

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

Case No ____ of 2022

IN THE MATTER OF: Case No ____ of 2022-Petition filed by TPCODL on behalf of all the four Discoms of Odisha for determination of a) Tariff from Pump Connected Solar Projects set up under Component C of Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan ("Kusum C") and b) for Approval of Purchase of power by Discom from such solar Projects.

IN THE MATTER OF: **And**
TP Central Odisha Distribution Ltd. (Formerly CESU), Corporate Office, Power House, Unit 8, Bhubaneswar- 751 012 represented by its Chief – Regulatory & Government Affairs.

...Petitioner

IN THE MATTER OF: The Chief Executive Officer
Odisha Renewable Energy Development Agency (OREDA)
Address S-3/59, Mancheswar Industrial Estate Bhubaneshwar- 751010
Chief General Manager, Power Purchase
GRIDCO Ltd
Janpath, Bhubaneshwar 751022
Principal Secretary
Department of Energy, Government of Odisha
Kharavel Bhavan Bhubaneshwar 751001
All concerned Stakeholders

...Respondents

N. KANUNGO
NOTARY, BHUBANESWAR
Govt. of Odisha, (India)
Regd. No-ON-14/2008

Affidavit

12 5 JUL 2022

I, Puneet Munjal, aged about 58 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 and I am duly authorized to swear this affidavit on its behalf.
2. The statements made in the submission -File No- TPCODL/Regulatory/2022/ 98/5764 herein shown to me are based on information provided to me and I believe it to be true.

Bhubaneswar.
Dated: 25.07.2022

Chief-Regulatory & Government Affairs

IDENTIFIED BY ME
ADVOCATE

N. KANUNGO
NOTARY, BHUBANESWAR
Govt. of Odisha, (India)
Regd. No-ON-14/2008



25th July, 2022

File No TPCODL/Regulatory /2022/98/5764

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

Subject: -Petition filed by TPCODL on behalf of all the four Discoms of Odisha for determination of a) Tariff from Pump Connected Solar Projects set up under Component C of Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan ("Kusum C") and b) for Approval of Purchase of power by Discom from such solar Projects.

Dear Sir

We are through this letter submitting our petition on behalf of all the four DISCOMs of Odisha for determination of a) Tariff from Pump Connected Solar Projects set up under Component C of Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan ("Kusum C") and b) for Approval of Purchase of power by Discom from such solar Projects.

We trust the same is in order.

Yours faithfully

(Vidyadhar Wagle)
Head Regulations

Cc:

1. The Chief Executive Officer, Odisha Renewable Energy Development Agency (OREDA)
Address S-3/59, Mancheswar Industrial Estate Bhubaneshwar- 751010.
2. The Principal Secretary, Department of Energy , GoO, Bhubaneswar-751001.
3. The Chief General Manager, Power Purchase ,GRIDCO Ltd, Janpath , Bhubaneswar-751022
4. The CEO, TPCODL ; The CEO, TPWODL, The CEO, TPNODL; The CEO, TPSODL

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IN THE MATTER OF: The Chief Executive Officer
Odisha Renewable Energy Development Agency (OREDA)
Address S-3/59, Mancheswar Industrial Estate Bhubaneshwar-751010

Chief General Manager, Power Purchase
GRIDCO Ltd
Janpath, Bhubaneshwar 751022

Principal Secretary
Department of Energy, Government of Odisha
Kharavel Bhavan Bhubaneshwar 751001

All concerned Stakeholders

A. Background for the petition

1. The State of Odisha is desirous of implementing solar projects under Kusum C scheme of the Government of India. Under this Scheme, the following is stipulated

DISCOMs will purchase excess power from the farmer at the rate decided by the respective State/SERC. The DISCOMs will ensure "must-run" status to the solarised feeders and will keep such feeders 'ON' during sunshine hours of a day.

It will be mandatory for implementing agency to create remote monitoring system to monitor performance of the system post-installation.

2. As the scheme involves purchase of power from a solar plant by Discom, the present petition is filed for determination of tariff to be made applicable for the electricity to be sold from projects set up under Kusum C to the Discoms.

B. Kusum Scheme in Brief

3. In this Kusum C arrangement for pump level solarisation, the penetration of the scheme would be at the LT level. Further 8310 pumps have been approved by the MNRE and the number of such pumps may rise in course of time. Keeping this large number of power purchase points at the interconnection with the Discoms, it will be appropriate that Discoms purchase such power at the rate approved by the Hon'ble Commission rather than Gridco purchasing the same and then onward supplying to the respective Discom. This will enable quick transaction between the farmer and Discom for the payment.
 4. While Large Scale Solar power generation projects are being installed to achieve the ambitious target of 100 GW of Solar Power generation by 2022, the GoI has planned to simultaneously develop decentralized Solar energy and other renewable energy generation Plants of capacity up to 2 MW which could be connected directly to existing 415 V point of supply, 33/11 kV or 66/11 kV or 110/11 kV sub-stations of Distribution Company. Further, over 20 million grid-connected agriculture water pumps installed in the country consume more than 17 percent of total annual electricity consumption of the country. Solarization of the same can reduce dependence of these pumps on conventional sources of energy supplied by DISCOMs and thus reducing their burden of subsidy on agriculture consumption of Electricity. This will also provide additional source of income to farmers who will be in a position to sell the surplus power to DISCOMs.
 5. The various schemes under Kusum proposed by the Government of India are as given below:
 - i. *Component-A*: Setting up of 10,000 MW of Decentralized Ground/ Stilt Mounted Grid Connected Solar or other Renewable Energy based Power Plants;
 - ii. *Component-B*: Installation of 17.50 Lakh (enhanced to 20 lakh on 4th November 2020) Stand-alone Solar Agriculture Pumps; and
 - iii. *Component-C*: Solarisation of 10 Lakh Grid Connected Agriculture Pumps (enhanced to 15 lakh on 4th November 2020) including through feeder level solarisation.
- **Component A**
6. Under this component, solar or other renewable energy based power plants (REPP) of capacity 500 kW to 2 MW will be setup by Renewable Power Generator (RPG). However, States or DISCOMs may allow setting-up of solar or other renewable energy based power plants of capacity less than 500 kW in specific cases. The REPP will be preferably installed within five km radius of the sub-stations in order to avoid high cost of sub-transmission lines and to reduce transmission losses. Under Component A, the scheme allows the farmers to either a) generate themselves and sell to the Discom/Gridco or b) lease the land to developers who can then set up the Power Plant.

7. For Odisha, the Hon'ble Commission has determined a levellised Tariff of Rs 3.08 per Kwh for solar plants under Component A. Further OREDA has come out with a tender on 10th May 2021 for procurement of power upto 500 MW for selection of developers under b) above. However, proposals for only about 15 MW have been received in response to the Bid.

- **Component B**

8. Under this Component, individual farmers will be supported to install standalone solar Agriculture pumps of capacity up to 7.5 HP for replacement of existing diesel Agriculture pumps / irrigation systems in off-grid areas, where grid supply is not available. Installation of new pumps shall also be permitted under this scheme except in dark zone areas. Pumps of capacity higher than 7.5 HP may be allowed, however, the Central Financial Assistance (CFA) will be limited to the CFA applicable for pump of 7.5 HP. Water User Associations and community/cluster based irrigation system will also be covered under this component.

- **Component C**

9. Under this Component, individual farmers having grid connected agriculture pump will be supported to solarise pumps ("Solarisation of Individual Pumps") . Solar PV capacity up to two times of pump capacity in kW is allowed under the scheme. However, State may specify lower solar PV capacity in kW, which in any case shall be not be less than pump capacity in HP e.g. for 2 HP pump it will not be less than 2 kW. The farmer will be able to use the generated solar power to meet the irrigation needs and the excess solar power will be sold to DISCOMs. The scheme has been modified on 4th November 2020 to include Feeder level Solarisation.

C. Types of Schemes Under Kusum C

10. There are two types of solar installations envisaged under this Scheme viz a) Solarisation of Individual Pumps and b) Feeder Level Solarisation.

- **Solarisation of Individual Pumps**

11. The Solarisation of Individual pump is expected to be undertaken by individual farmers under this Component. The farmer will be able to use the generated solar power to meet the irrigation needs and the excess solar power will be sold to DISCOMs. For accounting of energy and appropriate metering, the following is stipulated in the guidelines of the MNRE

DISCOM may adopt any of the modalities for solarisation of pumps i.e

- (i) *Net-metering: in this case the agriculture pump will continue to run at rated capacity taking power from solar panels and balance power from grid, if required, and in case solar power generation is higher than required by pump, the additional solar power would be fed to the grid;*

- (ii) *Pump to run on solar power only: in this case the pump will run from the solar power as in case of stand-alone solar pump and no power will be drawn from the grid for operation of pump. In case solar power generation is higher than required by pump, the additional solar power would be fed to the grid.*

- **Feeder Level Solarisation**

12. The MNRE through its Office Memorandum dated 4th December 2020 introduced the Feeder level solarisation. Under this the following is stipulated

Where agriculture feeders have already been separated the feeders may be solarised under the scheme. This will lead to lower cost both in terms of lower capital cost and cost of power. Feeders having major load for agriculture may also be considered for solarisation under the Scheme. The requirement of total annual power for an agriculture feeder will be assessed and a solar power plant of capacity that can cater to the requirement of annual power for that agriculture feeder can be installed either through CAPEX mode or RESCO mode, which will supply solar power to that feeder.

...

Feeder level solar power plant may be installed to cater to the requirement of power for a single feeder or for multiple agriculture feeders emanating from a distribution sub-station (DSS) to feed power at 11 kV or at the higher voltage level side of the DSS depending upon on factors like availability of land, technical feasibility, etc., and there is no cap of the capacity of solar power plant for feeder level solarisation.

D. Financial Support for Kusum C

13. The revised support as per order of the Ministry of New and Renewable Energy is Rs 34035 Crores. The scope of the schemes (in GW) and the support to various Kusum Schemes as provided in the extracts of the order dated 4th November 2020. The same is given below

Extracts 1 : Extract from the Government of India Order dated 4th November 2020

Component-wise revised solar capacity and financial support is given below:

Component	Revised target	Solar capacity (GW)	Central Financial Support (Rs. Cr.)		
			CFA	Service charges	Total
A	10000 MW	10.0	3300	25	3325
B	20 lakh Pumps	9.6	15600	312	15912
C	15 lakh Pumps	11.2	14508	290	14798
Total		30.8	33408	627	34035

Individual Pump Solarisation

14. The following support is available under the guidelines

CFA of 30% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component will be provided. The State Government will give a subsidy of 30%; and the remaining 40% will be provided by the farmer. Bank finance may be made available for farmer's contribution, so that farmer has to initially pay only 10% of the cost and remaining up to 30% of the cost as loan. In case the State Government provides subsidy more than 30%, the beneficiary share will reduce accordingly.

Feeder Level Solarisation

15. The following support is available under the guidelines

For the purpose of calculating CFA, the cost of installation of solar power plant has been estimated as Rs. 3.5 Cr/MW. Under the Scheme solarisation of pumps of any capacity is allowed, however, in case of pumps of capacity above 7.5 HP, the CFA will be limited to solar capacity for 7.5 HP pumps.

E. Appropriate Tariff for power from projects under Kusum Set up for Pump Level Solarisation

16. In our humble submission, for Kusum C to be successful, the tariff for power injected from the solar installation should be adequate for providing the incentive to farmer. At the same time, the tariff should not bring additional burden on the Discom as this burden will be passed on to the consumer thereby creating any adverse impact on the final consumer tariffs. Further, the Kusum C projects are entitled for Capital Subsidy/Assistance from the State and Centre which would result in lower tariffs. Considering all the above aspects, the following is the submission with regards to the tariff to be made applicable to the Solar Projects under Kusum C

a. Competitive Bidding for discovery of Tariff

17. It is submitted at present the power is procured by Gridco from projects set up under Competitive Bidding guidelines dated 3rd August 2017 framed under Section 63 of the Electricity Act 2003. However, these competitive bidding Guidelines have been framed for project size above 5 MW. The relevant extracts from the Guidelines are as under

2.1. Applicability of Guidelines:

2.1.1. *These Guidelines are being issued under the provisions of Section 63 of the Electricity Act, 2003 for long term procurement of electricity by the 'Procurers', from grid-connected Solar PV Power Projects ('Projects'), having size of **5 MW and above**, through competitive bidding.*

18. As the capacity of Kusum C Projects is about 7.5 BHP (i.e about 5.5 KW), the tariff for such power plants would not be covered under the above guidelines and hence the

condition of purchase of power through competitive bidding route should not be made applicable to the projects set up under Kusum C.

b. Tariffs determined by the Hon'ble Commission in the past

19. At present, the Hon'ble Commission has not framed any regulations for determination of tariff from Solar Projects. Further, the Hon'ble Commission has determined the generic tariff for Solar Projects in Case No 80 of 2013 on 15th January 2014. However, such tariff is applicable only for the control period from FY 2013-14 to FY 2017-18 i.e for projects set up in such period. Moreover, lot of changes, particularly with regards to the cost of solar module have taken place since the time order has been passed in January 2014. Hence the tariffs under this order cannot be made applicable to Kusum C Project as such.
20. The Hon'ble Commission in its order dated 20th December 2019 in Case No 82 of 2018 had determined a levelised tariff of Rs 3.08 per Kwh for projects set up under Kusum A. However, the tariff was not determined under the cost plus principle. Moreover, the tariff under Kusum A, is envisaged when there is no Capital Financial Assistance available as against that envisaged for Kusum C.
21. The Kusum C scheme permits Central Financial Assistance (CFA) to the extent of 30%, State Government Assistance to the extent of another 30%. However, on the other hand, the size of projects under Kusum C are much lower as compared to the projects under Kusum A. Hence extension of tariff under Kusum A to Kusum C may not be appropriate

F. Generic Tariff for Kusum C Project on Cost Plus principles

- **Assumptions for Tariff Workings**

(i) Financial Parameters

22. As mentioned earlier, there are no Tariff Regulations of the Hon'ble Commission to determine the Tariff for Kusum C Projects on the basis of the Cost plus principles. Similarly, while the Hon'ble CERC determines the tariff for several technologies like Small Hydro Projects, it has not determined the same for Solar PV technology. For working out the Tariff on Cost plus principles, we have therefore relied upon the Tariff Order of Hon'ble CERC for FY 2021-22 (Case No 2/SM/2021) for only Financial Parameters like Debt to Equity Ratio, Interest Rates, RoEs, Working Capital Parameters et al. The tariff for Solar Projects is worked out with the following assumptions

(ii) Generation

23. We have considered a CUF of 14% (i.e 1.2 Mus/ Year/MW) for Pump solarisation.

(iii) O&M Costs

24. For O&M Costs, we have relied upon the values considered by the Hon'ble CERC for the FY 2016-17, the last year for which the Hon'ble Commission determined the tariff on cost plus principles. However the escalations for O&M has been based on the rates considered by Hon'ble CERC in their Tariff Order for FY 2021-22.

(iv) Capital Costs

25. For the purpose of Capital Cost, we have considered the Benchmark capital cost announced by MNRE on 18th August 2021. The same applicable for Odisha for capacity of about 5.5 KW works out to Rs 4.71 Crores/MW. The extracts from the order of MNRE dated 18th August 2021 is as given below

Extracts 2 : Extract from the MNRE order dated 18th August 2021

(ii) Solarization of Grid-connected Individual Agricultural Pumps

Capacity	Above 1 kW and up to 3 kW	Above 3 kW and up to 6 kW	Above 6 kW and up to 10 kW	Above 10 kW and up to 15 kW
Benchmark Cost (Rs / kW) #	48,300	47,100	44,300	41,000

Cost of solarization (Rs./kW) as per MNRE specifications including remote monitoring

26. The notification from MNRE is attached as **Annexure 1**

(v) Assistance from Central Government and State Government

27. As per the guidelines issued by MNRE for Kusum C project, the following is available

Pump Level Solarisation

CFA of 30% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component will be provided. The State Government will give a subsidy of 30%; and the remaining 40% will be provided by the farmer.

28. As can be seen, the Central Financial assistance of 30% of the lower of the benchmark cost or the tender costs is available. However, for the purpose of tariff, as the tender cost will take time to be known, we have considered it as 30% of the Benchmark costs.

(vi) Capitals Cost to be considered for Tariff

Table 1: Capital Cost for determination of Tariff

Sr No	Particulars	Unit	Pump Level Solarisation
1	Bench Mark Costs	Rs Cr/MW	4.71
2	Capital Cost for Tariff= Bench mark Costs	Rs Cr/MW	4.71
Central Financial Assistance			
3	Applicable Capital Costs for Financial Assistance	Rs Cr/MW	4.71
4	Central Financial Assistance	%	30%
5	Central Financial Assistance	Rs Cr/MW	1.413
State Government Assistance			
6	State Government Subsidy	%	30%
7	State Government Subsidy	Rs Cr/MW	1.413
Effective Capital Costs			
8=2-5-7	Balance to be financed	Rs Cr/MW	1.88
9	Add Service Charges for CFA		
10	Service Charge	%	2%
11= 10 x 5	Service Charge	Rs Cr/MW	0.02826
12	Total Capital Costs for Tariff	Rs Cr/MW	1.91

(vii) **Summary of Financial and other parameters for Tariff**

29. Based on the values taken by the Hon'ble CERC in their order dated 31st March 2021 in Case 2/SM/2021, the O&M Costs of Rs 7 Lakhs per MW considered by Hon'ble CERC for FY 2016-17 in its order for FY 2016-17, the various parameters for Tariff working are as follows:

Table 2: Financial and Other Parameters for determination of Tariff

Sr No	Particulars		Source	Units	Pump Level Solarisation
1	CUF		As explained	%	14.0%
2	Capital Cost		As explained	Rs L/MW	191.23
3	Debt		CERC Regulations	%	70.0%
4	Equity		CERC Regulations	%	30.0%
Debt					
5	Interest on Loan		CERC Regulations	%	9.00%
6	Repayment Period		CERC Regulations	Years	15
Equity					
7	Return on Equity	1st 20 Years	CERC Regulations	%	16.96%
8	Return on Equity	Thereafter	CERC Regulations	%	21.52%
Depreciation (for projects of life 25 years)					
9	Depreciation	1st 15 Years	CERC Regulations	%	4.67%
10	Depreciation	Thereafter		%	2.00%
Working Capital					
11	O&M Charges		CERC Regulations	Months	1
12	Maintenance Spares		CERC Regulations	% of O&M	15%
13	Receivables for Debtors		CERC Regulations	Months	1.5
14	Interest on Working Capital		CERC Regulations	%	10.50%
O&M Charges					
15	O&M Charges 1st Year		CERC Tariff Order for FY 2016-17	Rs Lakh/MW	7.00
16	Increase in O&M Charges		CERC Regulations	% p.a	3.84%
17	Discount Rate		CERC Regulations	%	8.30%

(viii) **Levelling Tariff**

30. The following table captures the levellised tariff for two configurations worked out on Cost plus basis

Table 3: Proposed Levellised Tariff for different configurations

Sr No	Particulars	Units	Pump Level Solarisation
1	CUF Considered	%	14.0%
2	Net Capital Cost	Rs Cr/MW	191.23
3	Applicable Tariff	Rs/Kwh	2.79

31. The details of the calculations are given in **Annexure 2**

G. Tariff Based on Average Power Purchase Costs

32. It is submitted that tariff worked out above is based on the several assumptions, both commercial and financial. Kusum C is a new scheme aimed at the farmer who would implement the scheme. Hence the risk would be taken by the farmer for various parameters. It may be therefore necessary to enable to protect the farmer from such risk. For the same, it may be appropriate to allow a suitable higher margin over the Tariff that has been worked out above for the generation.
33. In this regard therefore it is submitted that a tariff of Average Power Purchase Cost (Rs/Kwh) of the Discoms would be the appropriate rate for purchase of power from such Solar Projects to Discoms. The Bulk Supply Price (BSP) of the discoms from Gridco and Average Power Purchase Costs for the entire state would be as follows for FY 2022-23

Table: BSPs of DISCOMS

Sl.No.	Name of the DISCOMS	BSP for the year 2022-23 (Rs./Kwh)
1.	TPCODL	3.00
2.	TPNODL	3.21
3.	TPWODL	3.60
4.	TPSODL	2.27
	Average BSP	3.12

34. Hence the rate of Rs 3.12 per Kwh may be made applicable for purchase of power by the Discom. It is further submitted that the Government of Odisha had also suggested that tariff for purchase of power by Discom for the energy injected by Kusum C Project be done at the BSP. The letter from the Government of Odisha is attached as **Annexure 3**.
35. It can be noticed that the average BSP of **Rs 3.12 per Kwh** is higher than the Generic tariff of **Rs 2.79 per Kwh** determined above. This additional margin would be available with the farmer to earn some additional income which is also one of the objectives of Kusum C. At the same if the power purchase is made at the BSP, then the average power purchase price of the Discom would not be adversely affected. Further since the power purchase is at the LT Level, there would not be any incurrence of Loss (at LT) which is an added advantage to the Discom. In our humble submission therefore

purchase of power at the BSP Rate of FY 2022-23 would be a kind of “Win-Win” for both the Discom as well as the Farmer

36. On this issue, it is relevant to submit that the Hon’ble Commission had determined a tariff of Rs 3.08 per Kwh (Levellised) in Order dated 20th December 2019 in Case No 82 of 2018 for Kusum A projects. It is submitted the tariff of Rs 3.08 per Kwh has not been determined through any Cost Plus principles but based on the latest trends in costs of power available to Gridco. The following additional points are also relevant
- i. While it is true that for projects under Kusum A do not have any subsidy like the projects under Kusum C (which has 60% subsidy) , the size of the projects under Kusum C are much lower than the size of projects under Kusum A thereby denying them the benefit of economies of scale.
 - ii. Secondly, Kusum A project are being developed by Developers but the Kusum C projects are being developed by Farmers themselves. This will enable farmer to generate additional income for themselves.
 - iii. Thirdly, OREDA had floated a bid for Kusum C projection for a capacity of 500 MW. However the response has not been very good with capacity of only about 15 MW being proposed. Hence in our humble submission, attractive but reasonable tariff would be the Key to success of the Scheme under Kusum C.

H. Suggested Tariff for Injection of Power for Kusum C Projects

37. In view of the above discussions, it is submitted that Tariff for Kusum C Projects be fixed at the Average BSPs for Discoms for FY 2022-23 i.e Rs 3.12 per Kwh .

I. Central Financial Assistance by Central Government and State Government

38. It is submitted that under Kusum C, the Government of India has sanctioned 8310 pumps for Odisha for extending 30% assistance envisaged under Kusum C Scheme. The Government of Odisha too is considering extension of 30% State Government Subsidy to be made available under the scheme. The letter from the Government of India (MNRE) is attached as **Annexure 4**
39. The petition and the tariff workings are on the basis that above subsidy (both State Government and Central Government) is available under the Kusum C.

J. Competitive Bidding and empanelment

40. As the Solar Project would be owned by the farmer, the bidding for empanelment of vendors would be on the basis of Capital Costs. The capital cost discovered in the bidding would be entitled for CFA of 30% and the State Government Subsidy of 30%.

K. Purchase Agreement by Discoms instead of Gridco

41. It is submitted that Gridco is state Agency for purchase of power for the Discoms. All the power whether the power is injected in the Transmission Network or in the

Distribution Network is purchased by Gridco except where there is Net Metering Arrangement.

42. Further, Gridco after pooling such purchases sells energy to Discoms at the BSP approved by the Hon'ble Commission
43. In this Kusum C arrangement for pump level solarisation, the penetration of the scheme would be at the LT level. Further 8310 pumps have been approved by the MNRE and the number of such pumps may rise in course of time. Hence it will be appropriate that Discoms purchase such power at the rate approved by the Hon'ble Commission rather than Gridco purchasing the same and then onward supplying to the respective Discom. This will enable quick transaction between the farmer and Discom for the payment.
44. The Hon'ble Commission may therefore permit purchase of power by Discoms instead of Gridco for energy injected under Kusum C .

L. Power Purchase Agreement

45. The draft PPA which may be made applicable for pump level solarisation is attached as **Annexure 5**

M. Prayers

46. TPCODL on behalf of all the Discoms prays for the following
 - a) Approve purchase of power at the rate of BSP for projects set up under Kusum C under Pump level solarisation.
 - b) Approve Discoms for signing the PPA with farmers for purchase of surplus power injected to TPCODL's network from the Solar Capacity installed by the farmers under KUSUM C Scheme.
 - c) Approve the draft PPA attached along with the petition.
 - d) Conduct a Public Hearing on the subject.
 - e) Pass any other direction it deems fit.

No. 32/24/2020-SPV Division
Government of India
Ministry of New & Renewable Energy

Block No. 14, CGO Complex
Lodhi Road, New Delhi
Date: 18 August 2021

ORDER

Subject: Benchmark costs for Off-grid and Decentralized Solar PV Systems for the year 2021-22 –reg.

I am directed to convey the approval of competent authority for issuing the benchmark costs for Off-grid and Decentralized Solar PV Systems applicable for MNRE Schemes for the year 2021-22. System-wise benchmark costs are as under:

(i) Standalone Solar Pumps

Pump Capacity	USPC	Benchmark Costs (Rs. / pump) *	
		General States/ UTs	NER/ Hill States & UTs/ Island UTs
1 HP	without USPC	1,05,500	1,14,900
2 HP	without USPC	1,34,700	1,46,800
3 HP	without USPC	1,81,100	1,97,300
	with USPC	2,17,300	2,36,800
5 HP	without USPC	2,55,500	2,78,400
	with USPC	3,06,600	3,34,100
7.5 HP	without USPC	3,55,100	3,87,000
	with USPC	4,08,300	4,45,000
10 HP	without USPC	4,44,200	4,84,100
	with USPC	5,10,800	5,56,700

* Cost of solar pump as per MNRE specifications including remote monitoring

(ii) Solarization of Grid-connected Individual Agricultural Pumps

Capacity	Above 1 kW and up to 3 kW	Above 3 kW and up to 6 kW	Above 6 kW and up to 10 kW	Above 10 kW and up to 15 kW
Benchmark Cost (Rs / kW) #	48,300	47,100	44,300	41,000

Cost of solarization (Rs./kW) as per MNRE specifications including remote monitoring

(iii) Solar Lighting Systems

System	Benchmark Costs (Rs. per system)
Solar Study Lamps [^]	395
Solar Street Lights (with Li batteries) [§]	14,200

[^] Solar study lamp with 2.5 Wp solar panel, 1 W LED luminaire and 3.2 V – 2000 mAh Li battery as per MNRE specifications

[§] Solar street lights with 75 Wp solar panel, 12 W LED luminaire and 12.8 V – 30 Ah Li battery as per MNRE specifications

(iv) Standalone Solar Power Plants/Packs

Capacity	Battery back-up (hrs)	Benchmark Costs (Rs. per Wp) [@]	
		General Category States/ UTs	North Eastern States/Hill States & UTs/ Island UTs
Up to 10 kW	6	94	103
	3	74	81
	1	62	68
Above 10 kW and up to 25 kW	6	84	92
	3	66	72
	1	55	60

[@] Cost of solar power plant (Rs./Wp) as per MNRE specifications including remote monitoring

2. For applications where separate benchmark costs are not specified for specific States/ UTs, same benchmark costs will be applicable in all States and UTs throughout the country. North-eastern Region (NER) includes the States of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. Hill States/ UTs include Himachal Pradesh, Jammu & Kashmir, Ladakh and Uttarakhand. Island UTs include Andaman & Nicobar and Lakshadweep:

3. Above mentioned benchmark costs are applicable from the date of issuance of this Order. In all cases where LoA (first LoA in case of multiple LoAs under the same sanction) is placed after the issuance of this order, the above specified benchmark costs will be applicable. All the above benchmark costs are inclusive of total cost of system as per MNRE specifications and its installation, commissioning, transportation, insurance, warranty/ guarantee, monitoring, maintenance for 5 years and applicable taxes.


(Shobhit Srivastava)
Scientist-D

To

All Concerned

Annexure 2

Table 4 (Computation of Levellised Tariff for Pump Level Solarisation)

		1	2	3	4	5	6	7	8	9	10	11	12
Unit Generation	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Installed Capacity	MW	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MUs	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Less:- Auxilliary Consumption	MUs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exportable Surplus	MUs	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Tariff Components (Fixed Charge	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
O&M Expenses	Rs. Lakh	7.00	7.27	7.55	7.84	8.14	8.45	8.78	9.11	9.46	9.83	10.20	10.60
Depreciation	Rs. Lakh	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93
Interest on Term Loan	Rs. Lakh	11.65	10.84	10.04	9.24	8.43	7.63	6.83	6.02	5.22	4.42	3.61	2.81
Interest on Working Capital	Rs. Lakh	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.68	0.68	0.68	0.69	0.69
Return on Equity	Rs. Lakh	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73
Total Fixed Cost	Rs. Lakh	37.98	37.44	36.92	36.40	35.90	35.41	34.94	34.47	34.02	33.58	33.16	32.76
Per Unit Tariff Components	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
PU O&M Expenses	Rs./kWh	0.57	0.59	0.62	0.64	0.66	0.69	0.72	0.74	0.77	0.80	0.83	0.86
PU Depreciation	Rs./kWh	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
PU Interest on Term Loan	Rs./kWh	0.95	0.88	0.82	0.75	0.69	0.62	0.56	0.49	0.43	0.36	0.29	0.23
PU Interest on Working Capital	Rs./kWh	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06
PU Return on Equity	Rs./kWh	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
PU Tariff Components	Rs./kWh	3.10	3.05	3.01	2.97	2.93	2.89	2.85	2.81	2.77	2.74	2.70	2.67

Unit Generation	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Installed Capacity	MW	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MUs	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Less:- Auxilliary Consumption	MUs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exportable Surplus	MUs	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Tariff Components (Fixed Charge	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
O&M Expenses	Rs. Lakh	11.00	11.42	11.86	12.32	12.79	13.28	13.79	14.32	14.87	15.44	16.04	16.65	17.29
Depreciation	Rs. Lakh	8.93	8.93	8.93	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82
Interest on Term Loan	Rs. Lakh	2.01	1.20	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Working Capital	Rs. Lakh	0.69	0.70	0.71	0.65	0.67	0.69	0.71	0.73	0.78	0.80	0.83	0.85	0.87
Return on Equity	Rs. Lakh	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	12.35	12.35	12.35	12.35	12.35
Total Fixed Cost	Rs. Lakh	32.36	31.99	31.63	26.52	27.01	27.52	28.05	28.60	31.82	32.42	33.03	33.67	34.34
Per Unit Tariff Components	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
PU O&M Expenses	Rs./kWh	0.90	0.93	0.97	1.00	1.04	1.08	1.12	1.17	1.21	1.26	1.31	1.36	1.41
PU Depreciation	Rs./kWh	0.73	0.73	0.73	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
PU Interest on Term Loan	Rs./kWh	0.16	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PU Interest on Working Capital	Rs./kWh	0.06	0.06	0.06	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07
PU Return on Equity	Rs./kWh	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	1.01	1.01	1.01	1.01	1.01
PU Tariff Components	Rs./kWh	2.64	2.61	2.58	2.16	2.20	2.24	2.29	2.33	2.59	2.64	2.69	2.75	2.80

Table 5 Annexure -Detailed Calculations

		1	2	3	4	5	6	7	8	9	10	11	12	13	20	21	22	23	24	25
Unit Generation	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Installed Capacity	MW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MUs	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Less:- Auxilliary Consumption	MUs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exportable Surplus	MUs	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Tariff Components (Fixed Charge	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
O&M Expenses	Rs. Lakh	7.00	7.27	7.55	7.84	8.14	8.45	8.78	9.11	9.46	9.83	10.20	10.60	11.00	14.32	14.87	15.44	16.04	16.65	17.29
Depreciation	Rs. Lakh	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	3.82	3.82	3.82	3.82	3.82	3.82
Interest on Term Loan	Rs. Lakh	11.65	10.84	10.04	9.24	8.43	7.63	6.83	6.02	5.22	4.42	3.61	2.81	2.01	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Working Capital	Rs. Lakh	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.68	0.68	0.68	0.69	0.69	0.69	0.73	0.78	0.80	0.83	0.85	0.87
Return on Equity	Rs. Lakh	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	9.73	12.35	12.35	12.35	12.35	12.35	12.35
Total Fixed Cost	Rs. Lakh	37.98	37.44	36.92	36.40	35.90	35.41	34.94	34.47	34.02	33.58	33.16	32.76	32.36	28.60	31.82	32.42	33.03	33.67	34.34
Per Unit Tariff Components	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
PU O&M Expenses	Rs./kWh	0.57	0.59	0.62	0.64	0.66	0.69	0.72	0.74	0.77	0.80	0.83	0.86	0.90	1.17	1.21	1.26	1.31	1.36	1.41
PU Depreciation	Rs./kWh	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.31	0.31	0.31	0.31	0.31	0.31
PU Interest on Term Loan	Rs./kWh	0.95	0.88	0.82	0.75	0.69	0.62	0.56	0.49	0.43	0.36	0.29	0.23	0.16	0.00	0.00	0.00	0.00	0.00	0.00
PU Interest on Working Capital	Rs./kWh	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07
PU Return on Equity	Rs./kWh	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	1.01	1.01	1.01	1.01	1.01	1.01
PU Tariff Components	Rs./kWh	3.10	3.05	3.01	2.97	2.93	2.89	2.85	2.81	2.77	2.74	2.70	2.67	2.64	2.33	2.59	2.64	2.69	2.75	2.80
Levelling Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Discount Factors		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.22	0.20	0.19	0.17	0.16	0.15
Discounted Tariff components	Rs./kWh	3.10	2.82	2.57	2.34	2.13	1.94	1.77	1.61	1.47	1.34	1.22	1.11	1.01	0.51	0.53	0.50	0.47	0.44	0.41
Levelling Tariff	Rs./kWh	2.79																		
Interest on Debt	UoM	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Opening Balance	Rs Lakhs	133.86	124.93	116.01	107.09	98.16	89.24	80.31	71.39	62.47	53.54	44.62	35.70	26.77	0.00	0.00	0.00	0.00	0.00	0.00
Loan repayment	Rs Lakhs	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	0.00	0.00	0.00	0.00	0.00	0.00
Closing Balance	Rs Lakhs	124.93	116.01	107.09	98.16	89.24	80.31	71.39	62.47	53.54	44.62	35.70	26.77	17.85	0.00	0.00	0.00	0.00	0.00	0.00
Average Debt	Rs Lakhs	129.40	120.47	111.55	102.62	93.70	84.78	75.85	66.93	58.01	49.08	40.16	31.23	22.31	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Debt	Rs Lakhs	11.65	10.84	10.04	9.24	8.43	7.63	6.83	6.02	5.22	4.42	3.61	2.81	2.01	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	UoM	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Book depreciation	Rs Lakhs	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	3.82	3.82	3.82	3.82	3.82	3.82
Accumulated Depreciation	Rs Lakhs	8.93	17.86	26.79	35.72	44.65	53.58	62.51	71.44	80.37	89.30	98.23	107.16	116.09	153.08	156.90	160.73	164.55	168.37	172.20
WDV	Rs Lakhs	182.30	173.37	164.44	155.50	146.57	137.64	128.71	119.78	110.85	101.92	92.99	84.06	75.13	38.15	34.33	30.50	26.68	22.85	19.03
Interest On Working Capital	UoM	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Working Capital as Receivables	Rs Lakhs	4.75	4.68	4.61	4.55	4.49	4.43	4.37	4.31	4.25	4.20	4.15	4.09	4.05	3.58	3.98	4.05	4.13	4.21	4.29
Working Capital as O&M	Rs Lakhs	0.58	0.61	0.63	0.65	0.68	0.70	0.73	0.76	0.79	0.82	0.85	0.88	0.92	1.19	1.24	1.29	1.34	1.39	1.44
Working Capital as Spares	Rs Lakhs	1.05	1.09	1.13	1.18	1.22	1.27	1.32	1.37	1.42	1.47	1.53	1.59	1.65	2.15	2.23	2.32	2.41	2.50	2.59
Total Working Capital	Rs Lakhs	6.38	6.38	6.38	6.38	6.39	6.40	6.41	6.44	6.46	6.49	6.53	6.57	6.61	6.92	7.45	7.66	7.87	8.09	8.33
Interest On Working Capital	Rs Lakhs	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.68	0.68	0.68	0.69	0.69	0.69	0.73	0.78	0.80	0.83	0.85	0.87

Note : We have in the appendix hidden years from 14 to 19 to enable clearer representation in the printout



GOVERNMENT OF ODISHA
ENERGY DEPARTMENT

No. 5505 /En., Bhubaneswar, dt. ⁷⁵17 June, 2022
ENG-HYD-HYDRO-0022-2019

From

Shri Sambit Parija, OFS (SAG),
FA-cum-Additional Secretary to Government

To

The Secretary,
Odisha Electricity Regulatory Commission,
Plot No 4, Chunokoli, Shailashree Vihar,
Bhubaneswar-751021.

Sub: Tariff for supply of Electricity to the Grid / DISCOMS under PM-KUSUM Component-C scheme.

Sir,

You are aware that the Ministry of New & Renewable Energy (MNRE), Government of India provides financial assistance for solarisation of pumps and agricultural feeders under PM KUSUM Component-C. In the meeting held under the chairmanship of Chief Secretary, on 1st June 2022 (copy enclosed), it was decided to implement PM KUSUM Component-C in the State.

The Component C has been envisaged with the intention of providing reliable day time power as well as for generating additional sources of income for the farmers. The objective of Component C under the scheme document is provided as follows:

Component-C of PM KUSUM Scheme is a new initiative from the Government of India aimed at ensuring reliable day time power supply for irrigation, reducing subsidy burden on Discoms and providing additional sources of income to the farmers.

Under this Component, individual farmer having grid connected agriculture pump will be supported to solarise pump. Solar PV capacity up to two times of pump capacity in kW is allowed under the scheme, so that the farmer will be able to use the generated solar power to meet the irrigation needs and get additional income by selling surplus solar power to DISCOMs. Water User Associations and community/cluster based irrigation system will also be covered under this component.....(Emphasis Supplied)

Hence, the scheme envisages selling surplus solar power to the Discom. Further, as per the Guidelines for implementation of the PM KUSUM Scheme dated 22.07.2019, the following is stipulated

DISCOMs will purchase excess power from the farmer at the rate decided by the respective State/SERC.

In view of the above, it is necessary that a tariff for such purchase is determined by OERC, keeping the stated objective of the scheme in mind.

- i. One of the objective of PM-KUSUM is project is to enable the farmer to generate additional income for himself through sale of power. If a reasonable Tariff is provided to the farmer, it will meet this objective. At the same time, if the DISCOMS purchases the surplus power at their respective BSPs or Avg. BSP for DISCOMS as a whole, then there would not be any adverse impact on the DISCOM as a whole since the average BSP would remain the same.
- ii. Keeping in mind the above objectives, it may be appropriate to have a tariff for surplus power from Solar Project fixed at the BSPs of the DISCOMS or Average BSP. The BSPs of the DISCOMS determined by the OERC for FY 2022-23 for the four DISCOMS is as follows:

Table: BSPs of DISCOMS

Sl.No.	Name of the DISCOMS	BSP for the year 2022-23 (Rs./Kwh)
1.	TPCODL	3.00
2.	TPNODL	3.21
3.	TPWODL	3.60
4.	TPSODL	2.27
	Average BSP	3.12

MNRE, vide its order dated 18th May 2022, has allotted 8310 pumps to the Odisha State. The allocation is likely to be enhanced.

In view of the above, it is requested to kindly initiate the process for determination of feed-in tariff for power purchased by DISCOMS under PM-KUSUM Component-C.

Yours faithfully,

FA-cum-Additional Secretary to Govt.

Proceeding of the meeting on solarisation of pumps and agriculture feeders held under the chairmanship of Chief Secretary on 01.06.2022 at 11.45.A.M. through video conferencing.

List of participants is attached at Annexure-I

Initiating the discussion, Principal Secretary, Energy welcomed the Chief Secretary & other participants. He stated that MD Tata Power had sent a request to Chief Secretary to provide at least 50 percent subsidy for solarisation of grid connected pumps under PM-KUSUM component C. He further mentioned PM KUSUM Component C has not yet been implemented in the State. However, OREDA has solarised off-grid pumps have been solarised under PM-KUSUM Component B.

Thereafter, AGM (Electrical), OREDA and Head Regulatory, TPCODL made presentations on the status of implementation of PM-KUSUM Components-A & B and the proposal of Tata Power regarding solarisation of pumps & feeder level solarisation under Component-C of PM-KUSUM respectively.

Records of discussion are as follows:-

Implementation of PM KUSUM- Component- A & B in the state:-

- OREDA is the nodal agency for components A & B.
- There is no CFA available under PM KUSUM component – A
- OREDA has so far aggregated about 1800 acre of land for establishment of solar power plants.
- In the first phase 5 developers have been on-boarded & 12.75 MW capacity has been awarded. PPA is to be signed with GRIDCO.
- The State can modify component A & launch it as an independent scheme to make it more attractive for developers and farmers.
- Under Component B, MNRE is providing 30% assistance & OLIC/DMF, bear the remaining 70% cost. So far 855 projects have been commissioned.
- PM KUSUM-C Scheme has two components.
 - Individual pump solarisation
 - Feeder level solarisation
- The program provides for Central Financial Assistance (CFA) at lower of 30% of the tender price of the benchmark price, with additional 30% subsidy by the State Govt.
- Solar PV capacity up to twice the pump capacity (up to 7.5 HP) is allowed under the scheme which would allow the farmers to generate solar power to meet his irrigation needs and sell the excess solar power to DISCOMs at pre-determined tariff resulting in additional income to the farmer

P.T.O.

Tata Power has submitted proposal for consideration as follows:-

- Since the agricultural tariffs in Odisha is very low @ Rs.1.50/unit (as compared to other States such as Kerala (Rs.2.3/unit), MSEDCL (Rs.3.29/unit), Rajasthan (Rs.5.5/unit), West Bengal (Rs.4.75/unit)) farmers may not show much interest with 60 percent subsidy. In order to make the scheme financially attractive for the farmers to invest in solarisation of their existing grid connected pumps, sufficient capital subsidy would be required to make cost of generation from the solar panels cheaper than the existing tariff.
- Based on current capital costs, subsidy of around 85% (Central Financial Assistance of 30% and State Subsidy of 55%) would be required to ensure that the cost of generation is around 10% lower (@ Rs.1.35/unit) than the agriculture tariff.
- Tata Power further proposed that due to certain inherent limitations of the PM KUSUM Scheme which allowed for CFA only up to twice the pump capacity, it may not be applicable to Paani Panchayats and there may be budgetary constraints for allowing larger coverage. Hence, the State may formulate its own scheme whereby the entire subsidy requirement may be funded by the State and higher capacity installations may be allowed.

After a detail deliberation, the following decisions were taken:-

- Since the PM KUSUM-C Scheme limit the CFA up to 7.5 HP pumps and does not include Paani Panchayats, Energy Department will take up with the MNRE to enhance the CFA eligibility for individual pumps from 7.5 HP to 15 HP to include Community Lift Irrigation Points. In case, MNRE does not accede to the State Govt.'s request, the State Govt. may formulate its own Scheme. Since the CLIPs are located away from the habitation and hence, there is chance of theft of the solar panels, in the first phase those Community Lift Irrigation Points be covered where the farmers give an undertaking to keep watch & ward over the solar panels.

(Action: Energy Department)

- Dedicated 33 KV & 11 KV feeders meant for mega LIPs & mega PWS may be solarised.

**(Action- Water Resources Department /
Panchayati Raj & Drinking Water Department)**

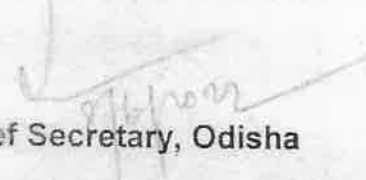
- DISCOMs should make sincere efforts to cover existing grid connected pumps under PM KUSUM -C with 30% subsidy each from the Central and State Govt. A meeting may be held under the chairmanship of APC to work out the modalities of implementation and thereafter, Government orders may be taken to implement the scheme. Accordingly A & FE Department may make budgetary provisions for providing the state subsidy.

(Action- Agriculture & FE Department / DISCOMs)

- OERC may be moved for approval of tariff for excess power to be sold by the farmers to the DISCOMs. Energy Department may modify Component- A suitably to make it more attractive & launch the same as a State scheme, as no budgetary support is involved.

(Action- Energy Department / DISCOMs)

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


Chief Secretary, Odisha

Annexure-I

Present:

- Principal Secretary, Energy Department
- Principal Secretary, Finance Department
- Special Secretary, A & FE Department
- Special Secretary, DoWR and Managing Director, OLIC
- Chief Executive OREDA
- FA-cum-Additional Secretary, Energy Department
- Managing Director, GRIDCO
- President (T&D), Tata Power Co. Ltd
- CEO, TPCODL/ TPWODL/ TPSODL/ TPNODL
- AGM (EI.) OREDA

F. No. 32/54/2018- SPV Division
Government of India
Ministry of New & Renewable Energy

Block No.14, CGO Complex
Lodi Road, New Delhi 110003
Dated: 18 May 2022

ORDER

Subject: Sanction for solarization of individual grid-connected agricultural pumps under Component-C of Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM KUSUM)

With reference to demand received from various States for solarization of individual pumps under Component-C of Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM KUSUM) Scheme, I am directed to convey the sanction of President of India for following quantities to State Implementation Agencies (SIAs) under the said component:

S. No.	State Implementation Agency (SIA)	Sanctioned Quantity of Existing Agricultural Pumps (Nos.)
1	Assam Energy Development Agency (AEDA)	103
2	Jharkhand Renewable Energy Development Agency (JREDA)	208
3	Agency for New and Renewable Energy Research and Technology (ANERT), Kerala	9348
4	Distribution Companies in Odisha*	8310
5	Punjab Energy Development Agency (PEDA)	39
6	West Bengal State Electricity Distribution Company Limited (WBSDCL)	4778
	Total	22786

*State Government to finalize Discom-wise allocation and intimate to MNRE

2. The project commissioning timeline shall be as mentioned in the Guidelines for implementation of Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan issued vide order no. 32/645/2017-SPV Division dated 22.07.2019 and amendments thereof. SIAs shall submit progress reports and completion reports on the online portal for PM-KUSUM Scheme.

3. SIAs shall follow all the terms and conditions stipulated in the Guidelines of the above mentioned Scheme issued vide Order no. 32/645/2017-SPV Division dated 22.07.2019 and Order no. 32/645/2017-SPV Division dated 08.11.2019 and amendments thereof. SIAs shall follow the Scheme Guidelines for selection of beneficiary farmer. Further, systems installed under the Scheme should meet technical specification and construction standards as specified by BIS and MNRE from time to time.

4. SIAs shall carry out various activities as mentioned under Section on Responsibilities of State Implementation Agency under Component-C of the Guidelines, including creating awareness about the scheme. MNRE may retain a certain amount from service charge for nation-wide centralised IEC activities.

5. Eligible CFA and service charges would be released to SIAs as per provisions of Administrative Approval dated 08.03.2019 and terms and conditions stipulated in the Scheme Guidelines and amendments thereof. CFA will be worked out based on benchmark cost as amended from time to time or the tender cost, whichever is lower.
6. SIAs will ensure use of indigenously manufactured solar panels with indigenous solar cells and modules. Further, the balance of system should also be manufactured indigenously. The vendor shall provide declaration to SIAs with a list of imported components used in the solarisation system.
7. SIA shall be liable for recovery of the whole or part amount of the CFA, with applicable penal interest, in case of non-compliance of the provisions of the Scheme/Sanction.
8. In terms of Rule 230 (7) of GFR 2017 and instructions of DoE, concerned SIA shall record the receipt of incentives and the expenditure therefrom in the EAT module of PFMS.
9. In terms of the Rule 230 (1) of GFR, concerned SIA will certify that they have not obtained or applied for grants for the same purpose or activity from any other Ministry or Department of the Government of India or State Government.
10. In terms of provisions contained in Rule 236(i) of GFR 2017, the account of concerned SIA shall be open to inspection by the sanctioning authority and audit (both by CAG of India and Internal Audit by the Principal Accounts Office of the MNRE), whenever the organization is called upon to do so.
11. SIAs will furnish year wise Utilization Certificate (UC) in the prescribed format of GFR-12(A) and Audited Statement of Expenditure (ASoE) along with detailed progress report periodically as per provisions of the scheme.
12. As per Rule 234 of GFR-2017, the sanction has been entered at S. No. 03 & Page No. 51 in the Expenditure Register of this Division.
13. This issues with the approval of Competent Authority.


(Shobhit Srivastava)
Scientist D

Phone No: 011-24360707/1016

To

Concerned SIAs/ Distribution Companies for Component-C of PM-KUSUM

Copy to:

1. Principal Director of Audit, Scientific Dept., DG, ACR Building, IP Estate, N. Delhi
2. AG, CW & M.II (Science Audit), AGCR Building, New Delhi
3. Pay and Accounts Officer, MNRE
4. IFD, MNRE
5. Sanction folder

**POWER PURCHASE AGREEMENT FOR SOLAR POWER PLANTS INSTALLED
FOR INDIVIDUAL GRID CONNECTED PUMPS UNDER
PM-KUSUM (COMPONENT- C) WITH NET METERING**

This Power Purchase agreement is entered into at (place).... on this.... Day of..... between TP Central Odisha Distribution Limited (TPCODL) a Joint Venture between Tata Power and the Government of Odisha with its registered office located at Bhubaneswar, Odisha, represented by.....hereinafter referred to as the "TPCODL", (which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns), as party of the first part

AND

.....(Name), an agricultural consumer of TPCODL residing at (address)....., having his land and grid connected pump set at Village GP..... Block..... Subdivision..... District..... hereinafter, referred to as the "farmer" (which expression shall, unless repugnant to the context or meaning thereof, include his successors and permitted assigns) as party of the second part.

Whereas,

- a. Under Component C of PM-KUSUM scheme, the farmer intends to set up a solar Power Plant of appropriate capacity and in order to reduce his grid power consumption on account of irrigation and increase his income through sale of unutilized solar power to TPCODL, is desirous to connect the said solar Power Plant to the at LT Distribution system of the latter via net meter as per relevant orders of the Odisha Electricity Regulatory Commission (OERC) vide Order No.dated:
- b. As per provisions of the scheme, the farmer intends to install a solar Power Plant ofkWp capacity on his agricultural land situated at..... having holding No khata No patta no..... under Sub-Division of TPCODL.
- c. The farmer intends to sell the un-utilised solar power generated from the solar Power Plant on net metering basis, from the date of commissioning of the solar Power Plant.

Explanation: the „Commissioning“ means the stage at which the solar Power Plant starts generating power for the use by the farmer and injects surplus power if any, into the grid.

- d. TPCODL intends to purchase the energy, generated by such solar power plant on Net-metering basis, at the tariff determined by the OERC.

Now therefore, in consideration of the foregoing premises, the parties, hereto, intending to be legally bound, hereby agree as under:

1. Technical and Interconnection Requirements:

Farmer shall ensure his solar power system complies with the following technical and inter-connection requirement and shall:

- 1.1 Comply with the applicable standards and conditions, in respect of integrating the solar Power Plant with the distribution system.
- 1.2 Connect and operate the solar Power Plant to TPCODL's distribution system, in accordance with the State Grid code, and distribution Code as amended from time to time.
- 1.3 Install a suitable inverter with automatic built-in isolation device before the point of connection with TPCODL's distribution system,.
- 1.4 Provide external manual isolation mechanism with suitable locking facility, so that Solar Power Plant will not back-feed into the TPCODL's network in case of power outage of the TPCODL's distribution system, and it shall be accessible for TPCODL to operate, if required, during maintenance / emergency conditions.
- 1.5 Install all the equipment of the solar power plant compliant with relevant International (IEEE/IEC) and Indian standards (BIS) as well as technical specifications provided by MNRE, GOI from time to time.
- 1.6 (a) The Solar power plant system shall be designed, engineered, constructed and operated by the Farmer or any other person on his behalf, with reasonable diligence, subject to all applicable Indian Laws, Rules, Regulations as amended from time to time and orders having the force of law.

(b) The farmer, shall commission the solar power plant within six months from the date of approval of the PPA.
- 1.7 Adhere to the following power quality measures, as per the International and Indian standards and/or such other measures stipulated by OERC/TPCODL:

- i) Harmonic current: Harmonic current injections from a generation unit shall not exceed the limits specified in IEEE 519.
- ii) Voltage at the injection point should be in the operating range of 80% to 110% of the nominal connected voltage.
- iii) Flicker: Operation of Photovoltaic system shouldn't cause voltage flicker in excess of the limits stated in the relevant sections of IEC standards or other equivalent Indian standards, if any.
- iv) Frequency: When the system frequency exceeds the upper limit, specified in the IEGC as amended from time to time, the solar power plant shall shift to island mode.
- v) DC Injection: Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.
- vi) Power Factor: While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9, shall be maintained.
- vii) The solar power plant, in the event of voltage or frequency variations must island/disconnect itself, as per IEGC/OEGC Regulations, within the stipulated period.

2. Safety:

The farmer shall comply with the following safety measures:

- 2.1 The Farmer shall comply with the Central Electricity Authority (Measures Relating to Safety and Electricity Supply) Regulations, 2010.
- 2.2 The Farmer shall ensure that, the design, installation, maintenance and operation of the solar power plant are in a manner conducive to the safety of the solar power plant as well as the TPCODL's distribution system.
- 2.3 If the farmer's solar power plant either, causes damage to and/or produces adverse effects on the other consumers' or TPCODL's assets, Farmer will disconnect the solar power plant immediately, from the distribution system, by himself or upon directions from the TPCODL and rectify the same at his own cost before reconnection.

3. Clearances and Approvals

The Farmer shall obtain TPCODL's and other statutory approvals and clearances before connecting the solar power plant to the distribution system.

4. Access and Disconnection

4.1 TPCODL shall have access to metering equipment and disconnecting device of the solar power plant, both automatic and manual, at all times.

4.2 In emergency or outage situation, where there is no access to a disconnecting device either, automatic or manual, the TPCODL shall have the right to disconnect power supply to the farmer.

5. Liabilities

The farmer shall be solely responsible for availing any fiscal or other incentive provided by the State/ Central government, at his own expenses.

6. Commercial Settlement-

6.1 Tariff:

- i) The TPCODL shall pay for the Net energy at Rs.....per kWh, as determined by the OERC in the Order dated, for a period of 25 years.
- ii) If for any reason the date of commissioning is delayed, beyond the date of commissioning agreed. The tariff payable by the TPCODL shall be lower of the:
 - i) Tariff agreed to in this agreement OR
 - ii) Any revised tariff, determined by the Commission, prevailing on the date of commissioning OR
 - iii) 90% of the tariff agreed to in this agreement.
- iii) The farmer, shall pay the Electricity tax and other statutory levies, pertaining to solar power generation, as may be levied from time to time.

- iv) The Farmer shall not have any claim for compensation, if the Solar power generated by his solar power plant system could not be absorbed by the distribution system due to failure of power supply in the grid/ distribution system for thereasons, such as line clear, load shedding and line faults, whatsoever. However , TPCODL will take adequate care to make the lines fully available during sunshine hours.

7. Metering:

- 7.1 The farmer, shall arrange to shift the existing meter to the generation side of solar power plant to measure solar power generation and install Bi-directional meter (whole current/CT operated) at the point of interconnection to the distribution system, at a suitable place , accessible for recording export of energy,from the solar power plant to the grid and import of energy for operation of the pump of the farmer from the grid. The bi-directional meter, shall comply with the Central Electricity Authority (Installation and operation of meters) Regulations, 2006 andshall have the following features:
- i. Separate registers, for recording export and import energy with facility to download by Meter Reading Instrument (MRI).
 - ii. kVA, kW and kVAR measuring registers for both import and export.
 - iii. The Meter shall have RS232 (or higher) communication optical port / Radio Frequency (RF) port to support Automatic Meter Reading (AMR).

8. BILLING AND PAYMENT:

- 8.1 TPCODL shall issue monthly electricity bill for the net energy on the scheduled date of meter reading.
- 8.2 In case, the exported energy is more than the imported energy, TPCODL shall pay for the net energy exported, as per Tariff agreed in this agreement, within 30 days from the date of issue of bill, duly adjusting the fixed charges and electricity duty, if any.
- 8.3 In case, the exported energy is less than the imported energy, the Farmer shallpay TPCODL for the Net energy imported as per the prevailing retail agricultural tariff, determined by the Commission from time to time.
- 8.4 The TPCODL shall pay interest at the same rates, as is being levied on the consumers, for late payment charges, in case of any delay in payment beyond30 (thirty) days period from the date of issue of bill, for the Net energy exported.

Explanation: *Net metered energy means the difference of meter readings of energy injected by the solar power plant into the grid (export) and the energy drawn from the grid for use by the Farmer (import,) recorded in the bi-directional meter.*

9. Term and Termination of the Agreement

- 9.1 This agreement, shall be in force for a period of 25 years from the date of commissioning of the solar power plant unless terminated otherwise, as provided here under.
- 9.2 If the TPCODL commits any breach of the terms of the Agreement, Farmer shall serve a written notice specifying the breach and calling upon the TPCODL to remedy/ rectify the same, within 30 (thirty) days or at such other period and at the expiry of 30 (Thirty) days or such other period from the delivery of the notice, Farmer may terminate the agreement by delivering the termination notice, if the TPCODL fails to remedy/ rectify the same.
- 9.3 if the Farmer commits any breach of the terms of the Agreement, TPCODL shall serve a written notice specifying the breach and calling upon the Farmer to remedy/ rectify the same within 30 (thirty) days or at such other period and at the expiry of 30 (Thirty) days or such other period from the delivery of the notice, the TPCODL may terminate the agreement by delivering the termination notice, if the Farmer fails to remedy/ rectify the same.
- 9.4 Upon termination of this Agreement, Farmer shall cease to supply power to the distribution system and any injection of power shall not be paid for by the TPCODL.

10. Dispute Resolution:

All the disputes between the parties arising out of or in connection with this agreement shall be first tried to be settled through mutual negotiation.

The parties shall resolve the dispute in good faith and in equitable manner.

In case of failure to resolve the dispute, either of the parties may approach the appropriate Forum.

IN WITNESS WHERE OF, the Farmer and the TPCODL have entered into this Agreement executed as of the date and the year first set forth above

For AND ON BEHALF OF TP Central Odisha Distribution Company Limited	For AND ON BEHALF OF farmer
By: (Name) Designation: Address:	By: (Name)RR No: Address:
1. WITNESS In Presence of Name: Designation:	1. WITNESS In Presence of Name:
2. WITNESS In Presence of Name: Designation:	2. WITNESS In Presence of Name:

