

ODISHA ELECTRICITY REGULATORY COMMISSION
BIDYUT NIYAMAK BHAWAN
PLOT NO.-4, CHUNOKOLI, SHAILASHREE VIHAR
BHUBANESWAR - 751 021

Present: Shri G. Mohapatra, Officiating Chairperson
Shri S. K. Ray Mohapatra, Member

Case No. 41/2022

M/s. TPCODL, M/s. TPWODL, M/s. TPNODL & M/s. TPSODL	Petitioners
Vrs. OREDA & Others	Respondents

In the matter of: Application filed by TP Central Odisha Distribution Ltd. on behalf of all the four DISCOMs of Odisha for determination of tariff from Pump Connected Solar Projects set up under Component C of Pradhan Mantri Kisan Urja Suraksha evam Uthan Mahabhiyan (“Kusum C”) under Pump Level solarisation and for approval of PPA signed with the farmers for purchase of power by the DISCOMs from such solar Projects.

AND

Case No. 62/2022

M/s. TPWODL, M/s. TPCODL, M/s. TPNODL & M/s. TPSODL	Petitioners
Vrs. GRIDCO Ltd. & Others	Respondents

In the matter of: Application filed by TP Western Odisha Distribution Ltd. on behalf of all the four DISCOMs of Odisha 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 the 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) Regulations,2004.

For Petitioners : Shri Puneet Munjal, (Head Regulatory Affairs), TP Central Odisha Distribution , Shri K. C. Nanda, GM(RA & Strategy) & Shri Gajanan Kale, CEO., TPWODL, Ms. Malancha Ghose, DGM(RA), TPNODL, Shri V.H. Wagle, (Head Regulatory Affairs), TPSODL.

For Respondents : Ms. Sasmita Patjoshi, Jt. Director, OREDA, Shri T.P.Panda of GRIDCO Ltd., Shri Sukanta Panda, Sr.GM (RT&C), OPTCL, Ms. Sonali Patnaik, ALO I/c., DoE, GoO, Shri Shobhit Srivastava of MNRE, Shri Bibhu Charan Swain, M/s. Power Tech Consultants Pvt. Ltd. and Shri R. P. Mahapatra.

ORDER

Date of hearing: 22.11.2022

Date of Order:19.01.2023

Both the above cases do arise out of same set of facts and are simultaneously disposed of by this common order.

2. The Petitioners- TPWODL & TPCODL have filed the present Petitions before the Commission on behalf of other DISCOMs of the State (TPNODL & TPSODL) seeking implementation of Pradhan Mantri Kisan Urja Suraksha evam Uthan Mahabhiyan (PM KUSUM-C) with following prayers:
 - a. 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 Retail Supply Tariff (RST) as per normal prevailing practice;
 - b. Interest on borrowed cost of farmer to be passed on in ARR;
 - c. 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.;
 - d. Through combination of all of the above.
 - e. To approve DISCOMs for signing the PPA with farmers for purchase of surplus power injected to the distribution network from the solar capacity installed by the farmer under KUSUM C scheme.
 - f. Approve the draft PPA
3. The brief background of the PM KUSUM-C Scheme of MNRE is as follows:
 - a) The Ministry of New and Renewable Energy (MNRE), Government of India has launched the Scheme for farmers named as Pradhan Mantri Kisan Urja Suraksha Utthaan Mahabhiyaan evam Utthaan Mahabhiyan (PM KUSUM) through office memorandum dated 8th March, 2019. The Scheme envisages installation of Solar Pumps, Grid connected solar system and renewable power plants in the country. The Scheme, vide notification dated 4th November, 2020 was further scaled up with certain additional features and expansion. 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. This scheme has

been extended upto 31st March, 2026. The PM KUSUM scheme has following three components:

- Component-A :Setting up of 10,000 MW of Decentralized Ground Mounted Grid Connected Solar Power Plants size upto 2 MWwith Central Financial Support (CFS) of Rs.3325 crore (including service charge).
 - Component-B :Installation of 20 lakh Stand-alone Solar Agriculture Pumps of individual pump capacity upto2 MW(9.6 GW) with CFS of Rs.15912 crore (including service charge)..
 - Component-C: Solarisation of 15 lakh Grid Connected Agriculture Pumps of individual pump capacity upto 7.5 HP including through feeder level solarisation (11.2 GW) with CFS of Rs.14798 crore (including service charge).
- b) The Component-C of PM KUSUM Scheme is aimed at ensuring reliable day time power supply for irrigation, reducing subsidy burden on DISCOMs and providing additional source of income to the farmers. The Component-C has two sub-components, Individual Pump level Solarisation and Agriculture feeder level Solarisation. Under the grid connected individual agriculture pump solarisation, individual farmer having grid connected agricultural pump will be supported for solarisation of the pump. The solar PV capacity upto 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.
- c) The DISCOM is the designated as the implementing agency(ies) under the Component-C. As per Ministry Guidelines, the Central Financial 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. Further, the farmer has to arrange 30% through Bank finance and 10% as own contribution up front. In no case solar PV capacity shall 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). CFA will be provided for solarisation of pumps upto 7.5 HP. Solarisation of pumps of capacity higher than 7.5 HP is also allowed,

however, the CFA in such cases would be limited to the CFA applicable for pump of 7.5 HP in the respective State/UTs.

- d) Under the Feeder Level Solarisation, the separate agricultural feeders or feeders having major loads of agricultural connection will 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. 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. For CFA calculation under feeder level solarisation, the cost of installation of Solar Power Plant as estimated by MNRE is Rs.3.5 crore/MW with 30% CFA.

4. DISCOMs of Odisha have submitted the following:

- (a) 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 18thMay, 2022 and dated 5thAugust, 2022 respectively. Further, Department of Energy, Government of Odisha (GoO) has allocated the share of Pump Solarisation and feeder level solarisation to DISCOM separately vide their letter no 8686 dated 12thSeptember, 2022. The allocation of the pumps to the various DISCOMs by the GoO is provided in the Table below:

Allocation of Pumps to Various DISCOMs by the Government of Odisha

DISCOMs	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
Total	8310	31690	40000	1311	8689	10000

- (b) The successful implementation of the project will benefit the farmers across Odisha not only to get electricity free of cost butalso create scope for revenue generation.

- (c) 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 money 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 for availing loan by the farmers.
- (d) 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). There is no adequate cash available with the farmer to repay the loan and also pay the interest on the Loan.
- (e) There will be savings in the net power purchase cost of the DISCOMs due to injection of such solar power at LT level by farmers.
- (f) **Quantum of financing by farmer & energy accounting:**
- (i) Basing 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:

Funding of Capital Cost(Rs/kW) by the Farmer

Sl. No.	Particulars		Units	Value
1	MNRE Benchmark Cost		Rs/kW	47100
	Source of Funding	Properties		
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	Total Cost			47100

However, the present cost per kW is Rs.55000/- (May undergo changes upon completion of 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:-

Stake holders Contribution on Total Project Cost @ Rs.55000 per kW				
Stakeholder Contribution	Stakeholder	Contribution per Wp in Rs.	Actual contribution towards the landed cost in percentage %	Value Contribution for 5 kW (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%	Total	55.00	100%	275000

*Farmer shall have to arrange

(N.B. Presently almost 80% irrigation consumers are having 3HP pump. Therefore, considering the same DISCOMs have taken the solar plant capacity as 5kW.)

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 arrange margin money of Rs.13370/- and balance of Rs.1,20,330/- would be financed by Bank. Therefore, to avail the above loan with interest rate of 9% p.a. the annual repayment would be as follows:

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	Tr-11	Yr-12	Total
Outstanding(Rs)	120330	110330	100330	90330	80330	70330	60330	50330	40330	30330	20330	10330	0	
Re-payment(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:** The Solar capacity to be set up can be used by the farmer for meeting his/her own load. Further, Kusum C permits the farmer to set up capacity upto 2 times the pump capacity for sale of Surplus power to the DISCOMs so as to enable him to earn additional income. As the DISCOMs have more than 80% of the total irrigation consumers having 3 HP pump, therefore, DISCOMs have considered double the capacity which is 4.476 kW (3 HP X 0.746 X 2). The availability of standard solar panel & related accessories with inverter facility in the market is of 5 kW. Hence DISCOMs have assumed solar capacity of 5 kW for computation purpose.

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:

Computation of Solar Generation and availability of Surplus

Sr. No.	Particulars	Units	Value
A	Self-Consumption by Farmer		
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	Generation from Solar Capacity		
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
C	Surplus after self-consumption		
9=(8-5)	Estimation of Surplus from Solar Capacity	kWh	1580

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

Presently, DISCOMs are billing as per RST rate of Rs.1.50 per unit for their consumption by the farmers. Upon setting up of the solar plant the self-consumption would be absolutely free and the farmer can generate additional revenue out of the project by selling the surplus power after consumption. The only difficulty in the state of Odisha is lower rate of irrigation tariff than that of other States of India. Therefore, it is not a profitable proposition for the farmers to avail solar power in lieu of grid power if they have to invest for installation of solar power plant. So, for successful implementation of the scheme, unless it is a win-win situation for the farmer as well as for the implementing agency the scheme would be non-starter. Therefore, the energy accounting needs to be considered in the following manner subject approval by the Commission.

Presently all DISCOMs are purchasing power from GRIDCO. After implementation of KUSUM-C, DISCOMs in addition to GRIDCO, will purchase the power from the farmer at the approved price by the Commission and it would be treated as power purchase cost under the

head “PM KUSUM-C” for DISCOMs. The unit to be consumed by the farmers shall be billed at Retail Supply Rate and the cost of surplus power purchased by the DISCOMs shall be transferred to the farmer’s designated account on monthly basis.

(iv) **Energy Accounting when the project is 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 the 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 as shown above would be passed on to farmer if the entire amount of farmer contribution shall be arranged by farmer on his own.

(v) **Energy Accounting when the solar project is entirely financed through loan by farmer**

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 5th year) will be paid by the farmer. The mechanism is as under.

Sl.No.	Particulars	Units	Value
A	Billing by DISCOM for self-consumption		
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	Availability of Fund for payment of Principal & AMCCost		
4	Energy Generated from Solar Capacity	kWh	5850
5	Cost of power generated (312 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 5th year)	Rs.	11848

From the above table it is clearly seen that the amount available with the

farmer for the 1st year is Rs 11848, is not adequate for payment of interest cost after meeting principal amount of Rs.10000 and estimated AMC cost after 5th year of the project. The Solar Capacity also needs to be maintained at the expense of farmer and clearly this would further strain the farmer.

Basing on the above computations, 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.

It may not be ruled out that even after installation of solar plant the Farmer may intend 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. 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.

(g) Estimation of Interest Costs on the financing of Kusum C Project and Savings in Power Purchase costs

i) Interest Costs on Loans

The estimation of interest has been done on the basis of Equated Yearly Instalment of principal which has been worked out in the table below. The yearly interest found out for the above quantum of loan (i.e. on a loan of Rs.1,20,330/-) is as given below:

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	Tr-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) **Savings in Power Purchase Costs**

The energy from Kusum C Project would be injected at LT. Such power injected would therefore, result in avoidance of same quantity of power purchase from GRIDCO. Hence the DISCOM while paying for the power purchased from Kusum C Solar capacity, would also save the cost of avoided power purchase from GRIDCO. The saving in per unit power purchase would be equal to the average BSP of GRIDCO (Rs.3.12 per kWh) plus the transmission charge of OPTCL (Rs.0.28 per kWh).

In addition to the above since the power would be injected from KUSUM-C project at LT level, DISCOM would save both LT and HT losses of distribution. The savings in the Power Purchase Costs would be as follows:

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	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12
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									
	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	9930	8130	7230	6330	5430	4530
2	Saving in Cost of Power Purchase	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	29230							
	HT Loss @ 8%	MU	1911							
	LT & HT Loss	MU	6270							
	LT & HT Loss in % approved derived	%	32%							

TPWODL has stated that out of 40000 approved individual solar pump they have a share of 20,000 nos. Since TPWODL's BSP & Transmission charges are much higher i.e. Rs.3.88 (Rs.3.60 BSP + Rs.0.28 Transmission charges) than other DISCOMs, the saving in power purchase cost would be more which ultimately will help in strengthening the revenue requirement of all DISCOMs.

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 the Commission on subsequent tariff years.

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 Commission may consider allowing the Interest costs in the ARR of the DISCOMs

(h) **Scope of PM KUSUM C in Odisha & mechanism of successful implementation:**

At present Distribution companies of Odisha are serving around 1.49 Lakhs of irrigation consumers whose tariffs are 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:

Distribution of Agriculture Consumers in various DISCOMs

Sl. No.	DISCOMs	Upto2kW	2-3kW	3-5kW	>5KW	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
	TOTAL	24092	77680	29108	18091	148971

In the 1st Phase DISCOMs proposes to cover the irrigation consumers having load upto 3kW. Total around 0.78 lakh (all four DISCOMs) connection can be covered under 5kW scheme. The DISCOMs have sought approval for solarisation of 40000 individual pumps and depending upon the approval they will initiate subsequent action.

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

the Commission. It would curtail wasteful use of electricity due to lower irrigation tariff which results in ground water depletion. As a result, the impact is on the Environment, tariff of high-end consumers and financial health of Discoms. This would also reduce the cross-subsidy burden on the high-end consumers who are cross subsidizing the irrigation consumers in terms of tariff.

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.

DISCOMs will educate the farmers about the benefit of Individual pump Solarization scheme and how through efficient use of solar power they will make additional income by selling energy to DISCOMs.

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/m² /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.

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

A joint visit of team of solar developers with DISCOM (TPWODL) officials has revealed that majority of farmers 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 to the project.

(j) **Road Map & Procedure for Successful implementation of the Scheme:**

The DISCOMs have submitted that they have already finalised the road maps for implementation of the project which includes

- i) Farmer Awareness campaign
- ii) Selection of Feeders and load survey

- iii) Beneficiary Application & Registration
 - iv) Tendering process & vendor selection
 - v) System Specifications
 - vi) Metering arrangement
 - vii) System operation
 - viii) Quality, Efficiency and Maintenance
 - ix) Project Monitoring activities
 - x) Installation Solar Energy Data Management (SEDM) Mechanism
5. To the above submissions of the Petitioners, the Respondent Power Tech Consultants has submitted as follows:
- (a) As per Odisha Renewable Energy Policy, 2016, the Government of Odisha has set up a target to add 2750 MW through renewable energy sources. Till now, around 525.5 MW of RE power has been added in the State Government of Odisha has not been able to achieve other targets and could not take up any major initiative to fulfil the objective of the Policy.
 - (b) From the status report of KUSUM, it is seen that there is certain progress in KUSUM-B whereas KUSUM-A and KUSUM-B have not progressed the way they were conceived. It was stated that due to lack of awareness, absence of adequate knowledge, lack of renewable repair centre, maintenance centre, non-availability of spares in rural electrical shops and lack of solar technicians, the various targets of the policy and schemes are not likely to be achieved. The financial benefits of the scheme are to be rationalized in order to motivate Agro-entrepreneurs and farmers. As regards the CUF, the statistical data of various installed solar projects in the State show that the average CUF of small sized solar power plant is around 11%. Therefore, the CUF of 11% may be considered to be appropriate for such projects.
 - (c) Since majority of farmers have pump capacity of 3 HP, they are unlikely to accept solar PV of twice the capacity because of the capital cost. Therefore, the benchmark cost of Rs.48,300/kW may be considered instead of Rs.47,100/kW for computation of levelized tariff.
 - (d) The cost of installation of Remote Monitoring and Solar generator meters may be borne by the respective DISCOMs. The existing consumption meters should be used and farmers should not be forced to install bi-directional meters. If the cost of the meters and RMS are to be borne by farmers, then the cost of the same

is to be considered in the capital cost for the purpose of computation of levelized tariff. It is observed that in the capital cost some expenditures for export meter, import meter with RS232 communicable meters with AMR, out of pocket expenses for release of subsidy, isolator cost, panel cost, compliance to CEA (Measures relating to Safety and Electricity Supply) Regulations, 2013 have not been considered by DISCOMs.

- (e) The O&M cost for the solar pump considered at Rs.7 lakh/MW (equivalent to Rs.700 per annum for 1 kW pump) is inadequate. Considering the remote, rural and agriculture location, the O&M cost may be considered at Rs.2000/kW. Alternatively, maintenance of the pump may be taken up by the DISCOMs or farmers may be reimbursed Rs.700/kW per annum for maintenance of pumps installed at their premises.
- (f) Considering the 1-year MCLR of 7.7%, the bank interest would be around 10.2%. Moreover, DISCOMs need to consider the application fees, processing fees, PMC cost of Banks and logistic cost of farmers for processing the loads. Effectively the interest rate may be considered at 11% for computation of levelized tariff. Based on the parameters discussed, the respondent has calculated the levelized cost of generation at Rs.7.01/kWh.
- (g) The effective LT losses saved for purchase of power at LT is around 32% therefore effective BSP price at interface points of farmer at LT is calculated considering existing BSP of each DISCOMs and transmission costs. Accordingly, the effective rate of power purchase after accounting for losses is calculated at Rs.4.82/kWh for TPCODL, Rs.5.13/KWh for TPNODL, Rs.3.75/KWh for TPSODL and Rs.5.71/KWh for TPWODL. Therefore, as such if the tariff of Rs.5.71/KWh is fixed for gross injection by farmer from its KUSUM-C project, then TPWODL will not be at loss considering the levelized cost at Rs.7.01/KWh. At this cost, many farmers will be encouraged to put the solar pump in the farm under KUSUM-C Scheme.
- (h) Instead of GRIDCO, DISCOMs should purchase power from RE generators. The earlier KUSUM-A scheme failed in Odisha due to fixation of unviable tariff of Rs.3.08/KWh. OERC may initiate a suo motu proceeding to approve the tariff for KUSUM - A scheme to make it feasible which will encourage Agro-entrepreneurs to put great interactive solar project within capacity of 500 KW to 200 MW under KUSUM – A scheme.

- (i) It is also proposed that instead of providing interest cost to the farmers, the tariff of gross solar power generated may be increased substantially. This will encourage farmers to set up KUSUM-C project and earn more money. The State Government by a notification should waive ED for consumption of solar power generated through KUSUM-C project. The Forum of Dispute Resolution for KUSUM implementation should be concerned GRF and Ombudsman.
 - (j) The major problem of the scheme is the theft of solar panel and associate pumps from the farm land of farmers. Since it is not possible for farmers to bear the watch and ward of the pumps, solar pumps set under KUSUM-C may be insured and the premium for the insurance may be borne by the DISCOM or State Government. In view of the flood and cyclone, the solarisation of feeders will rather bring good impact instead of solarisation of individual pumps. MNRE should revisit the scheme and reconsider if the solarised feeders can be adopted in totality and both CFA for individual pumps and solarised feeders can be clubbed for Odisha.
6. Another Respondent Sri R.P. Mahapatra has supported the proposal of the Petitioner since it will help the farmers to save interest on the loan to be incurred by them to finance their share for agricultural pump solarisation. There will be net saving equivalent to the landed power purchase cost against consumption by such farmers. He has requested the Commission that since the draft PPA submitted by the DISCOMs is tilted favourably towards them, the Commission should approve a revised PPA balancing the interest of the stakeholders.
7. MNRE of Government of India has submitted the following:
- a) MNRE supports purchase of solar power directly by DISCOMs instead of GRIDCO.
 - b) Low offtake in Component-A is due to unviable tariff of Rs.3.08 per kWh in the present scenario, wherein GST on renewable energy components, including solar components, has increased from 5 to 12% and Basic Custom Duty (BCD) of 40% has been imposed on Solar modules and 25% on Solar cells. This apart, cost of other items like module mounting structure and other Business Operating System (BOS) costs have also increased. On account of these issues, the tariff under Component-A needs to be revised.

- c) Solar module capacity of twice of the pump capacity in kW means, if the pump is 3 HP then in terms of kW the pump capacity will be around 2.238 kW, solar modules double of this capacity i.e. upto 4.47 kW in this case can be installed. Therefore, CFA of the Ministry under the Scheme would be limited to 4.47 kW for solarisation of pumps of 3 HP capacity.
- d) Both Component-A and Component-C are different and, therefore, separate tariff for Component-C should be determined.
- e) The CUF considered 14% is on lower side. Based on solar resource assessment exercise conducted by the National Institute of Wind Energy (NIWE), CUF of 17% is applicable in Odisha.
- f) The benchmark cost determined by MNRE was prior to increase in GST rates from 5 to 12% and imposition of BCD of 40% on Solar modules and 25% on Solar cells. While MNRE is working on revised benchmark cost it is suggested that impact of GST and BCD should be considered in capital cost. Roughly 10-15% increase in capital cost may be considered.
- g) Capital cost for tariff should be taken as Rs.5.5 Cr per MW in view of the increase in prices as stated by TPWODL in their petition. Further, the service charges @2% of MNRE CFA has been included in the total capital cost calculation. These service charges are rather given by MNRE to the DISCOM for implementing the Scheme and, therefore, should not be part of the capital cost estimation. Therefore, the capital cost for tariff after 60% subsidy from state and central should be Rs.2.67 Cr/MW.
- h) The LCoE should be determined on the basis of CUF of 17% and considering capital cost for tariff as Rs.2.67 Cr/MW. As farmer is taking 90% of their contribution as loan, debt equity ratio of 90:10 should be applied with RoE and interest rate on debt both at 9%. Further, other parameters such as depreciation, receivable for debtors and interest on working capital are also not required in this case as these are not commercial projects. The Levellised Cost of Energy (LCoE) so worked out is around Rs.2.39 per kWh.
- i) Rather than taking higher value amongst the Bulk Supply Price (BSP) and the estimated levellized tariff, it would be prudent to adopt the estimated levelized tariff based on levellized cost of energy. The rationale of adopting the higher prices in the petition is unsubstantiated.

j) Benchmark costs referred were issued by MNRE in August, 2021. Subsequently, due to change in GST, benchmark costs without GST were issued by the Ministry in October, 2021. On adding the revised GST of 13.8% (12% of 70% cost on account of supply plus 18% of 30% cost on account of services) the revised benchmark cost for the selected capacity is Rs. 49,218/- per kW. Additionally, due to imposition of BCD of 40% on Solar modules and 25% on Solar cells, there is further increase in prices. Therefore, roughly 10-15% increase in capital cost may be considered. It is also to mention that MNRE contribution would be limited to the capacity twice the capacity of pump in kW i.e. 4.47 kW for a 3 HP pump.

