

**TAMIL NADU ELECTRICITY REGULATORY COMMISSION**  
**(Constituted under section 82 (1) of the Electricity Act, 2003)**  
**(Central Act 36 of 2003)**

**PRESENT:**

**ThiruM.Chandrasekar**

**.... Chairman**

**and**

**ThiruK.Venkatasamy**

**.... Member (Legal)**

**M.P. No.31 of 2021**

Tamil Nadu Energy Development Agency (TEDA)  
(Represented by the General Manager)  
EVK SampathMaaligai, 5<sup>th</sup> Floor  
No.68, College Road  
Chennai – 600 006.

**..... Petitioner**  
**(Represented by its**  
**General Manager)**

Tamil Nadu Generation and Distribution  
Corporation Limited (TANGEDCO)  
(Represented by Chief Engineer  
Non Conventional Energy Resources  
144, Anna Salai  
Chennai – 600 002.

**... Petitioner**  
**(Thiru.M.Gopinathan,**  
**Standing Counsel for TANGEDCO)**

**Dates of hearing : 31-08-2021 and 05-10-2021**

**Date of Order : 12-10-2021**

The M.P.No.31 of 2021 came up for final hearing on 05-10-2021. The Commission upon perusal of the petition and connected records and after hearing the submissions of the petitioner hereby makes the following:-

## ORDER

### **1.0 Prayer of the Petitioner in M.P. No. 31 of 2021**

**1.1** The prayer of the Petitioner in M.P. No. 31 of 2021 is:

- (a) To approve a tariff of Rs.2.93 per kWh for the gross solar energy generated under the KUSUM scheme –Component C Agricultural solar Pump scheme in 20,000 pumpsets.
- (b) To approve a revised incentive at Rs.1.00 per kWh for the net exported energy.
- (c) To pass any other order as deems fit and appropriate considering the special nature of the project.

### **2.0 Facts of the case**

**2.1** Ministry of New and Renewable Energy, Government of India launched the PradhanMantriKisanUrjaSurakshaevemUtthanMahabhiyan (PM KUSUM) scheme during 2019 for farmers to promote distributed solar for agriculture and released guidelines providing broad implementation framework of the scheme. The scheme has three Components A, B and C of which 'Component C' is for Solarisation of 10 lakh Grid connected agriculture pumps.

**2.2** The KUSUM-C scheme launched by MNRE is to be funded as follows:

- (a) Capital subsidy by Government of India: 30% of capital cost (applicable on the actual capital cost or the MNRE benchmark cost, whichever is lower);
- (b) Capital subsidy by Government of Tamil Nadu: 30% of capital cost (applicable on the actual capital cost or the MNRE benchmark cost, whichever is lower);

(c) Contribution by participating Farmers: the net capital cost after subsidies.

**2.3** Tamil Nadu Government passed an order vide G.O.(D) No.39 Energy (E1)Department dated 21-08-2019 for the implementation of Component 'C' of the KUSUM scheme. The G.O states that "*the Government after careful examination accord Administrative Sanction for production of Solar Energy by the Farmers in their own land for self consumption and commercial sale to Tamil Nadu Generation and Distribution Corporation and other buyers in Tamil Nadu*".

**2.4** Tamil Nadu Government passed an order vide G.O.(Ms) No.69 dated 01-10-2019 in which it is stated that "The Government after careful examination designate the Tamil Nadu Energy Development Agency as the implementing agency for implementing 'Component C' (Solarisation of Grid Connected Agriculture Pumps) of the MNRE KUSUM scheme across the State of Tamil Nadu".

**2.5** Ministry of New and Renewable Energy (MNRE), Government of India accorded sanction for solarisation of 20,000 numbers of grid connected agricultural pumps to Tamil Nadu Energy Development Agency (TEDA) under Component-C of the KUSUM scheme vide letter number F.No.32/54/2018-SPV Division dated 03-10-2019.

**2.6** On receipt of required sanctions for implementation of the 'Component C' of the KUSUM scheme, Tamil Nadu Development Agency (TEDA) had filed a Miscellaneous petition numbered M.P No.2 of 2020 with the following prayer:

- (a) To accord approval for the proposed implementation of the KUSUM (Component C) Agricultural Solar Pump Scheme in 20,000 pump sets with 7.5 H.P load by installing 11 kW solar PV plant in each of the pump sets.
- (b) To approve a maximum / bench mark tariff of Rs.4.53 per unit further modified to Rs.3.08 per unit (which includes Rs. 1.00 incentive to farmer for net energy injected to the grid) for the gross unit generated by the proposed solar PV plant erected under this scheme.
- (c) To permit the TEDA, the RESCO for the project, to finalize the investment proposal or tariff based reverse bidding process and submit the final tariff rate for the approval of the Commission.
- (d) To approve to ensure “must-run” status by TANGEDCO to the solarised feeders of the scheme and keep such feeders ‘ON’ during sunshine hours of daytime.
- (e) To approve required modification, improvement to the TANGEDCO network for successful implementation of the project and
- (f) To pass any other order as the Hon’bleCommission deems fit and appropriate considering the special nature of the project.

**2.7** In the proposal of M.P No.2 of 2020, TEDA was to fund the 40% net capital cost (after deduction of subsidies from Government of India and State subsidies of 30% each). GoTN accorded financial sanction of Rs.316.80 crores vide G.o (Ms) No.39 Energy(E1) Department dt.18.8.2020 for the implementation of Component C of KUSUM scheme and allocated Rs.100 crores for FY 2020-21 and the same received by TEDA.

**2.8** Commission hosted a consultative paper on 2.9.2020 for ‘Determination of Tariff for purchase of power from solar energy generated under “Component C” of KUSUM scheme’ and upon compliance of all norms for a tariff determination process issued the order on 10.11.2020 on the petition filed by TEDA where a tariff of Rs.2.28 per unit was determined and TEDA directed to go for competitive bidding by considering the determined tariff of Rs.2.28 as the ceiling. Besides determination of tariff for the solar energy generated, Commission had approved payment of incentive to the participating farmers such that minimising import of power from the grid is incentivised.

**2.9** TEDA had filed review petitions seeking changes in some of the components due to the fact that TEDA was acting as the RESCO and implementing the KUSUM ‘C’ scheme. Commission directed TEDA to go ahead with the bidding process and come back with the response for the bidding. TEDA in the petition filed in M.P No.31 of 2021 has stated that due to the ongoing pandemic implementation of the order in M.P No.2 of 2020 did not fructify. However, MNRE has accorded a new sanction for solarisation of 20,000 nos. grid connected agricultural pumpsets under Component C of PM – Kusum scheme.

**2.10** TEDA in the present petition has proposed to implement the scheme through the farmers who will fund the net capital cost of 40% themselves after availing the 60% subsidy i.e 30% of Central Financial Assistance and 30% subsidy from GoTN.

**2.11** TEDA has submitted that as the capacity of each solar plant is small and geographical expanse will be large, it would be difficult for RESCO operator to aggregate large number of farmers and establish solar plants and maintain the same economically. The individual farmer can be incentivised for the upkeep of the solar panels in safe condition. The farmers will have the ownership right of the solar plant. Farmers as prosumer will get substantial annual income through sale of energy to TANGEDCO, the distribution licensee.

**2.12** TEDA seeks for a higher tariff of Rs.2.93 for the following reasons:

i) Rates of interest vary significantly from one bank to another anywhere starting from 9%. Loan tenure varies from 1-5 years upto 20 years. Banks mortgage the assets and hypothecate the solar plant. Petitioner, TEDA has requested to adopt a rate of interest 9.5% per annum.

ii) Availability of 3 phase power in rural areas is generally for about 10 hours. Petitioner requests to adopt Grid availability factor of 80% instead of the assumed 90%.

iii) As per MNRE guidelines, the solar plant should be equipped with Remote Monitoring system (RMS) and data are to be transferred to the head end system through cellular combination. This requires Subscriber Identification Module (SIM) cards of mobile network operators. Generally two SIM cards are required to be provided and the system will automatically select the strongest network signal available. Though the cost of RMS is included in the benchmark cost, monthly rental costs of about Rs.25 per card per month are to be borne by the farmers. Therefore, O&M cost may be increased by adopting a factor of 1.8% with annual

increase of 5.72%. Sub-clause (d) of clause III under Component C of MNRE guidelines in F.32/645/2017-SPV division dt.22.7.2019 states, 'Vendors will mandatorily provide AMC for a period of 5 years from the date of commissioning of the systems including insurance coverage for the installed systems against natural calamities and theft'. MNRE's capital cost covers insurance for the first five years of the total life period of 25 years. Petitioner seeks 0.35% of capital cost towards insurance charges.

iv) Providing an incentive at the rate of Rs.1 per unit would serve as an additional income and incentivise the farmers for day time operation of pumps. It will also motivate the farmers to consider introduction of advanced irrigation control systems that delivers climate based, crop specific irrigation schedules along with micro irrigation. MNRE guidelines recommend to give priority to farmers already using micro – irrigation systems or those that are about to adapt micro-irrigation in order to minimise water usage and energy consumption for irrigation. TEDA requests to provide an incentive at the rate of Rs.1 per unit for net export energy.

### **3.0 Hearing on 31.8.2021 and 5.10.2021**

3.1 Commission directed Registry to prepare the Consultative Paper and webhost the same for seeking comments of the stakeholders and adjourned the case to 5.10.2021 for further hearing. On further scrutiny of the case, on 5.10.2021, Commission observed that no further proceedings are required on the matter and reserved for orders.

#### **4.0 Findings of the Commission:**

**4.1** Commission has already undertaken the task of tariff setting process in the petition filed by TEDA vide M.P No.2 of 2020 as mandated under the Electricity Act 2003 and the Commission's Tariff Regulations and Power Procurement from New and Renewable Sources of energy regulations. The order in M.P No.2 of 2020 was passed after issue of a consultative paper and receipt of views/suggestions of stakeholders. A tariff of Rs.2.28 per unit has been determined in M.P No.2 of 2020. Besides the tariff, payment of incentive starting from 50 paise per unit with an annual increase capped at Rs.3.22, which is the per unit rate of subsidy for agricultural category has been approved in M.P No.2 of 2020. A minimum of incentive of Rs.3000/- per annum will be paid to the farmer irrespective of the quantum of net energy exported.

**4.2** For an investment of 40% of capital cost, the tariff of Rs.2.28 per unit is more than viable. Therefore, Commission decides that the tariff already determined is adequate. The solar energy tariff of INR 2.28 per kWh (25 years fixed), applies only to solar PV systems installed at agricultural farms under the KUSUM-C scheme. The tariff at which the farmer would be paid for the generated solar energy shall be at Rs.2.28 per unit. Clause 4.8.2 of M.P No.2 of 2020, reproduced below, stands deleted.

*“4.8.2 The solar energy tariff determined herein applies only to solar PV systems installed at agricultural farms under the KUSUM-C scheme and is the maximum solar energy tariff permitted. The actual solar energy tariff shall be discovered through a tender process.”*

**4.3 On the issue of payment of tariff rates for the solar energy generated, Commission decided as follows in M.P No.2 of 2020:**

**4.8.6** *The Government of Tamil Nadu (GoTN) had issued policy directions under sub-section (1) of section 108 of the Electricity Act, 2003, for extension of free supply / concessional tariff to different categories of consumers and supply to agricultural category falls under this scheme. The Government has also committed to provide subsidy to TANGEDCO to meet the shortfall in revenue due to extension of free supply, under section 65 of the Electricity Act, 2003. The present tariff for agricultural category is Rs.3.22 as per Commission's Tariff order dt.11.8.2017. One of the aims of the KUSUM scheme is to reduce the subsidy burden.*

**4.8.7** *Commission in the consultative paper proposed that GoTN may make payments to the petitioner, TEDA for the Gross energy generated under Component C of the KUSUM scheme. GoTN has not furnished any remarks for the proposal in the consultative paper. TANGEDCO has also not furnished any remarks.*

**4.8.8** *The implementation of the KUSUM scheme will result in a considerable savings in subsidy costs to GoTN. TANGEDCO always makes a provisional subsidy claim from GoTN and then files a reconciliatory statement to the Commission to obtain actual subsidy from GoTN. Therefore, on the issue of payments to be made to TEDA for the solar energy generated, Commission decides as follows:*

**(i)** *TANGEDCO shall claim advance charges for payment for solar energy generated under the KUSUM C scheme provisionally like claiming subsidy charges for agricultural services at the tariff rate of Rs.2.28 per unit at CUF of 19% for the capacity of solar power plants commissioned under the scheme, at the time of commissioning of the plants and subsequently at the beginning of each financial year. Following is the illustration to claim advance charges provisionally:*

*Charges for solar energy generation when say in 500 pumpsets solar PV plants are commissioned = 500 \*16478 (11 KW \* 365 \*24 \* 19% \* 90%) \*2.28  
= Rs.1,87,84,920/-*

*Until commissioning of the solar power plants, for the pumpsets covered under the KUSUM C scheme, subsidy charges as normally claimed may be made.*

**(ii)** *TANGEDCO shall make payments on monthly basis to the petitioner, TEDA, for the Gross energy generated under Component C of the KUSUM scheme. The data of generation, export/import energy obtained through online monitoring shall be shared by TEDA with TANGEDCO every month.*

**4.4** As per the directions in M.P No.2 of 2020, TANGEDCO shall claim advance charges for the payments to be made for the solar energy generated from

GoTN and make the payments to TEDA for the gross energy generated since TEDA was the investor. In the revised proposal filed in this petition M.P No.31 of 2020, the farmer is the investor. Therefore, sub-clause (ii) of clause 4.8.8 in M.P No.2 of 2020 is modified as hereunder:

*“ii) The data of generation, export/import energy obtained through online monitoring shall be shared by TEDA with TANGEDCO every month. TANGEDCO shall make payments on monthly basis to the farmers for the gross energy generated.”*

4.5 For payment of incentive, Commission decided in M.P No.2 of 2020 as follows:

“5.0 Incentive for Farmers

**5.1 .....**

.....

**5.14** (i) *The Commission notes that TEDA and TANGEDCO have not spelt out the source of funds for the incentive to the Farmer.*

(ii) *Regarding bearing the cost of payment towards incentive, the following was the proposal in the consultative paper:*

*‘TANGEDCO and TEDA in consultation with Government of Tamil Nadu may decide on the payment of incentives. The benchmark tariff being less than the tariff of Rs.3.22 notified in the Commission’s Tariff order of 2017 and which is the subsidy being paid by GoTN, the incentive may be paid by GoTN from the subsidy savings.’*

*Both the Government of Tamil Nadu and TANGEDCO have not offered any views on this issue.*

**5.15***The implementation of the KUSUM-C scheme will result in a significant reduction in subsidy costs to the Government of Tamil Nadu. On payment of incentives, Commission decides as follows*

*(i)The incentive rate shall initially be set at INR 0.50 per kWh for the net exported energy (computed with the export and import energy TOD factors as per the formula given in clause 5.6) for a 7.5HP pump - 11kW solar PV system combination. The incentive cost shall be such that the solar tariff added to the incentive is always less than the per unit tariff subsidised by GoTN for the agricultural category. The*

rate of incentive may be at intervals that may be decided by TANGEDCO and can reach upto a maximum of Rs.1 per kWh

(ii) Since TANGEDCO already has a service provider relationship with the Farmer in the form of an electricity service connection, TANGEDCO shall administer the disbursement of the incentive to the Farmer on behalf of the Government. TANGEDCO shall make the advance claim of charges to be paid towards incentive along with the advance tariff charges ordered in para 4.8.8 of this order and subsequently claim as per actuals. The claim in advance for incentives shall be for 40% of total generation at the adopted CUF of 19% at the adopted incentive rate, which is 50 paise per unit initially. Following, is the illustration to claim incentive charges in advance:

$$\begin{aligned} \text{Incentive} &= 500 * 16478 * 40\% * 0.50 \\ &= \text{Rs.16,47,800/-} \end{aligned}$$

**5.16** Government shall reimburse TANGEDCO for the actual Farmer incentives disbursed.

**5.17** The Farmer incentive may be disbursed by TANGEDCO to the Farmers annually within 30 days from the end of each financial year by bank transfer.

**5.18** TANGEDCO shall develop and implement a mobile phone and web application (App) whereby the Farmer gets access to the status of the incentive credit and can keep track of incentive payments due and paid. For any practical difficulties in implementing the incentive mechanism as per the formula notified in this order, TANGEDCO/TEDA may approach the Commission.”

**4.6** TEDA has requested for an increase in the rate of incentive from Rs.0.50 to Rs. 1 per unit from the date of commencement of solar generation under the scheme. The operation of KUSUM C scheme benefits the distribution licensee in terms of reduction in line losses by way of consumption at the point of generation by the farmer and nearby distributed loads. The Commission accepts the proposal of TEDA and decides to fix the base rate of incentive from the first year of operation of the solar system at Rs.1.00 per unit. Thus, the sub-clause (i) of clause 5.15 stands modified as below:

“ (i)The incentive rate shall be INR 1.00 per kWh for the net exported energy (computed

*with the export and import energy TOD factors as per the formula given in clause 5.6) for a 7.5HP pump - 11kW solar PV system combination. ”*

**4.7** Except for the clauses amended herein in this order, the tariff determined and all other terms and conditions specified in M.P No.2 of 2020 shall be operative and remain applicable for the implementation of Component C of KUSUM scheme for the 20000 nos. of pumpsets sanctioned by MNRE and approved by GoTN. No network charges are applicable to the KUSUM –C scheme.

**4.8** For the purpose of clarity, the important features of the order passed by this Commission in M.P No.2 of 2020 and in this order are summarised below:

**1.** Tariff – The solar energy tariff at which the farmer will be paid by TANGEDCO for the Gross solar energy generated is Rs.2.28 per unit. The data of generation, export/import energy obtained through online monitoring shall be shared by TEDA with TANGEDCO every month. No network charges are applicable to the KUSUM –C scheme.

**2.** Incentive - Payment of incentive rate shall be at INR 1.00 per kWh for the net exported energy (computed with the export and import energy TOD factors as per the formula given in clause 5.6 of M.P. No.2 of 2020) for a 7.5HP pump - 11kW solar PV system combination. The incentive may be disbursed by TANGEDCO to the Farmers annually within 30 days from the end of each financial year by bank transfer/any other suitable mode of payment.

**3.** Claims to be made by TANGEDCO from GoTN:

(a) advance charges for payment for solar energy generated under the KUSUM C scheme provisionally like claiming subsidy charges for agricultural services at the tariff rate of Rs.2.28 per unit at CUF of 19% for the

capacity of solar power plants commissioned under the scheme as illustrated in clause 4.8.8.(i) of M.P No.2 of 2020. The charges for payment of solar energy generated shall be claimed for the first time at the time of commissioning of the plants, and subsequently at the beginning of each financial year. Until commissioning of the solar power plants, for the pumpsets covered under the KUSUM C scheme, subsidy charges as normally claimed may be made.

- (b) actual subsidy charges for the energy drawn by the farmer from TANGEDCO's grid at the per unit tariff rate notified in the Commission's retail tariff order for agricultural category, and
- (c) the actual tariff charges paid for the gross solar energy generated i.e the difference between the advance charges already obtained and the actual to be paid, through reconciliatory statements. Any excess may be refunded to GoTN.
- (d) TANGEDCO shall make the advance claim of charges to be paid towards incentive along with the advance tariff charges(ordered in para 4.8.8 of M.P No.2 of 2020) and subsequently claim as per actuals. The claim in advance for incentives shall be for 40% of total generation (computed for advance claim for payments towards tariff) at the incentive rate. i.e computed generation \*40% \* Re.1 per unit. Any excess may be refunded to GoTN.

**4.**At the end of every financial year, TANGEDCO shall furnish

- (I) data of solar energy generated by the Solar PV power plants in each of the grid connected agricultural pumpsets under the KUSUM C scheme

(II) data of energy drawn by the farmer from TANGEDCO's grid over and above the consumption from the solar power plants under this scheme to the Commission, and

5.GoTN shall make advance payments for the provisionally computed solar energy generation as claimed by TANGEDCO (at the time of commissioning of the plants and at the beginning of each financial year). GoTN shall also make advance payments for the provisionally computed incentive charges claimed by TANGEDCO.

6.GoTN shall pay the subsidy for any energy drawn by the farmer from TANGEDCO's grid over and above the consumption from the solar power plant on passing of suitable orders by the Commission based on data furnished by TANGEDCO.

(Sd.....)  
**(K.Venkatasamy)**  
**Member (Legal)**

(Sd.....)  
**(M.Chandrasekar)**  
**Chairman**

/True Copy /

Secretary  
Tamil Nadu Electricity  
Regulatory Commission