23-24)	%	21.21%	25.00%	18.08%	16.25%		
N=K/(1-M)	Marginal Power Purchase Saving	MUS	65.74	69.06	63.23	61.85	259.88	Approved in FY-24 Tariff Order
O	BSP +Transmission Charges(FY 23-24)	Rs./ Unit	3.29	2.34	4.14	3.59		As Approved for FY-24
P=N/10*O	Savings in Power Purchase Cost +Tx Charges	Rs.Cr	21.63	16.16	26.18	22.20	86.17	

Annexure-5 : Net Saving in Power Purchase Cost vis a vis DSM Expenditure

Sr No	Description	UoM	TPCODL	TPSQDL	TPWODL	TPNODL	Total	Remark /Reference
A	BLDC Fans	Nos.	125,000	125,000	125,000	125,000	500,000	
B	Cost of One BLDC Fan	Rs. / Fan	2200	2200	2200	2200	2200	
C	Buy Back Cost of one (existing) Induction Fan	Rs. / Fan	0	0	0	0	0	
D=(B-C)	Cost of Replacement	Rs. / Fan	2200	2200	2200	2200	2200	
E=D X 50%	Proposed Subsidy	Rs. / Fan	1100	1100	1100	1100	1100	
E1 = DX 30%	Government of Odisha	Rs./Fan	660	660	660	660	660	
E2 = DX 20%	DSM Allowance in ARR	Rs./Fan	440	440	440	440	440	
F=A x E2 /10^7	DSM Budget in ARR(BLDC Fan Subsidy)	Rs. Cr.	5.50	5.50	5.50	5.50	22.00	
G	5 Star BEE Rated ACs	Nos.	12,500	12,500	12,500	12,500	50,000	
H	Cost of One BEE 5 Star AC	Rs. / AC	39000	39000	39000	39000	39000	
I	Buy Back Cost of one (existing) less than BEE 5 Star AC	Rs. / AC	0	0	0	0	0	
J=H-I	Cost of Replacement	Rs. / AC	39000	39000	39000	39000	39000	
K=25% X J	Proposed Subsidy	Rs. / AC	9750	9750	9750	9750	9750	
K1= 15% X J	Government of Odisha	Rs. / AC	5850	5850	5850	5850	5850	
K2= 10% X J	DSM Allowance in ARR	Rs. / AC	3900	3900	3900	3900	3900	
L= G X K2 /10^7	DSM Budget in ARR (5 Star AC Subsidy)	Rs. Cr.	4.88	4.88	4.88	4.88	19.50	
M=(AXB+GXH)/10^7	Total Appliances Cost	Rs. Cr	76.25	76.25	76.25	76.25	305.00	
N	Expenditure towards Information, Education and Communication (IEC) & Other expenses for Implementation of Scheme as DSM Expenditure in ARR	Rs. Cr	2.50	2.50	2.50	2.50	10.00	
Q= F+L+N	Total DSM Budget In ARR	Rs. Cr.	12.88	12.88	12.88	12.88	51.50	
P	Savings in Power Purchase Cost	Rs. Cr.	21.63	16.16	26.18	22.20	86.17	Sr No. P of Annexure-4
Q=P-O	Net Savings (after DSM Allowance)	Rs. Cr.	8.75	3.29	13.30	9.33	34.67	

Annexure-6 : Year wise Reduction in CO2 emission

Particular	*Saving in Electrical Energy In (MU)						#Reduction in CO ₂ emission (Ton) due to saving in electrical Energy Consumption					
	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	For each year beyond FY 2027-28	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	For each year beyond FY 2027-28
	20,000 BLDC Fans installed in FY-24 (replacing existing Induction Fans)	0.6	4.92	4.92	4.92	4.92	4.92	559.65	4477.2	4477.2	4477.2	4477.2
1,20,000 BLDC Fans installed in FY-25 (replacing existing Induction Fans)		14.76	29.52	29.52	29.52	29.52	0	13431.6	26863.2	26863.2	26863.2	26863.2
1,20,000 BLDC Fans installed in FY-26 (replacing existing Induction Fans)			14.76	29.52	29.52	29.52	0	0	13431.6	26863.2	26863.2	26863.2
1,20,000 BLDC Fans installed in FY-27 (replacing existing Induction Fans)				14.76	29.52	29.52	0	0	0	13431.6	26863.2	26863.2
1,20,000 BLDC Fans installed in FY-28 (replacing existing Induction Fans)					14.76	29.52	0	0	0	0	13431.6	26863.2
Sub Total (A)	0.6	19.7	49.2	78.7	108.2	123.0	559.65	17908.8	44772	71635.2	98498.4	111930
2000 BEE 5 Star AC installed in FY-24 (replacing existing less than BEE 5 Star AC)	0.42	3.36	3.36	3.36	3.36	3.36	382.2	3057.6	3057.6	3057.6	3057.6	3057.6
12000 BEE 5 Star AC installed in FY-25 (replacing existing less than BEE 5 Star AC)		10.08	20.16	20.16	20.16	20.16	0	9172.8	18345.6	18345.6	18345.6	18345.6
12000 BEE 5 Star AC installed in FY-26 (replacing existing less than BEE 5 Star AC)			10.08	20.16	20.16	20.16	0	0	9172.8	18345.6	18345.6	18345.6
12000 BEE 5 Star AC installed in FY-27 (replacing existing less than BEE 5 Star AC)				10.08	20.16	20.16	0	0	0	9172.8	18345.6	18345.6
12000 BEE 5 Star AC installed in FY-28 (replacing existing less than BEE 5 Star AC)					10.08	20.16	0	0	0	0	9172.8	18345.6
Sub Total (B)	0.42	13.44	33.6	53.76	73.92	84	382.2	12230.4	30576	48921.6	67267.2	76440
Total (A+B)	1.0	33.1	82.8	132.5	182.2	207.0	941.85	30139.2	75348	120556.8	165765.6	188370

* Note: Basis of Computation: Average Annual Saving for BLDC Fan (246 Units), BEE 5 Star AC (1680 Unit) For Year of implementation, the period of usage taken at midpoint (i.e. for FY-24 mid point of 3 months (0.125 Year) and for FY 25 onwards mid point of 12 Months (0.5 Year)

Conversion factor used 0.91 kg/ kwh as per 'Co2 Baseline Database for the Indian Power Sector user Guide version 18.0, Dec'22'