8. The submissions of OREDA are stated hereinafter:

- (a) There has to be adequate awareness among the farmers about the scheme and DISCOMs should take initiatives for this.
- (b) DISCOMs are seeking the approval of the Commission to allow the Interest cost of the loan to be taken by the farmers in the ARR of the respective DISCOMs. This is again cross-subsidizing the farmers by other consumers. If allowed, the interest on loan is to be taken under the head of the Agriculture tariff.
- (c) At present the cost of Solar generation is more than the prevailing Agriculture tariff. Hence Gross Metering will be helpful for the Farmers in terms of additional financial gain. With Gross Metering, Solar generation will be billed at higher Solar cost & the self-consumption will be billed at the cheaper Agriculture tariff, with a net gain to the farmers.
- (d) The DISCOMs have been sanctioned with 40000 nos. under individual pump solarisation. With present per kW cost of around Rs.55000, there would be a requirement of around Rs.1100 crores for full implementation, out of which, only 330 crores (30%) will be contributed by MNRE, GoI. Equal contribution of 330 crores (30%) is proposed from State Govt. & balance fund requirement of 440 crores is to be arranged by the farmers from own funding & through Bank loan.
- (e) The following points may influence the successful implementation of PM KUSUM Component C in the State:
 - i. Any increase of RST for the DISCOM due to the Scheme.

- ii. If significant gain for the Farmers cannot be ensured as a monthly or annual income.
- iii. The Pump level solarisation capacity addition should contribute towards RPO of the State.
- iv. Farmers should be made aware of any associated benefits, if any along with green initiatives along for pump level Solarization by them such as saving of ground water depletion etc.

9. GRIDCO has submitted the following:

- (a) The Scheme proposed by the Petitioner is expected to attract more participation and is a welcome step.
- (b) While approving the Scheme, the Commission may consider for issuing following directives to petitioner.
 - To put in place a mechanism for ensuring that the benefits under the scheme are passed on to the farmers for the entire useful life of the project,
 - To maintain proper records of the energy consumed and sold to the DISCOMs through separate accounts for prudence check,
 - To share the information related to energy generated, injected and consumed by the farmers, with GRIDCO on monthly basis for keeping track of the RPO compliance.
- (c) The Commission may consider the following and direct the petitioner for taking appropriate action regarding the same.
 - Consumption by the agricultural consumers during the daytime to be encouraged.
 - Costly power has been scheduled to meet the evening peak hour requirement of the State in the past. Therefore, it becomes imperative that the agricultural consumers reaping the benefits under this scheme should not contribute to increase the power purchase cost through consumption.
 - Self-consumption by the agricultural consumers to be encouraged: As highlighted by the petitioner the farmers may intend to inject energy into

the system rather than instantly consuming the same, as the tariff for the agricultural category is lower than the power purchase rate proposed by the Petitioner. A check and balance mechanism may be put in place to discourage the agricultural consumers from taking undue advantage of the scheme proposed by the petitioner.

- (d) To direct petitioner to put in place an appropriate mechanism to discourage the farmers from consumption of power during peak hours, especially during evening peak hours and encourage self-consumption of such power.
- (e) To allow procurement of surplus solar power from the farmers by the DISCOMs to be limited to PM KUSUM 'C' Scheme only.

10. The submissions of Department of Energy, Govt. of Odisha are stated hereinafter:

- (a) The Ministry of New & Renewable Energy (MNRE), Govt. of India has launched PM KUSUM for installation of off grid solar pumps, grid connected solar pumps and solar power plants on farm land. The Scheme has now been extended upto 31stMarch, 2026.
- (b) The PM KUSUM scheme has three components (Component-A, Component-B & Component-C). Under Component-C, DISCOMs (TPWODL, TPCODL, TPSODL& TPNODL for Odisha) are the implementing agencies (IAs) for solarisation of Grid Connected Agriculture Pumps as well as through feeder level solarisation.
- (c) As per MNRE 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 Agriculture and FE Department has been requested to make budget provision towards subsidy of 30%. The remaining 40% is required to be provided by the farmer. The farmer has to arrange 30% through bank finance and arrange 10% as own contribution up front to avail 30% loan.
- (d) In absence of adequate knowledge/awareness farmers participation is not likely to be encouraging. Therefore, it is desired that the DISCOMs take proactive steps to implement PM KUSUM C. In Odisha, the tariffs under "Irrigation Pumping and Agriculture" is quite low at Rs.1.50 per kWh (at LT) and Rs.1.40 per kWh (at HT). Such low tariff acts as a deterrent for solarisation of pump sets connected to GRID.

- (e) Under the proposed model, the DISCOMs will purchase the power from the farmers at the rate approved by OERC.
- (f) DISCOMs are seeking the approval of the Commission to allow the interest cost of the loan taken by the farmers in the ARR of the respective DISCOM. While seeking such approval, they have considered the savings arising out of the cost of power purchase due to injection from such Solar Projects at the LT level and the calculations indicate that there is a net saving in the ARR.
- (g) DISCOMs are also seeking OERC approval for gross metering instead of net metering. As the agriculture tariff in Odisha is very low and farmers are not willing to invest 40% of their share, after self-consumption their return is not remunerative under net-metering. Hence the DISCOMs are suggesting through this application for energy accounting in the following manner so that it will be beneficial to the farmers.

Particulars	Yearly	Monthly
Generation from the 5kw solar plant in kWh (A)	5850	488
Proposed purchase rate subject to approval by Commission (B)	Rs.3.12/unit	Rs.3.12/unit
Cost of Power generated in the solar plant C=(AxB) 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

In this case the balance amount shall be utilized towards principal repayment and AMC cost (after 5th year). After completion of loan repayment, the balance amount shall be passed on to the farmer after meeting the AMC cost.

- (h) MNRE has so far sanctioned 40000 nos. under individual pump solarisation category and another 10,000 nos. under feeder level solarisation category. Agriculture & Farmers Empowerment (A&FE) Department has been moved to make budgetary provision towards state's share of 30% of the cost.
- (i) Basing on the request of DISCOMs, MNRE has been requested to give approval for solarisation of 108800 individual pumps & 27200 through feeder level solarisation by 31.03.2026.

- (j) As per GoO, the use of diesel pump sets is to be discouraged and all inefficient pumps used in agricultural sector is to be replaced with Energy Efficient (EE) pumps (new technology with solar).
11. The reply of TPWODL in response to views/suggestions/objections of Respondents are as stated hereinafter:
- a) To educate, create awareness among farmers, the licensee has made various campaigns through local Junior engineers, SDOs, village level meeting and also through hoarding, leaf let, electronic & print media and DISCOM website etc. The Licensee has explained the benefits of the scheme to the farmers which in turn help the State and nation at large. Farmers have shown their keen interest to participate in the scheme and basing upon their consent (more than 500 farmers as on date) DISCOMs have moved ahead and filed this petition before this Commission for approval. The Licensees have filed this application with prior consultation with all stake holders considering their experience in KUSUM A & B. Those two schemes have not taken off as expected due to lack of motivation & inadequate financial assistance to the Agro entrepreneur.
- b) The CUF has been adopted basing on 300 days considering seasonal effect and natural calamities like thunderstorm, cyclone, low pressure etc. CUF has been considered based on the solar insolation level in entire Odisha as a whole although it is higher in western part of Odisha. CUF, as considered is in any way a conservative estimate since the sun shine days is comparably more in Western Odisha than rest of the State. If actual CUF is more then farmers would get the benefit of more generation.
- c) With the present available MNRE guidelines, individual grid connected pump solarisation can be made up to 2 times of the pump capacity and MNRE will provide the assistance accordingly. That means the CFA of MNRE is based on the solar capacity and not on the existing pump capacity. However, if MNRE is pleased enough to increase the benchmark cost considering market price, then farmer's share will be reduced.
- d) With the Existing meters the suggested mechanism for energy accounting like purchase and billing cannot be fulfilled. Hence a separate mechanism is required. The project cost as derived by the licensee is inclusive of such arrangement i.e. generation meter for consideration of purchase and bi-

directional meter for energy billing and accounting. Hence, the concern of overburden on the consumer will not arise.

- e) The licensee has already discussed with various nationalised bank and received consent from banks that interest on loan will be well within limits of 9%. We have received consent from Union Bank with interest rate of @8.55% p.a. (MCLR 7.90+ 0.65 for Loans above Rs.50000/- up to Rs.2.00 Lakh), which is less than 9%.
- f) The Commission may approve a suitable format for model PPA for entire Odisha DISCOMs considering the above aspect as suggested.
- g) Considering the apprehension of theft of solar panel and pump the insurance cost of the project upto five years has been covered under project cost. Further insurance beyond five years for solar panel only can be factored in annual AMC. However, the Pump set is not included as the same is not part of PM-KUSUM-C project.
- h) All the equipment shall be procured as per MNRE guidelines. Feeder level solarisation is also covered under PM KUSUM C and the tender for this is under finalisation. Feeder level solarisation and Individual grid connected pump solarisation are two sub-components of PMKUSUM C and will be handled separately for each of sub component.
- i) The interest on farmers loan shall be met from saving out of avoidable power purchase cost. As power purchase cost is part of ARR, the interest component needs to be approved through ARR only.
- j) In case of individual grid connected pump solarisation the intention of PM KUSUM C is that the farmer should install the solar plant for self-consumption and balance surplus energy should be injected to the grid. Unless energy is consumed by the farmer, the very purpose of PM-KUSUM C would be defeated. Therefore, the intention of keeping minimum consumption in a year is basing on the consumption pattern of the farmers which is for a period of 265 days (covers two crop cycles).
- k) As per MNRE OM No 32/645/2017 dated 8th November 2019, only manufacturers of solar PV modules or manufacturers of solar water pumps would be allowed to participate in the bidding process. Hence this is as per MNRE guidelines.

- l) The energy injected under PM KUSUM C Scheme will lead to savings in power purchase cost of all DISCOMs and as a result such savings can be used towards meeting the interest on loans arising out of loans taken by the Farmers. There is no such absolute negative impact or double subsidisation effect. Rather, if the scheme is implemented there would not be any requirement of extending further subsidy to the agriculture sector, as they will generate power at their farm land and help others by injecting surplus energy to the grid and additional income to the farmer.
 - m) The scheme will not contribute towards increase in RST as power will be generated for self-consumption and would not depend on grid power.
 - n) The pump level solarisation will contribute towards RPO requirement of the State.
 - o) As per MNRE guidelines PM KUSUM C feeder level solarisation is for dedicated agricultural feeder/Major agricultural connections feeder. While implementing the feeder level solarisation projects, suggestions regarding prioritizing the installation of KUSUM C projects for feeders under Odisha Dedicated Agriculture and Fisheries Feeder Project (ODAFFP) may be considered.
12. During hearing the Commission had raised the issues of enhancing benchmarking cost, CUF, total solar days per year in Odisha with Respondent-MNRE. The representative of MNRE responded that there is a discussion underway to enhance the benchmark cost per MW of solar installation covered under PM KUSUM-C Scheme. The CUF of 17% is reasonable for Odisha as the technological development has increased the efficiency of Solar PV modules and the solar plant remains connected to the grid for 365 days in a year.
13. Both the cases i.e. Case No. 41/2022 and Case No. 62/2022 were heard analogously through virtual mode. The Commission has also considered the written submission and arguments put forth during the hearing. M/s. TPWODL has filed the Case No. 62/2022 which relates to allowing interest on loan (to be taken by the DISCOMs on behalf of the farmer) for setting up solar plant for solarisation of pump 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, 2022 and OERC (Conduct of Business) Regulations, 2004. Similarly,

TPCODL has filed the Case No. 41/2022 which relates to determination of tariff for surplus solar power to be procured by DISCOMs from the farmers who are covered under KUSUM-C and approval of consequential PPA. The petitioners have filed petition on behalf of all other DISCOMs i.e. a joint petition of all four DISCOMs (TPWODL, TPCODL, TPNODL & TPSODL).

14. We observe that the Component-C of PM KUSUM Scheme of MNRE includes two sub-components such as individual pump level solarisation & agriculture feeder level solarisation. This is aimed at ensuring reliable day time power supply to irrigation pumps of farmer(s), reducing subsidy burden on DISCOMs and providing additional source of income to the farmers. The separated agricultural feeders or feeders having major loads of agricultural connection will be solarised under feeder level solarisation which may be implemented through CAPEX or RESCO mode.
15. The DISCOMs are the designated implementing agencies for the Scheme. As per MNRE Guidelines, CFA at the rate 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 (30% could be through bank finance & 10% as own contribution).
16. In the meantime, State Government has allocated following no. of pumps under individual & feeder level solarisation to all four (4) DISCOMs, vide their letter No.8686 dated 12.09.2022.

DISCOM	Individual Grid connected Agricultural Pump Solarisation	No. of Feeder level solarisation pumps
TPCODL	6000	1500
TPSODL	6800	1700
TPNODL	20,000	5000
TPWODL	7200	1800
Total	40,000	10,000

It is estimated that about 78,000 individual pumps level solarisation (for all 4 DISCOMs) can be covered under 5 kW solarisation scheme against approval of only 40,000.

17. We further observe that most of the farmers in the state are very poor and unaware of the benefit of the scheme. Due to their poor financial condition, they will not be able to repay the principal & the interest on loan to be availed for solarisation of pumps. They are not even in a position to arrange 10% of the margin money to avail loan component of 30% for installation of solar plant under KUSUM-C. At present DISCOMs of Odisha are serving about 1.49 lakhs of irrigation consumer and tariffs under “irrigation

pumping & agriculture” is also quite low (Rs.1.50 per kWh & Rs.1.4 per kWh at LT & HT level respectively). It is apprehended that availability of power at such low tariff may not encourage farmer(s) to participate in the scheme, which could be a challenge for DISCOMs, DISCOMs being the implementing agency, need to take adequate initiatives and put effort to become facilitator for arranging loan on behalf of farmers and educate farmers and make them aware of the benefit of the Scheme.

18. We find that the petitioner-TPWODL, on behalf of all four (4) DISCOMs has proposed an innovative technical and financial model for successful implementation of the PM KUSUM-C scheme and has submitted that consents to participate in the scheme have already been obtained from more than 500 nos. of individual farmers. It is expected that more nos. farmers will join the scheme to avail the benefit once it is implemented.
19. The generated solar power will be injected at LT level and DISCOMs will purchase the power directly from the farmers at the rate approved by the Commission.
20. It is understood that when the scheme is implemented it will improve reliability of power supply during the day time in the rural area including power supply for irrigation purpose and in addition it will reduce cross subsidy burden on the high-end consumers. Another attribute of the scheme is that it will reduce distribution loss both at HT and LT level since farmers will inject surplus power due to solarisation of their pump at LT level. Farmers will garner additional income due to sale of surplus power produced from the solar panel installed in their farm land.
21. It has been brought to our notice that Government of Odisha pro-actively has already requested Agriculture and FE Department to keep budget provision for State Government part of subsidy of 30%. Moreover, this scheme will discourage the use of diesel pump set and encourage the use of Energy Efficient Solar driven pumps for irrigation purpose to replace inefficient pumps which are other missions of the Government both at State and Central level. To extend the mission, State Government has requested Government of India to sanction 1,08,800 nos. of individual pump level solarisation and 27,200 nos. of feeder level solarisation for the State of Odisha.
22. We have noted the suggestion/observation of another important stakeholder and Scheme formulator i.e. MNRE, Government of India which are follows:
 - MNRE agrees to the proposal of DISCOMs to purchase surplus solar power directly from farmers instead of GRIDCO;

- Basing on solar resource assessment exercise conducted by the National Institute of Wind Energy (NIWE), CUF of 17% is applicable for solar generation in Odisha and development in technology has resulted in more efficient PV modules resulting in higher CUF;
- The Levellised Cost of Energy (LCoE) should be determined on the basis of CUF of 17% and capital cost of Rs.2.67 Cr. per MW. The debt equity ratio should be maintained at 90:10 and interest rate on such debt as well as RoE should be assumed as 9%. Other parameters such as depreciation, receivable for debtors and interest on working capital etc. are not required in this case as these are not commercial project.
- The cost of solar plant should be taken as Rs.5.5 crore/MW as proposed by TPWODL due to escalation in cost of Solar PV plant.
- As per the notification, CFA of MNRE under the Scheme would be limited to the capacity twice the capacity of pump i.e. 4.47 kW for a 3 HP solarised pump. The solar PV capacity allowed should not be less than 5 kWp (i.e. 3HP) and may go up to 7.5 kWp. Solarisation of Pumps of capacity higher than 7.5 HP is also allowed, however, the CFA in such cases would be limited to the CFA applicable for pump of 7.5 HP in the respective State/UTs.
- The petitioner-TPWODL has worked out the capital cost to be funded by the farmer based on the present cost of solar plant discovered through competitive bidding(i.e. Rs.5.5 crore per MW against Rs.4.71 crore per MW as benchmark cost of MNRE). The petitioner has estimated availability of generation and surplus energy for injection to grid and revenue from sale of solar power to DISCOM(s) by the farmer(s) based on following assumptions:
 - Plant capacity: 5 kW (0.3 HPx0.746x2) as more than 80% of irrigation consumers are having 3 HP pump.
 - Solar power availability: 300 sunshine days in a year (against 365 days as suggested by MNRE) and effective days of utilization by farmer: 265 days (considering two crop cycles within a year).
 - CUF: 13.36%
 - Capital loan repayment period: 12 years
 - Rate of interest on Loan: < 9%
 - Load factor of irrigation & pumping category: 30%.

- Farmer's contribution: in the ratio of 90:10 (90% in form of loan and Govt assistance & 10% upfront contribution by farmer)
 - Cost at which solar power to be purchased from farmer's installation: Rs.3.12 per/kWh (i.e. Average BSP of GRIDCO)
 - Annual Maintenance Contract (AMC): Rs 1000 per kW from 6th year onwards (after completion of warranty period of 5 years) with escalation of 5% per year for subsequent years
 - Pump set is not covered under the scheme
23. We observe that as per the proposal of DISCOMs, the entire quantum of power from the solar plant of farmer will be purchased at the rate of average BSP of GRIDCO or at a rate as decided by the commission and the self-consumption of the farmer for irrigation purpose shall be billed at Retail Supply Rate (RST) as approved by the Commission from time to time. The revenue earned from sale of solar power shall be credited to the farmer's designated account on monthly basis by the DISCOM(s). As per Petitioner, the earning from sale of power is less than the amount required to pay the principal and interest on farmer's loan and AMC cost(after 5 years of warranty period) and hence shortfall in the account towards above expenses may be recovered in the ARR of respective DISCOMs as there will be adequate saving in Power Purchase Cost (PPC) by GRIDCO.
24. More generation will result in more revenue to the farmers and early closure of loan will result in early benefit to farmer(s). The DISCOM(s) will also gain in terms of reduction in AT&C loss by implementation of PM KUSUM –C Scheme.
25. During hearing, it was brought to notice that the DISCOMs are also in the process of identification of feeders for implementation of feeder level solarisation of grid connected agricultural pumps in consultation with willing farmers.
26. Petitioner has submitted that the land related constraint may not be there for installation of solar plant for irrigation purpose as the plant can be installed in farmers' agricultural land and farmer can continue his usual agricultural activities.
27. The petitioner has already discussed with various nationalized bank and expect the rate of interest on loan amount could be less than 9%.
28. In view of above observations and submission of petitioner & respondents, we are of the opinion that unless it is a win-win situation for the farmer(s) as well as to the

implementing agency, it would be a futile exercise and considering the benefit of PM KUSUM-C scheme, the commission issues following directives:

- a) The DISCOMs, the designated implementing agencies for the Scheme, shall be responsible for successful implementation of the Scheme.
- b) The farmer shall install the solar PV capacity twice the capacity of pump which shall not be more than 7.5 HP and shall not be less than 5 kWp (for 3HP solarised pump).
- c) Presently all Distribution licensees are purchasing power from GRIDCO, the state Designated Entity for bulk power purchase and sale of power to all four (4) Discom(s). However, under PM KUSUM-C Scheme, DISCOM(s), the implementing agency, will purchase entire quantum / surplus quantum of power directly from the solar installation of the farmer at LT level.
- d) The farmer shall execute a valid supply contract/agreement with licensee for implementation of KUSUM-C. The minimum energy consumption by the farmer from the solar installations has to be at annual load factor of 15% for effective use of solar energy. The farmer shall use the pumps for irrigation purpose during day time (from 5.00 AM to 6.00 PM) availing the generation from the solar installation which is the primary objective of the scheme to reduce cross subsidy and introduce Demand Side Management (DSM). The farmer shall be responsible to conserve the ground water.
- e) Farmers can arrange loan on their own or DISCOM(s) on behalf of farmer can arrange loan for solar plant installation(s).
- f) The solar power injected to the Grid shall be metered through Gross metering arrangement for useful life of the project (25 years). The DISCOMs shall raise the monthly bill to the farmers for energy consumed basing on actual meter reading at a rate approved by the Commission in the RST order. However, the minimum annual consumption of the farmer shall be at 15% load factor and accordingly reconciliation of bill shall be done at the end of the year.
- g) In case of farmer(s), who is availing the loan for solarisation of pump through DISCOM(s), the entire quantum of power will be purchased by the DISCOM(s) at the rate of Rs.3.60 per kWh. AMC shall be the responsibility of the Developer for the initial five years. DISCOM(s), on behalf of farmer(s), shall arrange/facilitate the AMC of the Project from 6th year.

- h) In case the farmer(s), who does not avail any loan for solarisation of pump through DISCOM(s), the solar power will be injected to the grid after self-consumption for irrigation purpose by the farmer and shall be metered through gross metering arrangement. The generated solar power shall be paid at the rate of Rs.3.60 per kWh and the amount will be transferred to farmer's account after adjustment of the amount due for self-consumption. The AMC of the Project shall be the responsibility of the farmer.
- i) The self-consumption of power by farmer for irrigation purpose will be billed at RST rate approved by the Commission from time to time.
- j) An ESCROW account for individual farmer [availing loan through DISCOM(s)] would be opened by the respective DISCOM(s).The revenue earned from sale of solar power by the farmer will be transferred to the ESCROW account (the farmer's designated account) on monthly basis after deduction of amount due for payment towards self-consumption for irrigation purpose. The components of principal, interest on loan amount and cost of Annual Maintenance Contract (AMC), which will be applicable after 5th year i.e. after completion of warranty period shall be paid from the fund available in this account. After repayment of loan amount, the entire amount will go to the farmer(s) after deduction of amount due for payment towards self-consumption of farmer(s) for irrigation purpose and cost of Annual Maintenance. Therefore, the net amount to be credited to the farmer's account shall be as follows:

Net Amount to be credited to Escrow account (the farmer's designated account)= [(Solar energy generated x tariff approved by Commission in this order i.e. Rs.3.60 per kWh) – (Energy consumed by farmer as per meter reading x approved RST for farmer) – (Interest on loan amount) –(Cost of AMC after five years)]

- k) In case the farmer(s) does not avail any loan for installation through DISCOM(s), opening of ESCROW account is not required. The net amount to be credited to the farmer's account shall be as follows:

Net Amount to be credited to the farmer = [(Solar energy generated x tariff approved by Commission in this order i.e. Rs.3.60 per kWh)- (Energy consumed by farmer as per meter reading x approved RST for farmer)]

- l) The solar power injected to the grid through gross metering arrangement shall be purchased by the DISCOMs at the tariff of **Rs.3.60 per kWh**. In addition to the above no other charges shall be payable to the farmer. The rate will remain

unchanged as long as RST under “irrigation pumping & agriculture” category of consumers is unchanged and the rate of interest on loan amount does not exceed 9%. If Retail Supply Tariff (RST) for above category of consumer and/or the interest rate on loan amount changes, DISCOM (s) shall approach the Commission for re-determination of Power Purchase Cost for solarised pump installations covered under PM KUSUM-C scheme.

- m) Whenever sufficient fund is not available in ESCROW account to meet expenses towards interest on loan amount and AMC cost, in such case the deficit amount shall be paid by the licensee / DISCOM(s) from the receipts on account of Cross Subsidy Surcharge and Non-Tariff income of the respective DISCOM(s) as there will be adequate saving in Power Purchase Cost (PPC) of GRIDCO consequent to implementation of the scheme in addition to other benefits. Moreover, the scheme will not contribute towards increase in RST.
- n) More generation will result in more revenue to the farmers and early closure of loan resulting in early benefit to farmer(s). The DISCOM(s) will also gain in terms of reduction in AT&C loss by implementation of PM KUSUM –C Scheme.
- o) In case farmer [availing loan through DISCOM(s)] wants to repay the balance amount of loan at any point of time in one instalment, then he will be entitled for 10% discount of the balance amount which will be paid by DISCOM(s) from the receipts on account of Cross Subsidy Surcharge and Non-Tariff income for early closure of loan resulting in early benefit to farmer(s).
- p) The solar insolation level and hence CUF of solar installation in western part is expected to be higher compared to other parts of Odisha. Any additional income due to increase in generation over & above the assumed CUF (>17%) shall be adjusted against payment towards the Principal amount of loan so that interest burden will be reduced in subsequent months, and the loan amount will be cleared / paid early and ultimately farmer will get early benefit out of this arrangement. Similarly, any reduction in income due to decrease in generation resulting in reduction in CUF (<17%), shall be paid by the DISCOM(s) (for farmers’ availing loan through DISCOM) from the receipts on account of Cross Subsidy Surcharge and Non-Tariff income of the respective DISCOM(s), which will be limited to interest on loan amount, discount for early closure of loan amount and cost of AMC. The farmer (s) can also clear /pay the loan amount early to get benefit out of this scheme.

- q) The Petitioner-DISCOMs shall also negotiate with bank to avail loan at reasonable rate of interest to reduce the contribution of / burden on the farmer(s). The term / duration of loan shall not exceed 12 years.
- r) The solar installation shall be insured against the natural calamities and cost related to it shall be borne by the developer of the solar plant.
- s) MNRE has already issued updated specifications for stand-alone solar water pumping system; vide circular dated 17.07.2019 (as amended from time to time). These specifications also cover specifications for solar modules, MMS and other balance of system. Implementing agency shall ensure that the systems installed under this Programme shall meet technical specification and construction standards as specified by BIS and MNRE from time to time including proper smart metering, communication hardware, mandatory AMC and creation of remote monitoring system to monitor performance of the system post-installation etc. For grid-tied inverters, applicable BIS/MNRE specifications shall be followed. Protection equipment including Surge Protection Device (SPD), lightning arrestors, earthing, MCB/MCCB/RCCB, etc., shall be provided as per standard industry practice.
- t) Exercising power conferred under Section 86(2) of the Electricity Act, GoO is advised to consider waiver of ED for consumption of power from solar installation linked to individual pump level or feeder level solarisation in line with solar policy of GoO so that financial burden on farmer gets reduced.
- u) The GoO is advised to take necessary action to extend grant/subsidy of 30% as per guidelines of MNRE for the PM KUSUM-C Scheme.
- v) The DISCOMs, the implementing agencies, shall take necessary steps for wide circulation/publication of the Scheme through their own people by organising village level meetings, through hoardings, leaf let, electronic & print media, DISCOMs' website etc. and can engage NGOs or other agency(ies) so that maximum no. of farmers get the benefit of the Scheme. Ultimately the implementing agency shall take all measures for successful implementation of the project.
- w) DISCOMs shall also take initiatives for identification of feeders for implementation of feeder level solarisation of grid connected agricultural pumps in consultation with willing farmers.

- x) The implementing agency shall maintain proper record of energy generated, injected/sold to DISCOMs & consumed by the farmers(s), rate of interest, payment of principal & interest on loan amount and AMC cost etc., which can be availed as and when required.
- y) The model PPA to be executed with farmer(s) (common to all four DISCOMs) as approved and attached to this order shall be uniformly applied across the DISCOMs. DISCOM may include any additional provision in PPA in consultation with farmer(s) for successful implementation of the Scheme with intimation to the Commission.
29. The Commission considers the following parameters for estimation of the capital cost, the availability of generation, surplus solar energy for injection to grid and revenue earned from sale of solar power by the farmer(s) to DISCOM(s) based on the suggestions of MNRE and the Petitioner-DISCOMs:
- Plant capacity: 5 kW (0.3 HPx0.746x2) and can go upto 7.5kW to avail CFA (as more than 80% of irrigation consumers are having 3 HP pump)
 - Solar power availability: 300 sunshine days in a year and effective days of utilization by farmer: 240 days (considering two crop cycles within a year).
 - CUF: 17%
 - Benchmark cost of MNRE: Rs.4.71 crore per MW
 - Cost of solar plant: Rs.5.5 crore per MW
 - Capital loan repayment period: 12 years
 - Rate of interest on capital loan: < 9%
 - Load factor of irrigation & pumping category: 15%.
 - CFA: at the rate of 30% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component
 - Assistance from GoO (grant/subsidy): at the rate of 30%
 - Farmer's contribution: in the ratio of 90:10 (90% in form of loan & Govt. assistance and 10% upfront contribution by farmer)
 - Cost at which solar power to be purchased from farmer's installation: Rs.3.60 per/kWh
 - AMC: Rs 1000 per kW from 6th year onwards (after completion of warranty period of 5 years) with escalation at the rate of 5.72% per year for subsequent years
 - Pump set is not covered under the scheme
30. The Commission is of the opinion that the implementation of the Scheme will benefit the Distribution system as the generation at the door step will ensure reliable day time power supply for irrigation purpose resulting in AT&C loss including collection cost, reduction in Cross Subsidy burden on subsidising consumers (high-end consumers) and

improve overall financial health of DISCOMs. The Scheme will introduce Demand Side Management (DSM) by shifting load to off peak hours, promote energy conservation and reduce dependency of farmer on the grid, save ground water and reduce carbon foot print. The overall Power Purchase Cost will also get reduced. The green initiative for pump level solarization would contribute to RPO of the State and would also save exploitation of ground water & preserve ground water level. Ultimately there will be positive impact on the Environment, tariff of high-end consumers and financial health of DISCOMs.

31. A model PPA as approved by this Commission, is enclosed herewith for due guidance.
32. With above observations and directions, the Case No. 41 of 2022 and Case No.62 of 2022 are disposed of.

Sd/-
(S. K. Ray Mohapatra)
Member

Sd/-
(G. Mohapatra)
Officiating Chairperson

MODEL PPA APPROVED BY THE COMMISSION

(The DISCOMs may modify the PPA basing on the requirement strictly as per the order of the Commission in Case Nos. 41 & 62/2022)

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

This Power Purchase Agreement is entered into at (place).... on this.... Day of between(Full name of the **DISCOM**)..... a Joint Venture between Tata Power and the Government of Odisha with its registered office located at Bhubaneswar, Odisha, represented by..... here in after referred to as the "**(Name of DISCOM)**", (which expression shall, unless repugnant to the context *or* meaning thereof, includes its successors and permitted assigns), as party of the first part

AND

.....(Name), an agricultural consumer of (**Name of DISCOM**) residing at (address), having his land and grid connected pump set at Village..... GP Block District Electrical Section..... Subdivision & Division..... hereinafter, referred to as the "farmer"(which expression shall, unless repugnant to the context or meaning thereof, include his/her 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/her grid power consumption on account of irrigation and increase his/her income through sale of unutilized solar power to DISCOM, is desirous to connect the said Solar Power Plant to the LT Distribution system of the latter as per relevant orders of the Odisha Electricity Regulatory Commission (OERC).
- b. As per provisions of the scheme, the farmer intends to install a solar Power Plant of kWp capacity on his/her agricultural land situated at... having holding No khata No patta no..... under Sub-Division of (Name of DISCOM).
- c. The farmer intends to sell the un-utilized solar power generated from the Solar Power Plant on gross 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. (Name of the DISCOM) intends to purchase the energy, generated by such solar power plant as per mechanism and at the tariff determined by the OERC vide their order dated _____ passed in Case No. _____.

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

1. Technical and Inter-connection Requirements:

Farmer shall ensure his/her 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 (Name of the DISCOM)'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 connection with (Name of DISCOM)'s distribution system,
- 1.4 Provide external manual isolation mechanism with suitable locking facility, so that SolarPower Plant will not back-feed into the (Name of DISCOM)'s network in case of power outage of the (Name of DISCOM)'s distribution system, and it shall be accessible for (Name of DISCOM) operation, 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, Government of India 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/her 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 signing of the PPA.

2. Safety:

The farmer shall comply with the following safety measures:

- 2.1 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 (Name of DISCOM)'s distribution system.
- 2.2 If the farmer's solar power plant either, causes damage to and/or produces adverse effects on the other consumers' or (Name of DISCOM)'s assets, the farmer will disconnect the solar power plant immediately, from the distribution system, by himself or upon directions from the (Name of DISCOM) and rectify the same at his own cost before reconnection.

3. Clearances and Approvals

The Farmer shall obtain (Name of DISCOM)'s approval and other statutory approvals and clearances before connecting the solar power plant to the distribution system.

4. Access and Disconnection

- 4.1 (Name of DISCOM) 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 (Name of DISCOM) 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 (Name of DISCOM) shall calculate the cost of power generated during the month with OERC approved rate i.e Rs.per kWh and energy consumed during the month as per norms fixed by OERC shall be deducted at the rate of retail supply tariff from the generation cost. The balance amount so arrived shall be remitted to designated account (escrow account) of the farmer. The settlement of energy shall be made

on quarterly basis. The cost of generation as determined by the OERC in the Order dated... .., will hold good for a period of 25 years or such period of time as directed.

- ii) The farmer, shall pay the Electricity duty and other statutory levies, pertaining to solar power generation/consumption, as may be levied from time to time.
- iii) The Farmer shall not have any claim for compensation, if the Solar power generated by his/her solar power plant could not be absorbed by the distribution system due to failure of power supply in the grid/ distribution system for the reasons, such as line clear, load shedding and line faults, whatsoever. However, (Name of DISCOM) will take adequate care to make the lines fully available during sunshine hours.

7. Metering:

7.1 The Vendor on behalf of the farmer, shall install two nos. of smart meters – one at the generation side of solar power plant to measure solar power generation, the other one a 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 cost of such meter and installation charges shall be included in the capital cost of the solar power plant. The bi-directional meter, shall comply with the Central Electricity Authority (Installation and operation of meters) Regulations, 2006 and shall 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 (Name of DISCOM) shall issue monthly/ quarterly electricity bill for the energy so consumed after adjustment of the generation cost. Balance amount shall be

payable to farmer's bank account directly if the solar plant is installed on self-financing model.

- 8.2 If the solar plant is installed through financing mechanism, the mechanism as per para 8.1 shall be followed. But the amount credited to the designated account (loan/escrow account of the farmer) shall be utilized towards principal repayment, payment of interest on loan and future AMC cost after five years. However, in case of any shortfall towards repayment of principal, interest and AMC, the shortfall amount limited to interest cost and AMC only shall be credited to the designated account by the (Name of DISCOM). The farmer shall have the option once in a year to withdraw the residual amount, if any, after recovery of principal, interest and AMC. However, the farmer may utilise the surplus amount if any, arising during the year, towards early repayment of loan amount.
- 8.3 In case the farmer repay the balance amount of loan in one installment at any point of time within the period of loan term, then the farmer shall be entitled to avail 10% discount on the balance amount of loan, which shall be credited by (Name of DISCOM) to the designated account of the farmer.
- 8.4 This scheme is to promote self-consumption of energy generated through individual pump solarization. The DISCOM shall raise the monthly/quarterly bill to the farmers for the energy consumed basing upon actual meter reading, however a yearly reconciliation has to be made to the extent of energy generated by the farmer through the solar system and self-consumption so made.
- 8.5 On completion of the loan repayment the cost of power generated after adjustment of self-consumption cost shall be remitted to the designated account. The farmer has to meet the AMC cost mandatorily out of the amount so remitted and balance amount may be utilized for its own.

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 hereunder.
- 9.2 If the (Name of DISCOM) commits any breach of the terms of the Agreement, Farmer shall serve a written notice specifying the breach and calling upon the

(Name of DISCOM) 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 (Name of DISCOM) fails to remedy/ rectify the same.

9.3 If the Farmer commits any breach of the terms of the Agreement, (Name of DISCOM) 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 (Name of the DISCOM) 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 (Name of DISCOM).

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 and in case of failure to settle the issue through mutual negotiation it shall be done through normal Grievance Redressal Forum (GRF) established for consumers under the Electricity Act, 2003.

IN WITNESS WHERE OF, the Farmer and the (Name of DISCOM) have entered into this Agreement executed as of the date and they are first set forth above

For AND ON BEHALF OF (Name of DISCOM)	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: