

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

**Present: Shri U. N. Behera, Chairperson
Shri S. K. Parhi, Member**

Case No. 82/2018

OREDA

Vrs.

GRIDCO & Others

..... Petitioner

..... Respondents

In the matter of: **Application under S. 86(1)(a) for determination of Feed-In-Tariff for sale of Solar Power to GRIDCO/DISCOMs by Farmers/co-operatives/Panchayats/other Developers who would set up Decentralised Ground Mounted Grid-connected Solar Power Plants of capacities ranging between 0.5 – 2.0 MW in their barren lands under the ‘Kisan Urja Suraksha Evam Utthan Mahabhiyan’ (KUSUM) Scheme launched by the Ministry of New and Renewable Energy (MNRE), Govt. of India.**

For Petitioner: Mr. Ashok Kumar Choudhury, Dy. Director (Technical-II), Ms. Sujata Das, Programme Assistant, OREDA.

For Respondents: Mr.S K Mohanty, GM, OPTCL, Mr. Laxminarayan Padhi, Sr. Scientist, S & T Department, GoO, Mr.S S Nayak, CGM(PP), GRIDCO, Sasmita Patajoshi, AGM(RE), GRIDCO, Mr. P K Mishra, CLD, SLDC, Ms. S Pattanaik, Dy. Manager (Legal), DoE, GoO are present. Nobody is present on behalf of GEDCOL, CESU, NESCO Utility, SOUTHCO Utility and WESCO Utility.

ORDER

Date of hearing: 20.08.2019

Date of order:20.12.2019

1. This petition has been filed by OREDA before the commission to determine a suitable tariff for purchase of solar power by GRIDCO/DISCOMs from solar power plants having installed capacity ranging between 0.5MW-2.0MW developed by Farmers/Cooperatives/Panchayats/other Developers in their barren lands and power evacuated at 33/11KV rural substations within a radius of 5KM from the point of generation under the ‘Kisan Urja Suraksha Evam Utthan Mahabhiyan’ (KUSUM) Scheme launched by the Ministry of New and Renewable Energy (MNRE), Govt. of India. The petitioner stated that the Ministry of New and Renewable Energy (MNRE), Govt. of India has formulated the scheme KUSUM with a objective of promoting the following:

- a. Decentralized Ground Mounted Grid Connected Solar Power Plants of capacities ranging between 0.5-2.0 MW through Farmers/ Cooperatives/ Panchayats/ other Developers on their barren/unused lands.
 - b. Stand-alone off-grid Solar water Pumps to fulfil irrigation need of farmers not connected to the grid.
 - c. Solarization of existing grid connected agricultural pumps to make farmers independent of grid supply and also enable them to sell surplus power to DISCOMs.
 - d. Solarization of Tube wells, Lift Irrigation Projects, Drinking water projects in Government sector;
2. The petitioner further stated that the other features of KUSUM for the implementation of the scheme in the state include the following:
 - The scheme is proposed to be implemented during FY 2018-19 to FY 2021-22;
 - The Ground Mounted Grid Connected Solar Power Plants as mentioned above will be installed within 5KM radius of 33/11 KVsub-stations in rural areas;
 - The Solar Power generated from these plants will be purchased by DISCOMs at Feed-In-Tariff(FIT) as determined by the respective State Electricity Regulatory Commissions;
 - Government of India will provide Procurement Based Incentive (PBI) to the DISCOMs @ Rs.0.50/kWh or Rs.8.25 Lakhs/MW/Year, whichever is lower for buying solar power under the scheme over a period of 6 years;
3. The petitioner also stated that the Government of Odisha is inclined to implement KUSUM in the state which apart from meeting the objectives of the scheme is likely to support generation of more solar power leading to tail end voltage improvement and fulfilling RPOs of GRIDCO. To discuss the implementation modalities of the scheme an inter-departmental meeting was held under the Chairmanship of Principal Secretary, Science and Technology Department, Govt. Of Odisha, on 22.11.2018 which was attended by the representative of Energy Department, GRIDCO, GEDCOL and OREDA. In the said meeting the following was resolved.
 - a. OREDA, as the state Nodal Agency for Renewable Energy shall implement KUSUM in the state;

- b. Pending formal demand aggregation the Ministry may be requested for a preliminary target of 200 MW of solar power under the programme;
 - c. Determination of Feed-In-Tariff is a must without which the scheme cannot be implemented in the State.
 - d. The Suo Motto draft tariff petition of the Commission for the third control period stipulates purchase of solar power only through the bidding route and as such does not specify any Feed-In-Tariff.
 - e. OREDA to file a petition before the Odisha Electricity Regulatory Commission to determine a Feed-in-Tariff (FIT) for purchase of power from the solar power plants installed under the scheme;
4. Citing the technical and financial parameters determined by the Commission for the second control period and the prevailing bench mark costs fixed by the MNRE, GoI for grid connected solar power plant of 0.5 MW capacity the petitioner has proposed an indicative tariff of Rs 5.45/kwh.
5. The petitioner therefore prayed to the commission to determine a suitable Feed-In-Tariff for the purchase of solar power by GRIDCO/DISCOMs from such power plants as in absence of such tariff the scheme will become non-implementable and farmers of Odisha cannot avail the advantage of this scheme. The determination of such Feed-In-Tariff will facilitate demand aggregation by OREDA through Expressions of Interest and proposal to MNRE, GoI to fix annual targets. Power procured by GRIDCO from these renewable plants will be accounted towards GRIDCO's RPO targets. Commission may decide suitable Feed-in-Tariff for the generated power from such renewable power plants by GRIDCO by conducting prudent check.
6. The respondent CESU in its reply filed before the commission has stated the following:
 - Under the existing Bulk Supply Agreements with GRIDCO Ltd. the Distribution Utilities of Odisha are under obligation to purchase power solely from GRIDCO, as it is the designated agency to purchase power from all generators of the State.
 - As per Odisha renewable Energy Policy, 2016 GRIDCO shall have the first right of refusal to procure power from the solar projects at the tariff discovered through competitive bidding process with due approval from OERC.

- At present all the renewable power purchase obligation lies with GRIDCO following the single buyer model. If power purchase obligation regarding solar power will lie with the DISCOM, the tariff may be determined by the Commission, considering the viability of DISCOM, through hearing process.
 - As per different articles published in current financial year by different e-media regarding solar tariff, the solar power tariff has been discovered below Rs.3.00 per Kwh. KERC announced a revised tariff of Rs.3.08 per unit for rooftop solar plants for domestic consumers with capital subsidy. The auctions conducted in Rajasthan, Gujarat and Karnataka have fetched competitive prices of Rs.2.44, Rs.2.65 and Rs.2.95 per unit respectively.
7. CESU further submitted the Generic power purchase rates approved in the tariff order of different Regulatory Commissions regarding solar tariff which are as follows:
- **Tamil Nadu Electricity Regulatory Commission-** Solar power tariff is Rs.3.11 per unit for Solar PV projects for the FY 2018-19.
 - **Karnataka Electricity Regulatory Commission-** The generic tariff for grid connected solar projects of less than 5 MW is Ps 3.05 per unit and for grid connected solar projects of less than 1 MW is Rs 2.67 per unit with capital subsidy for the FY-2018-19.
 - **Maharashtra Electricity Regulatory Commission-** The generic tariff for Solar Roof top PV projects is Rs 3.22 for the FY 2018-19.
8. CESU further stated that that the commission may determine feed-in-tariff considering the fact that India is witnessing a downward trend of solar tariff discovered through competitive bidding process and in the recent past it is discovered as low as Rs.2.50 per unit. A combination of factors of low module prices, loans at cheap rates of interest, location of projects and return spread over an average of 25 years have lead to continuously decreasing tariff rates to the extent of Rs.2.44 per unit in year 2018.
9. CESU suggested that the feed-in-tariff may be considered to be equal to Average Power Purchase Cost (APPC) i.e. Rs.2.59 per unit for the FY 2018-19 as approved by the Commission or may be equal to Bulk Supply Price of GRIDCO Ltd for CESU i.e. Rs.2.74 per unit as has been decided for the FY- 2018-19. In case the determined feed-in-tariff exceeds the power purchase cost of CESU from GRIDCO (Bulk Supply Price of GRIDCO Ltd of the relevant year), for sustainability of CESU, either this should be passed to the retail supply tariff or the price of BSP of GRIDCO should match with

solar feed-in-tariff. However in such evaluation, the additional Procurement Base Incentive (PBI) should also be a part for compensating the difference as has been done by Government of India. CESU also submitted that separate feeders may be constructed where the generated solar power may be directly injected into the 33/11KV S/S for better utilization of power, safety and system stability.

10. **Department of Science & Technology, GoO in its reply to the petition** suggest the following:

- The ground mounted grid connected solar power plants as mentioned above will be installed within 5 KM radius of 33/11 KV substations in rural areas.
- The solar power generated from these plants will be purchased by DISCOMs at Feed-in-Tariff (FIT) as determined by the respective State Electricity Regulatory Commission.

11. The reply further stated that an inter-departmental meeting was held under the Chairmanship of Principal Secretary, S & T Dept. Govt. of Odisha on 22.11.18 which was attended by representative of Energy Department, Govt. of Odisha, GRIDCO, GEDCOL and OREDA where it was decided that OREDA will approach the OERC for the determination of Feed-in-tariff (FIT). OREDA had proposed an indicative tariff of Rs. 5.45/ KWh. The department also agrees with the proposed indicative tariff of Rs.5.45/KWh.

12. Respondent GRIDCO in its reply stated that the KUSUM Scheme will be implemented during FY 2018-19 to FY 2021-22 and the solar power procured for the state through that scheme can be accounted towards the RPO of GRIDCO. As per the Scheme document, as the Ground Mounted Grid- connected Solar Power Plants of capacities 0.5-2.0 MW will be installed within 5 KM radius of any 33/ 11 kV sub-stations, the proposed Solar Power Projects are likely to be connected at 11 kV voltage level only.

13. GRIDCO stated that in the recent period, around 300 nos. of 33/ 11 kV sub-stations were commissioned in the state under a state scheme and another 200 nos. are in the construction stage, totalling to 500 nos. of 33/ 11 kV sub-stations, which will contribute towards the successful implementation of KUSUM scheme in the state. As per the KUSUM Scheme document, the solar power from the projects with capacities 0.5-2.0 MW will be procured at the Feed-In-Tariff to be determined by the OERC, where the procuring DISCOM will get Procurement Based Incentive (PBI) of Rs. 0.50/kWh or Rs. 8.25 Lakhs/MW/year whichever is lower over a period of 6 years.

14. GRIDCO further submitted that they have executed PPA with M/s Aditya Birla Renewables Ltd. on dated 28.12.2018 to avail 75 MW solar power to be implemented in the state at the lowest cost of Rs. 2.79/kWh factoring the actual cost towards Safe Guard Duty (SGD). GRIDCO has executed another Power Sale Agreement with SECI on dated 21.08.2018 to avail 300 MW solar power at a tariff of Rs. 2.57/kWh and also GRIDCO has given in-principle approval to SECI to avail another 200 MW solar power at an applicable tariff of Rs. 2.65/kwh for which Power Sale Agreement will be executed soon with SECI.
15. GRIDCO contended that at present, the solar power is available with a tariff of around Rs.2.50 to Rs.3.00 per kWh. GRIDCO may purchase up to 100 MW solar power under the above said KUSUM Scheme if the Feed-In-Tariff will be up to Rs.3.00 per kWh. The Feed-In-Tariff of Rs.5.45/kWh proposed by OREDA is exorbitantly high and should not be considered.
16. GRIDCO therefore prayed for finalizing the Feed-In-Tariff for the procurement of solar power in the state under KUSUM Scheme of MNRE up to Rs 3.00 /- kWh.
17. Respondent GEDCOL in its reply made the following submissions:
 - GEDCOL has been designated as the State Nodal Agency for development of all on- grid solar & hybrid power projects of 1 (one) MW and above capacity as per Odisha Renewable Energy Policy, 2016 and pursuant notification by the Department of Energy, Government of Odisha.
 - Several small scale investors, including land owners, farmers and third party developers are approaching GEDCOL and they are exploring the avenues of developing small grid-connected solar power plants in the range of 1-2 MW.
 - The Ministry of New & Renewable Energy has come up with the new scheme KUSUM for farmers for installation of solar pumps and grid connected solar power plants. MNRE has also issued draft guidelines for implementation of the Scheme (i.e. Component-A of KUSUM) on a pilot basis for 1000 MW capacity of ground mounted / stilt mounted plants, which can be from solar or any other renewable energy source till 31 Dec. 2019.
 - Government of India will provide a Procurement Based Incentive (PBI) of Rs.0.40/kWh or Rs.6.60 lakh/MW/year whichever is lower to the DISCOMs (GRIDCO in Odisha) for buying renewable power under the scheme. PBI will

be applicable for a period of 5 years from plant COD, i.e. maximum PBI will be Rs.33.0 lakh/MW.

- The discovered tariff rates found out by GEDCOL through competitive bidding for 10 MW grid connected ground mounted solar capacity was Rs.4.50/KWh in Jan., 2017 and in case of GRIDCO it reduced to Rs. 2.79/kWh in tariff based competitive bidding in July, 2018 for 75 MW capacity.
18. This petition has been filed by OREDA to determine a suitable tariff for purchase of solar power by GRIDCO/DISCOMs from power plants ranging between 0.5MW-2.0MW installed by Farmers/Cooperatives/Panchayats /other Developers in their barren lands and evacuated at 33/11KV rural substations within a radius of 5KM from the point of generation under the ‘Kisan Urja Suraksha Evam Utthan Mahabhiyan’ (KUSUM) Scheme launched by the Ministry of New and Renewable Energy (MNRE), Govt. of India. The objective of KUSUM scheme is to promote decentralized Ground Mounted Grid Connected Solar Power Plants, stand-alone off-grid Solar water Pumps to fulfill irrigation need of farmers connected to the grid. The scheme also aims at solarization of existing grid connected agricultural pumps to make farmers independent of grid supply and also enable them to sell surplus power to DISCOMs. This will also help in solarization of Tube wells, Lift Irrigation Projects and Drinking water projects in Government sector.
19. During the hearing the commission in its interim order dated 17.05.2019 had directed OREDA and GRIDCO to sit together and resolve the issues in this matter. Now GRIDCO has submitted that in compliance to the directions of the Commission a meeting was convened by GRIDCO with OREDA and GEDCOL on 14th August, 2019 under the Chairmanship of Commissioner-cum-Secretary, Department of Energy, Govt. of Odisha in presence of Chief Executive, OREDA for finalization of the levelled tariff for procurement of power by GRIDCO under KUSUM scheme. Highlights of the decisions are as follows:
- The pre-determined levelised power purchase cost as envisaged in the scheme is to be decided to attract investment by the Renewable Power Generators, keeping in view the small capacities of the plants to be set up by the farmers.
 - As the DISCOMs will have to notify sub-station wise surplus capacity that can be fed from such RE power plants. A technical committee will be constituted with representatives from DISCOMs, OPTCL and GRIDCO which will finalise the

mechanism of determining the surplus capacity available with the 33/11 kV sub-stations of the state and intimate the same to OREDA.

- For implementation of KUSUM scheme in the state, OREDA will be the State Nodal Agency which will be responsible for inviting Expression of Interest as well as processing and placement of the same before the STC for allocation of projects.
- GRIDCO on behalf of the DISCOMs will act as the aggregator for determining substation wise power injection capacities, connectivity of the RE projects, purchase of power etc.
- In order to make the levelled Tariff more attractive for smaller capacities (0.5-2 MW) projects in KUSUM scheme, GRIDCO (DISCOMs) agreed to pass on the Procurement Based Incentive (PBI) to be received from MNRE @Rs.0.40/Kwh or Rs.6.6 lakh per MW, whichever is less, for a period of five years from CoD.
- For making the scheme more farmer-centric, a proposal will also be submitted to State Government for consideration of additional Generation Based Incentive of Rs.0.40 per kWh for the entire life period of the projects so that the farmers can get Rs.3.80 per kWh for the first 5 years and thereafter Rs.3.40/- per kWh for the balance 20 years, with a levelled tariff of Rs.3.48 per kWh.
- Without any incentive of the State Government, the tariff will be Rs.3.40 per kWh for the first 5 years and thereafter Rs.3.00/- per kWh for the balance 20 years, with the levelled tariff of Rs.3.08 per kWh.
- This tariff will also be applicable for export of excess power to the GRID connected solar pumps up to 7.5 HP capacities as envisaged under component-C of the scheme.
- The cost of up-gradation of sub-station capacity required if any under the scheme will be met out of the Odisha Renewable Energy Fund (OREDF) created under Renewable Energy Policy-2016 or any other schemes of the Govt.
- For the activities of the State Nodal Agency as detailed in the MNRE Office Memorandum dt.22.07.2019, OREDA is entitled for a service charge of Rs.25,000 per MW after commissioning of a project. State Government will also be requested to consider a matching incentive for OREDA from the Odisha Renewable Energy Fund (OREDF) created under Renewable Energy Policy-2016.

20. The Respondent GRIDCO therefore made a prayer to consider finalizing the Levelled Tariff for the procurement of solar power in the state under KUSUM Scheme of MNRE up to Rs.3.08/kWh without any incentive of the State Govt. and Rs.3.48 with GBI incentive of Rs.0.40/kWh for entire life period (25 years) of the project.
21. The Commission after going through the petition of OREDA and replies of the respondents GRIDCO, CESU, Government of Odisha and GEDCOL observe that this scheme KUSUM can bring about a transformational change in the lives of the farmers having huge environmental benefit by reducing the carbon footprint. The Commission in this case is required to notify a Feed in Tariff (FiT) for these projects for the complete life of the project so that the developer of the project is assured of the return on its investment.
22. The Commission in its order dated 16.02.2019 in Case No. 46/2018 has not determined the tariff for solar power plants and directed that all the procurement of solar power by GRIDCO be made through competitive route only. It is observed in the recent times that the solar tariff across the country has gone down considerably which is mostly discovered through competitive bidding process. In the recent times in Odisha, GRIDCO discovered a price of Rs.2.79 per Kwh for a 75 MW solar power plant to be commissioned in Odisha. The impact of the safeguard duty on the panels as imposed by the Govt. of India has not been added to the discovered rate which is likely to go up due to such duty. The major component for the calculation of tariff is the capital cost. It is seen that due to competitiveness and improvement in the technology for panel manufacturing, the capital cost for the solar projects has come down substantially during the recent times. Due to such rapid decline in the capital cost the Commission has consciously desisted itself from determining generic tariff for solar plants whether ground mounted or roof top plants. The solar power pumps are being promoted by Govt. of India with a view to empowering farmers towards self sufficiency in the power procurement.
23. The Commission, in order to arrive at a reasonable FiT asked OREDA and GRIDCO to meet and decide on a mutually agreed tariff. As per the mutually agreed tariff it was decided that farmers will get Rs.3.40 per Kwh for first five years and thereafter Rs.3.00 per Kwh for further 20 years with levelised tariff of Rs.3.08 per Kwh for 25 years.
24. The Commission finds that the tariff discovered on mutual agreement is reasonable. The Commission approves the agreed rate of Rs.3.08 per Kwh as levelised tariff (Feed

in tariff) for 25 years. The Procurement Based Incentive to be received from Government, if any, will be passed on to the developer.

25. Accordingly the case is disposed of.

Sd/-
(S. K. Parhi)
Member

Sd/-
(U. N. Behera)
Chairperson