

**BEFORE THE HON'BLE**  
**ODISHA ELECTRICITY REGULATORY COMMISSION**  
**BIDYUT NIYAMAK BHAWAN**  
**PLOT NO.4, CHUNOKOLI, SHAILASHREE VIHAR, CHANDRASEKHARPUR,**  
**BHUBANESWAR-751023**

In the matter of: An application for allowing interest on loan to be taken by the farmer for setting up Solar Capacity for Kusum C Pump level solarisation in ARR of DISCOMs under Section 62 of Electricity Act 2003 in conformity with the provisions of OERC (Terms and Conditions for determination of wheeling Tariff and Retail Supply Tariff) Regulations, 2014 and OERC (Conduct of Business) Regulation 2004.

**AND**

In the matter of: M/s. TP Western Odisha Distribution Ltd. (i.e TPWODL) (on behalf of all the four Discoms) viz TPWODL, M/s. TP Central Odisha Distribution Ltd. (TPCODL), M/S. TP Northern Odisha Distribution Ltd (TPNODL), M/S. TP Southern Odisha Distribution Ltd (TPSODL).

..... Applicants

**AFFIDAVIT**

I, Gajanan S. Kale, aged about 53 years S/o late Sampatrao Sitaram Kale, presently working as the Chief Executive Officer, TP Western Odisha Distribution Ltd, Corporate Office, Burla do hereby solemnly affirm and state as follows:-

1. That, I am the authorized representative of the Applicant.

2. That, I have gone through the contents of the present application and am well versed with the facts laid down there-under.

3. That, the facts stated in the present application are true to the best of my knowledge and belief and the same are based upon available records.

DEPONENT

**VERIFICATION**

Solemnly affirmed at Sambalpur on this 7th day of October, 2022 that the contents of the above affidavit are true to my knowledge (as derived from the records), no part of it is false and nothing material has been concealed there from.

DEPONENT

PLACE: Sambalpur

DATE: 07/10/2022

The deponent solemnly affirms  
today at about 5:10 AM/P.M.

K.P. MISHRA  
NOTARY  
Reg.: ON-23/94  
SAMBALPUR

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**And**

**.... Applicants**

**In the matter of:**

- a. M/S GRIDCO Ltd
- b. OREDA
- c. Dept. of Energy Govt. of Odisha

.....**Respondents**

**The Humble applicants above named respectfully sheweth:**

1. That TP WESTERN ODISHA DISTRIBUTION LIMITED (in short TPWODL), a company duly incorporated under the Companies Act, 2013, having its Registered office at Burla, Sambalpur, Odisha-768017, is the Distribution & Retail supply licensee to distribute electricity in Western part of Odisha consisting of 9 revenue

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*G. K. Mishra*

districts namely Sambalpur, Jharsuguda, Deogarh, Sundargarh, Bargarh, Bolangir, Sonepur, Kalahandi & Nuapada

**And**

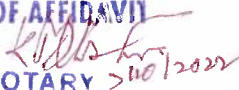
2. **That TP CENTRAL ODISHA DISTRIBUTION LIMITED (in short TPCODL)**, a company duly incorporated under the Companies Act, 2013, having its Registered office at IDCO tower, Janpath, Bhubaneswar, Odisha-751022, is the Distribution & Retail supply licensee to distribute electricity in **Central part of Odisha** consisting of 9 revenue districts namely Puri, Khurda, Nayagarh, Cuttack, Dhenkanal, Jagatsinghpur, Angul, Kendrapara and some part of Jajpur.

**And**

3. **That TP NORTHERN ODISHA DISTRIBUTION LIMITED (in short TPNODL)**, a company duly incorporated under the Companies Act, 2013, having its Registered office at Januganj, Balasore, Odisha-756019, is the Distribution & Retail supply licensee to distribute electricity in **North Eastern part of Odisha** consisting of 5 revenue districts namely Mayurbhanj, Keonjhar, Bhadrak, Balasore and major part of Jajpur.

**And**

4. **That TP SOUTHERN ODISHA DISTRIBUTION LIMITED (in short TPSODL)**, a company duly incorporated under the Companies Act, 2013, having its Registered office at Courtpetta, Berhampur, Odisha-760004, is the Distribution & Retail supply licensee to distribute electricity in **Southern part of Odisha** consisting of 8 revenue districts namely Ganjam, Gajapati, Kandhamal, Boudh, Rayagada, Koraput, Nawarangpur and Malkanagiri.

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### **A. Background for the petition**

1. Ministry of New and Renewable Energy (MNRE), Government of India has launched a scheme for farmers named as Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM KUSUM) through office memorandum No. 32/645/2017-(SPV Division) on dated 08<sup>th</sup> March 2019 towards installation of solar pumps, grid connected solar system and renewable power plants in the country. The scheme was further scaled up with certain additional features and expansion vide order dated 04<sup>th</sup> November 2020. With the scaled-up scheme, the capacity of renewable generation target increased to 30.8 GW to be implemented by 2022 with total central financial support of Rs. 34,035 Crore. The scheme has now been extended upto 31<sup>st</sup> March 2026. The PM KUSUM scheme for the farmers has following three Components:
  - i) **Component-A:** Setting up of 10,000 MW of Decentralized Ground Mounted Grid Connected Solar Power Plants size up to 2MW;
  - ii) **Component-B:** Installation of 20 Lakh Stand-alone Solar Agriculture Pumps of individual pump capacity up to 7.5 HP; and
  - iii) **Component-C:** Solarisation of 15 Lakh Grid Connected Agriculture Pumps of individual pump capacity up to 7.5 HP including through feeder level solarisation.
2. Out of the above under Component C, distribution companies (TPWODL, TPCODL, TPSODL and TPNODL for Odisha) are the designated and implementing agencies (IAs). The scheme mainly aims to ensure reliable day time power supply for irrigation, reducing subsidy burden on Discoms and providing additional sources of income to the farmers. Further, Component-C have also two sub components i.e.
  - a) **Individual pump Solarization:** Individual farmer having agriculture pump and connected with Grid are eligible under the sub-category of individual pump

solarisation. Solar PV capacity up to two times of the pump capacity in kW is allowed under the scheme, so that the farmer will be able to use the generated solar power to meet its irrigation needs and get additional income by injecting the surplus solar power to DISCOMs.

As per ministry guideline, Central Finance Assistance (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 extend a grant/subsidy of 30%; and the remaining 40% will be provided by the farmer. The farmer has to arrange 30% through bank finance arrange and 10% as own contribution up front to avail 30% loan.

Solar PV system up to two times of pump capacity is allowed under the scheme. However, in no case SPV capacity shall not be less than pump capacity in HP. ( e.g. for 5 HP pump, the solar PV capacity allowed should not be less than 5 kWp and may go up to 7.5 kWp (1 HP ~ 0.75 kW)). Further, the CFA will be provided for solarisation of pumps up to 7.5 HP.

- b) **Feeder level Solarization:** Where agriculture feeders have already been separated or Feeders having major load having agriculture connections may be solarised under the scheme. Annual power requirement for an agriculture feeder will be assessed and a solar power plant capable to fulfil the requirement of annual power for the concerned agriculture feeder can be installed either through CAPEX or RESCO mode by the implementing agency (here Distribution companies of Odisha. For CFA calculation under Feeder Level Solarisation, the cost of installation of solar power plant as estimated by ministry (MNRE) is Rs. 3.5 Cr/MW. However, 30% CFA is fixed for both the mode i.e CAPEX and RESCO.

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*[Signature]*



3. Distribution companies in Odisha have received the sanction order from Ministry of New and Renewable Energy (MNRE), Govt. of India in two phases, vide order No. 32/54/2018-SPV Division dated 18<sup>th</sup> May 2022 and dt. 05<sup>th</sup> August 2022 respectively. (Copy of both the order is enclosed herein **Annexure I**). Further, Department of Energy, Govt. of Odisha has allocated the share of Pump Solarisation and feeder level solarisation DISCOM wise vide their letter no 8686 dated 12<sup>th</sup> September 2022 (Copy of allocation letter is enclosed herein **Annexure II**). The allocation of the pumps to the various Discoms by the GOO is provided in the Table below:

**Table 1: Allocation of Pumps to Various Discoms by the Government of Odisha**

DISCOM	Individual Grid connected Agricultural Pump Solarisation			No. of Feeder level solarisation Pumps		
	Earlier allocation	Subsequent allocation	Total	Earlier allocation	subsequent allocation	Total
TPCODL	1246	4754	6000	197	1303	1500
TPSODL	1413	5387	6800	223	1477	1700
TPWODL	4155	15845	20000	655	4345	5000
TPNODL	1496	5704	7200	236	1564	1800
<b>Total</b>	<b>8310</b>	<b>31690</b>	<b>40000</b>	<b>1311</b>	<b>8689</b>	<b>10000</b>

4. Now, with the above support it is the obligation of the stake holder to implement the project successfully for benefit of the farmers across Odisha, which not only helps them to get electricity free of cost but shall also create scope for revenue generation.
5. As can be seen from the earlier paragraphs, the farmer is required to arrange for 40% of the Capital Cost of the Solar Capacity. The Kusum C envisages contribution of farmer to the extent of 10% ("Margin Money") and the Balance (i.e 30%) through loan. However, from the field study it is observed that most of the farmers are very poor and not even able to pay 10% margin to avail 30% loan. Further, in absence of adequate knowledge/awareness their participation is not likely to be encouraging. Therefore, all the DISCOMs would take up the initiative and would endeavour to facilitate them to avail loan by the farmers.

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*[Signature]*

6. Clearly the loan would entail repayment of principal and payment of Interest. It is submitted that the tariffs to the farmers under "Irrigation Pumping and Agriculture" is quite low at Rs 1.50 per Kwh (at LT) and Rs 1.40 per Kwh (at HT). As demonstrated later in this petition, there is not adequate cash available with the farmer to repay the loan and also pay the interest on the Loan.
7. We are therefore through this petition seeking the approval of the Hon'ble Commission to allow the interest cost of the loan taken by the farmer in the ARR of the respective Discom. While seeking such approval, we have considered the savings arising of the cost of power purchase due to injection of such Solar Projects at the LT Level and the working indicate that there is a net savings in the ARR

**B. Quantum of Financing by the Farmer and Energy Accounting**

**i. Capital Cost of the Solar Project and quantum of financing**

8. Based on the MNRE benchmark costs, the quantum of assistance from the Centre and the State (i.e Government of Odisha) and capital cost to be funded by the farmer works out to as follows:

**Table 2: Funding of Capital Cost(Rs/Kw) by the Farmer**

Sr No	Particulars	Units	Value
1	MNRE Benchmark Cost	Rs/Kw	47100
	<b>Source of Funding</b>	<b>Proportion</b>	
2	State Govt-Odisha	30%	Rs/Kw 14130
3	Central Govt-MNRE	30%	Rs/Kw 14130
4	Farmer Share (including Loan)	40%	Rs/Kw 18840
5	<b>Total Cost</b>		<b>47100</b>

However, the present cost per Kw is Rs.55000 (May undergo changes upon completion of our tendering process). As MNRE and Govt of Odisha shall extend the assistance only on bench mark cost, farmer share shall be increased further as per table appended below:-

Table -3

Stake holders Contribution on Total Project Cost @ Rs.55000 per Kw				
Stake holder Contribution	Stake holder	Contribution per Wp in Rs.	Actual contribution towards the landed cost in percentage %	Value Contribution for 5kw (Rs.)
30%	State Govt-Odisha	14.13	26%	70650
30%	Central Govt-MNRE	14.13	26%	70650
40%	Farmer Share *	26.74	49%	133700
100%	<b>Total</b>	55.0	100%	275000

\*Farmer shall have to arrange

N.B Presently all most 80% irrigation consumers are having 3HP pump so considering the same we have taken the plant capacity of 5kW.

9. The above farmer shares of 40% amounting to Rs.1,33,700 can be funded partly by the farmer and the balance needs to be borrowed by the farmer either through a bank loan or from any financial institution. So, keeping 10% margin of Farmer share the farmer has to keep margin of Rs.13370 and balance of Rs.1,20,330 would be financed by Bank.
10. Therefore, to avail the above loan with interest rate of 9% p.a and repayment with equal yearly instalment interest component would be as per computation indicated below: -

Table 4: Amount of Loan and Servicing by the Farmer

If funded through Bank														
Rate of interest p.a.		9%												
Loan amount	Rs.120330	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Total
Outstanding (Rs.)		120330	110330	100330	90330	80330	70330	60330	50330	40330	30330	20330	10330	0
Repayment (Rs.)		10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10330	120330
Interest on loan (Rs.)		10830	9930	9030	8130	7230	6330	5430	4530	3630	2730	1830	930	70556

ii. Quantum of Energy generation, Energy consumed and availability of surplus.

11. The Solar capacity to be set up can be used by the farmer for meeting his/her load. Further, Kusum C permits the farmer to set up capacity upto 2 times the pump capacity



for sale of Surplus power to the Discom and enable him to earn additional income. As the DISCOMs have more than 80% of the total irrigation consumers are having 3 HP pump we have considered double of the same which is coming 4.476 kW (3 HP X 0.746 X 2). The availability of solar panel & related accessories with inverter facility in the market is of 5 kW. Hence calculation is made with solar plant capacity of 5kW.

12. Accordingly, the Solar plant that would be set up and the generation from such Solar plant & self-consumption by the Farmer with 3 HP capacity of the pump works out to be as follows:

**Table 5: Computation of Solar Generation and availability of Surplus**

Sr No	Particulars	Units	Value
<b>A</b>	<b>Self-Consumption by Farmer</b>		
1	Capacity of Pump	HP	3.00
2	Capacity of Pump	Kw	2.238
3	Usage Load Factor of Irrigation and Pumping Category	%	30%
4	Effective Days utilisation	Days	265
5	Energy Consumed by the Farmer	Kwh	4270
<b>B</b>	<b>Generation from Solar Capacity</b>		
6= 2x Sr No 2	Capacity of Solar Project	KW	5.00
7	CUF of the Solar Capacity considered for Odisha model	%	13.36%
8	Generation from Solar Project	Kwh	5850
<b>C</b>	<b>Surplus after self-consumption</b>		
9=8-5	Estimation of Surplus from Solar Capacity	Kwh	1580

**iii. Energy Accounting under implementation of PM Kusum C Model in Odisha.**

13. Presently, DISCOMs are billing as per RST rate of Rs.1.50 per unit for their consumption, upon set up of the solar plant the self-consumption would be absolutely free and the farmer can generate additional revenue out of the project. The only difficulty in our state that, the rate is very low as compared to other state of the Country. So, for successful implementation of the scheme, unless it is a win-win situation for the farmer as well as to the implementing agency it would be futile. Therefore, the energy accounting needs to be considered in the following manner subject approval by Hon'ble Commission.

With recently filed petition before Hon'ble Commission by TPCODL (vide case no 41/2022) the proposed price is Rs.3.12 per unit.


Presently all DISCOMs are purchasing power from GRIDCO. Now, DISCOM will purchase the power from the farmer @ approved cost and would be treated as power purchase cost under the head "PM KUSUM-C". The unit to be consumed by the farmer shall also be billed at Retail Supply Rate for self-consumption by the farmer, balance amount shall be transferred to the farmers designated account on **monthly basis**

**Table 6: Energy Accounting when self-financed by Farmer**

Particulars	Yearly	Monthly
Generation from the 5kw solar plant in kwh (A)	5850	488
Proposed purchase rate subject to approval by Hon'ble Commission(B)	Rs.3.12/unit	Rs.3.12/unit
Cost of Power generated in the solar plant C= (A X B) in Rs.	18252	1522
Self-Consumption of Farmer in kwh	4270	356
Billing to be made with RST rate per kwh	Rs.1.50	Rs.1.50
Billing Value of DISCOM (Rs.) D	6405	534
Balance amount E=C-D in Rs.	11848	1166

The balance amount would be passed on to Farmer if the entire amount shall be arranged by farmer on its own.

In case it is arranged through loan by the Farmer the interest cost has to be absorbed in the ARR of the DISCOM, however the AMC cost (Applicable after 5<sup>th</sup> year) will be paid by the farmer. The mechanism is as under.

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**Table 7: Energy Accounting when financed through loan**

Sr No	Particulars	Units	Value
<b>A</b>	<b>Billing by DISCOM for self-consumption</b>		
1	Energy consumed by Farmer with 3 HP pump @ 30% LF for 265 days in a year	Kwh	4270
2	Tariff	Rs/Kwh	1.5
3	Total Bill of Farmer	Rs	6405
<b>B</b>	<b>Availability of Fund for payment of Principal &amp; AMC cost</b>		
4	Energy Generated from Solar Capacity	Kwh	5850
5	Cost of power generated (@ 3.12 p/u)	Rs.	18253
6	Less:-Discom share of billing (as per Sl 3)	Rs.	6405
7	Balance available for payment of Principal & AMC(After 5 <sup>th</sup> year)	Rs.	11848

14. Clearly the amount available for the 1<sup>st</sup> year is Rs 11848, is not adequate enough for payment of interest cost after meeting principal amount of Rs.10000 and estimated AMC cost after 5<sup>th</sup> year of the project, the Solar Capacity needs to be maintained at the expense of farmer and clearly this would further strain the farmer.
15. Based on the above computation, as the money saved /earned is lower than the amount required to pay the loan (interest and principal) i.e Equated Yearly Instalment (EYI), the farmer will not be encouraged to invest/take interest in Kusum C proposal. Accordingly, it is requested that suitable cost i.e Interest on Loan be permitted to be recovered by the individual Discom in their ARR.
16. It may not be ruled out that even after installation of solar plant the Farmer may intendeds to inject more & more energy into the system and try to use the pump through theft or unauthorised means. To prevent such behaviour, we also propose a minimum energy for self-consumption may be fixed with 30% LF so that the farmer won't be tempted to do so. Even without putting any pump some may start only injecting which may lead to misuse of the scheme hence there must be a self-consumption.

17. We wish to submit that despite the allowance of Interest in the ARR , Kusum C would benefit the consumers in general as such scheme would bring in savings in the Power Purchase cost of Discom. The same is presented in the following paragraphs

**C. Estimation of Interest Costs on the financing of Kusum C Project and Savings in Power Purchase costs**

**a. Interest Costs on Loans**

18. The estimation of interest has been done on the basis of Equated Yearly Instalment worked out above. The Interest worked out for the above quantum of Loan (i.e on a loan of Rs 120330 is as given below

**Table 8: Interest Costs to be passed on in the ARR**

If funded through Bank														
Rate of interest p.a.		9%												
Loan amount	Rs.120330	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Total
Outstanding (Rs.)		120330	110330	100330	90330	80330	70330	60330	50330	40330	30330	20330	10330	0
Repayment (Rs.)		10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10330	120330
Interest on loan (Rs.)		10830	9930	9030	8130	7230	6330	5430	4530	3630	2730	1830	930	70556

**b. Savings in Power Purchase Costs**

19. The energy from Kusum C Project would be injected at LT. Such power injected would therefore displace the power purchased from Gridco. Hence the Discom while would pay for the power from Kusum C Solar capacity, it would save the power purchase cost from Gridco. The rate of power purchased saved would be equal to the BSP of Gridco (Rs 3.1234 per Kwh) plus the transmission charge of OPTCL (Rs 0.28 per Kwh).

20. Further, and rather more important to submit here is that such Kusum C project would inject at LT thereby saving on the LT and HT Losses of the Discoms. This coupled with

the above charges to Gridco and OPTCL would result in savings of power purchase cost for the Discoms. The Savings in the Power Purchase Costs would be as follows:

**Table 9: Savings in the Power Purchase Costs (All DISCOM)**

Sr No	Particulars		FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30
1	Rate of Gridco BSP	Rs/Kwh	3.1234	3.1234	3.1234	3.1234	3.1234	3.1234	3.1234	3.1234
2	Transmission Charges	Rs/Kwh	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
3	Total PP Rate	Rs/Kwh	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
4	Effective LT Losses saved for purchase at LT	%	32%	31%	30%	29%	28%	27%	26%	25%
5=3/(100%-4)	Effective Rate of PP after accounting for Losses	Rs/Kwh	5.00	4.92	4.85	4.79	4.72	4.66	4.59	4.53
6	Tariff for purchase of Power (Petition 41 of 2022) by Discom	Rs/Kwh	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12
7	Power generated under Kusum C Project	Kwh	5850	5850	5850	5850	5850	5850	5850	5850
8=(5-6)x7	Cost of Power Purchase Saved	Rs	10961	10538	10127	9727	9339	8962	8594	8236
	Net Savings in ARR									
Sr No	Particulars		FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30
1	Interest on Loan to be allowed for payment through ARR	Rs	10830	9930	9030	8130	7230	6330	5430	4530
2	Cost of Power Purchase Saved	Rs	10961	10538	10127	9727	9339	8962	8594	8236
3=2-1	Net Impact on ARR	Rs	131	608	1097	1598	2109	2632	3164	3707
	Estimated No of Solar Pump as of now	40000								
	Net Financial impact on ARR in crs		0.52	2.43	4.39	6.39	8.44	10.53	12.66	14.83
	Approved Input For FY 22-23	MU	29500							
	Approved EHT Sale	MU	5610							
	Approved HT Sale	MU	4230							
	Approved LT Sale	MU	13390.4							
	Total Sale	MU	23230							
	HT Loss @ 8%	MU	1911							
	LT & HT Loss	MU	6270							
	LT & HT Loss in % approved -derived	%	32%							

It is worth mentioning that out of the above 40000 approved individual solar pump, TPWODL share is 20000 nos. As TPWODL 's BSP & Transmission charges are much higher i.e Rs.3.88 (Rs.3.60 BSP + Rs.0.28 Transmission charges). The saving in power purchase cost would be more which ultimately will help in strengthening the revenue requirement of all DISCOMs.

21. The LT loss for the base year FY 22-23 has been arrived from the approved parameters in RST order and thereafter has been considered with 1% reduction for calculation purposes, which may change as per approved figure of Hon'ble Commission on subsequent tariff years.

22. As can be seen from the above table, there is a net savings in the ARR due to implementation of Kusum C Scheme even after allowing the cost of Interest in the ARR



of the Discoms. Hence the Hon'ble Commission may consider allowing the Interest costs in the ARR of the Discoms

**D. Request to the Hon'ble Commission**

23. Therefore, to make success of this scheme DISCOMs have taken up this joint application before Hon'ble Commission with following request for implementation of PM KUSUM C component;

- i. The solar power generated by the farmer may be treated as Power purchase Cost of DISCOMs and the self-consumption by the farmer shall be billed in RST as per normal prevailing practice and
- ii. Interest on borrowed cost of farmer to be passed on in ARR or
- iii. Approval may be accorded to meet the interest cost out of miscellaneous receipt of DISCOMs like Cross Subsidy Surcharge, Wheeling charges, service connection charges etc or
- iv. Through combination of all of the above

**E. Scope of PM KUSUM C in Odisha & mechanism of successful implementation:**

24. At present Distribution companies of Odisha are serving to around 1.49 Lakhs of irrigation consumers whose tariffs is much lower than the highest BST in the state. They are cross subsidized by high end customer. DISCOM wise irrigation consumer strength is mentioned below:

**Table 10: Distribution of Agriculture Consumers in various Discoms**

Sr No	Discom	Upto 2 KW	2-3 KW	3-5 KW	> 5 KW	Total
1	TPSODL	2130	9209	6150	2635	20124
2	TPWODL	11448	51215	7442	4463	74568
3	TPNODL	3575	8511	8361	6006	26453
4	TPCODL	6939	8745	7155	4987	27826
	<b>TOTAL</b>	<b>24092</b>	<b>77680</b>	<b>29108</b>	<b>18091</b>	<b>148971</b>

25. In the 1st phase DISCOMs proposes to cover the irrigation consumers having load upto 3 Kw. DISCOM wise 3 kw connections are appended above. Total around 0.78 lakh (all four DISCOMs) connection can be covered under 5 Kw scheme. Present approval is only for 40000 individual solar pumps, so for approved quantum DISCOMs will initiate action to cover.
26. More than 50% irrigation connections are connected with load of 3 kW. hence, a 5KW SPV System has been proposed to cater their (farmer) annual energy demand and excess energy shall be sold to the DISCOM with approved tariff of Hon'ble Commission.
27. Due to lower tariff, the irrigation consumers are not much attracted about energy savings, ground water preservation etc. As a result, the impact is upon the Environment and tariff of high-end consumers and financial health of Discom. On the other hand, due to poor financial ailment of the farmers they failed to pay their monthly Energy bill even with much lower tariff.
28. DISCOMs are of the opinion that, the Scheme "Individual pump Solarization" under Component-C of PM KUSUM will play a vital role in this condition. There is an ample opportunity to generate and consume the power locally, which is an additional advantage. Successful implementation of Individual pump Solarization scheme in the state with 40,000 grid connected pump with Gross metering modalities will ensure the day time reliable power throughout the year to the farmers, energy bill shall be adjusted with the cost of generation hence farmers can earn an extra income after its own consumption.
29. Discoms will educate the farmers about the benefit of Individual pump Solarization scheme and how it will helpful to strengthen their financial ailment with efficient use of

Solar power and sell of maximum energy to the grid to earn an extra income and reduction of ground water consumption.

30. That, Government of Odisha has been intently exploring different sources of clean energy to meet its increasing energy requirements, diversify sources of energy, and address potential climate change issues. The state of Odisha has fairly good potential for solar power generation with 300 days of sunshine in a year and Global Horizontal Irradiance of about 4.5-5.0 kWh/m<sup>2</sup> /day. Setting up of large solar power projects require huge land space whereas availability of land is a major constraint. The land related constraint will not be an issue for farmers who can install the Plant at their agricultural land and continue with agricultural activities.

- **Probable Challenges in Implementation (Individual pump Solarization):**

31. A joint visit along with a team of solar developer was carried out by Discom (TPWODL) officials to chalk out the actual ground reality, challenges and farmers willingness before implementation of Individual pump Solarization project under Component C of PM KUSUM. The team has discussed with individual farmers, majority are not willing to arrange/contribute the 40% farmers share i.e., **Rs. 133700** for 5 KW on grid System. Most of them are very poor and not in a position to bear the 40% of their contribution.

**F. Road Map & Procedure for Successful implementation of the Scheme:**

- (i) **Farmer Awareness campaign:** Awareness campaign to the targeted consumer, area wise / village wise shall be carried out in a regular manner to create awareness among farmers about the scheme and teach them about the model and it's benefits. Educate the farmers, how to strengthen their financial condition through this scheme by using Solar power efficiently and selling maximum energy to the grid and earn an extra income. Discom shall open dedicated support centre locally for PM KUSUM scheme.


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- (ii) **Selection of Feeders and load survey:** DISCOMs are in the process of identification of willing farmers village wise, segregating and compiling their connection feeder wise for implementation of this component for solarization of grid connected agricultural pump. Once tentative upcoming load, feeder wise in particular cluster will be finalised, installation work shall be initiated and can be completed in time bound manner with less cost.
- (iii) **Beneficiary Application & Registration:** It is the responsibility of the implementing Agencies (Discom) to extend sufficient effort for wide circulation/publication of the scheme. Interested farmers shall register them through various channels like, Website Registration, Registration Via DISCOM's Call centre, Registration at Section/Sub-Division/Division/Circle. The intending applicant has to submit the application form duly filled up along with photographs, copy of Land Ownership Document, copy of PAN, copy of AADHAR, cancel Cheque (in Original), copy of electricity bill of residential connection as well as irrigation connection.
- (iv) **Tendering process & vendor selection:** Discoms shall invite bids for empanelment of Vendors through transparent bidding process. A common tender for all the four DISCOM will be more helpful for standardisation and effective for vendor selection. To ensure quality and post installation service empanelment of vendors shall be may be done DISCOM-wise. Real time monitoring is a significant aspect of the project, therefore a separate team having expertise in metering, communication and designing the required software for monitoring including data acquisition through different communication service providers, processing of data using analytical tools, generating reports for monitoring and MIS, etc., shall be set up.
- (v) **System Specifications:** Majority of the irrigation connections are with pump capacity of below 5 KW, SPV plant would be the standardized model in this scheme. MNRE has already issued updated specifications for stand-alone solar water pumping system vide circular dated 17.7.2019, these specifications also cover specifications for solar modules, MMS and other balance of system. A copy of

MNRE approved specification enclosed herewith in **Annexure-III**. The approved specification shall be adopted for solarisation of grid connected agriculture pumps. For grid-tied inverters, applicable BIS/MNRE specifications shall be followed. Protection equipment including surge protection device, lightning arrestors, earthing, MCB/MCCB/RCCB, etc. shall be in place as per standard industry practices.

- (vi) **Metering arrangement:** Metering procedure/mechanism as laid down and amended from time to time by Hon'ble Commission to record self-consumption & generation of power and balance energy injected into the system shall be in place.
- (vii) **System operation:** The sunlight will be converted to DC Electricity by the Solar Panel and thereafter it will be fed to the DC Distribution box where necessary protection system will be available like SPD, Fuses etc. The Inverter/ PCU will yield I/P DC power from the DCDB and produce AC Power at desired Voltage and Frequency level. A 5 KW system can generate approx. 6000 unit of electricity annually. A Solar meter will record the total solar generation of the plant and whereas the Net Meter will capture the net Energy Import and Export unit after consumption.
- (viii) **Quality, Efficiency and Maintenance:** It will be ensured that systems installed under this programme is as per technical specification and construction standards as specified by BIS and MNRE from time to time. To ensure quality, inspection shall be carried out at factory level before dispatch of major items e.g. solar modules, inverter/controller, MMS, etc., and also during the installation & final commissioning. Selected vendors shall be responsible for design, supply, installation and commissioning of adopted solarisation system. Vendors has to extend AMC for a period of 5 years from the date of commissioning of the system including insurance coverage for the installed system against natural calamities and theft. AMC is mandatory and not an option. AMC shall include inspection by

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Vendor at least once in a quarter and submission of quarterly inspection report of the installed system.

- (ix) **Project Monitoring:** The implementing agency shall create remote monitoring system to monitor performance of the system post-installation. The RMU will be consisting of smart meters, communication hardware/ IoT devices, software interface, web and mobile application and internet connection.
- (x) **Solar Energy Data Management (SEDM) Mechanism:** Online Monitoring shall be ensured for Productive Utilization and Security of Investments and to meet the objective of the SEDM platform while providing end to end process support to the scheme.

**Prayer**


In view of the above, the stakeholders humbly pray before the Hon'ble Commission to approve:

- i. The solar power generated by the farmer may be treated as Power purchase Cost of DISCOMs and the self-consumption by the farmer shall be billed in RST as per normal prevailing practice and and
- ii. Interest on borrowed cost of farmer to be passed on in ARR or
- iii. Approval may be accorded to meet the interest cost out of miscellaneous receipt of DISCOMs like Cross Subsidy Surcharge, Wheeling charges, service connection charges etc or
- iv. Through combination of all of the above and
- v. Any other direction as deemed fit by Hon'ble Commission may please be approved.

The applicant stakeholders crave leave to amend/ modify/ further submission on the above application as and when required.

On behalf of all the applicants:

  
CEO, TPWODL

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