



BEFORE THE TAMIL NADU ELECTRICITY REGULATORY COMMISSION

SUO MOTU PROCEEDINGS

Present : Thiru S.Kabilan, Chairman
Thiru B.Jeyaraman, Member
Thiru R.Rajupandi, Member

Order No 6 dated 11.07.2008

In the matter of: **Determination of provisional tariff for power procurement by the Distribution Licensees in Tamil Nadu from Grid Interactive Solar Power Generation Plants**

In exercise of powers conferred by section 181 read with section 61(h), 86(1)(e) of the Electricity Act, 2003 (Act 36 of 2003) and Power Procurement from New and Renewable Sources of Energy Regulations 2008 and all other powers enabling it in this behalf, the Tamil Nadu Electricity Regulatory Commission after having considered the documents and information available on record, passes this order, to fix the provisional tariff for procurement of power by the distribution licensees in Tamil Nadu from Grid Interactive Solar Power Generation Plants which are eligible to avail generation based incentive of the Ministry of New and Renewable Energy(MNRE), Government of India. This order shall come into force from the date of its issue.

Sd/...
R.Rajupandi
Member

Sd/...
B.Jeyaraman
Member

Sd/...
S.Kabilan
Chairman

1. 0 BACKGROUND AND NEED OF THIS ORDER

1.1 Section 61 of the Electricity Act 2003 (Central Act 36 of 2003) stipulates that the State Electricity Regulatory Commission shall specify the terms and conditions for the determination of tariff. In line with the above stipulation the Commission issued and notified the "Power Procurement from New and Renewable Sources of Energy Regulations 2008" on 27.02.2008. In the said regulation the new and renewable sources has been defined as below:

"New and renewable sources" means the non-conventional, renewable electricity generating sources such as mini / micro hydel, wind, solar, biomass, bagasse based cogeneration, urban/municipal waste, or other such sources as approved by the Government of India or Government of Tamil Nadu which are generally inexhaustible and can be replenished in a short period of time.

1.2 The Commission issued the Order No. 3 dated 15.5.2006 on "Power purchase and allied issues in respect of Non-Conventional Energy Sources based Generating Plants and Non-Conventional Energy Sources based Co-Generation Plants". The said order stipulates tariff rates for power procurement by the distribution licensee from Wind Energy Generators (WEG), Biomass based generators and Bagasse based generators. The order did not specify the tariff for purchase of power from Solar Power Generation Plants. In section 9.6 of the said order, the Commission have noted the following in respect of setting of tariff for solar power generation plants:

The quantum of grid connected solar system in Tamil Nadu is at present only 0.165 MW and that of India is 47 MW. The capital cost required for installing a solar generating station is 30 times more than that of the conventional generating station. Technical advancements are being achieved in the field of tapping of solar energy. The number of grid connected solar generators is yet to take off to the desired level. Hence, the Commission can specify the cost of purchase of solar energy separately.

1.3 With a view to develop and demonstrate technical performance of grid interactive solar power generation, achieve reduction in the cost of the grid

connected solar power generation in the country, the Ministry of New and Renewable Energy (MNRE), Government of India have launched a generation based incentive scheme to encourage grid quality Solar Photovoltaic(PV) and Solar Thermal Power Generation from megawatt size solar power plants.

1.4 Under this programme, the Ministry would provide incentive for installation of up to 50MW capacity solar power projects in the country. Solar power projects with an aggregate capacity of a maximum of 10MW in a State would be considered for support. Any project developer would be allowed to set up a maximum aggregate capacity of 5MW, either through a single project or multiple projects of a minimum capacity of 1MW each, under the demonstration programme. The said MNRE guidelines specify the importance of the SERC's tariff order on purchase of power from solar generation plants as below:

While the generation based incentive scheme is applicable to the entire country, preference/priority would be given to those projects, which are proposed in the States that have approved and/or notified tariff for solar power.

..... The PPA (signed by the utility with a project developer) would draw reference to the orders of the State Electricity Regulatory Commission's order in this regard and enclose copies of the same. The Ministry will not consider proposals, which do not follow these guidelines on power purchase agreements.

1.5 Based on the above, many organisations have approached the Government of Tamil Nadu (GoTN) and Tamil Nadu Energy Development Agency (TEDA) for installation of Solar Generation plants in Tamil Nadu. The Chairman, TEDA in his letter dated 4.6.2008 has stated that the announcement of MNRE has generated considerable interest and some of the project developers are coming forward to install solar photovoltaic and solar thermal power plants in Tamil Nadu. In order to avail the maximum generation based incentive, the projects should be commissioned on or before 31.12.2009. Hence the project

developers have been requested to approach Tamil Nadu Electricity Regulatory Commission (TNERC) in order to facilitate the early fixation of tariff for power generated through solar power plants. He has requested the Commission to intimate the TEDA on fixation of the tariff. Similar request has also been received from the Government of Tamil Nadu (GoTN) to fix the tariff.

1.6 Tamil Nadu, being a pioneer State in development of power from renewable sources and Wind Energy, contributing around 39% and 48% respectively to the total installed capacity of the country, the State should not miss this opportunity offered by the MNRE for developing solar power generation in the State. Solar energy is considered to be the ultimate energy source. Considering the importance of solar energy and keeping the laudable trend set by this State in renewable energy development, there is an urgency to set the tariff for purchase of power from the Solar Generation Plants.

2.0 APPROACH TO TARIFF SETTING

2.1 The relevant portions of the National Tariff Policy are reproduced below to decide on the tariff approach:

Section 6.4(1): Pursuant to provisions of section 86(1)(e) of the Act, the appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006. It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the appropriate Commission.

Section 6.4(2): Such procurement by distribution licensees for future requirements shall be done, as far as possible, through competitive bidding process under Section 63 of the Act within suppliers offering energy from same type of non-conventional sources. In the long-term, these technologies would need to compete with other sources in terms of full costs.

2.2 Grid connected Solar Power technology is still in the early stage of development and it will take quite some time before Solar Power technologies can compete with the other renewable energy sources or with the conventional energy sources in terms of cost of generation. Therefore, procurement by distribution licensees from solar generation plants shall be done at preferential tariffs determined by the appropriate Commission as stipulated in section 6.4 (1) of the tariff policy.

2.3 In the absence of competitive bidding process, cost plus method shall be the appropriate method for setting of tariff. Unfortunately, since grid connected solar power plants are yet to be installed in the State and different manufacturers and developers are reporting different capital cost, it is not possible to ascertain the capital cost and tariff. In the absence of required financial parameters, it is not possible to decide on the tariff using cost plus method.

2.4 Considering the deadline of 31st December, 2009 set by the MNRE and in the absence of data required for cost plus tariff setting, the Commission have decided to fix a provisional tariff.

3.0 TARIFF SETTING

3.1 Tariff and incentives related provisions of the said MNRE guidelines are reproduced below:

Wherever the state electricity regulatory commissions have fixed a separate tariff for solar power or they fix the tariff for solar power during the period for which the Ministry is providing incentive, the utilities will offer a minimum of that tariff to the solar PV grid interactive power projects in their respective states. In absence of such tariff orders, the utilities will offer the highest tariff for purchase of power to the PV power project developers, that is being offered by the utilities for purchasing power in their respective states on medium term or the highest tariff being provided for purchase of power from any other energy source for which orders/guidelines are already issued for that State.

The Ministry may provide, through IREDA (Indian Renewable Energy Development Agency), a generation-based incentive of a maximum of Rs. 12 per kWh to the eligible projects which are commissioned by 31st December, 2009, after taking into account the power purchase rate (per kWh) provided by the State Electricity Regulatory Commission or utility for that project.

The generation based incentive for solar thermal power generation project will, however, be limited to a maximum of Rs. 10 per kWh. The same method to determine the eligible incentive will be adopted in this case.

3.2 The Commission in their order No: 3 dated 15.5.2006 have fixed a purchase rate of Rs.3.15 per kWh for the biomass generators and bagasse based generators. The control period for the tariff is three years (medium term) and it is the maximum tariff fixed for the NCES based generators by the Commission in the State.

3.3 After careful consideration of all the points discussed above, the Commission fixes a provisional tariff of Rs. 3.15 per kWh as purchase rate for procurement of power by the distribution licensee from the Solar Photovoltaic and Solar Thermal Power Generation Plants.

4.0 OTHER GENERAL ISSUES

4.1 Start up power

The STU/Distribution Licensee shall provide start up power for the solar generator under unit to unit adjustment basis.

4.2 Reactive Power Charges

The terms & conditions and charges as provided in the Tamil Nadu Electricity Grid Code and the Commission's order on Transmission, wheeling and other charges will apply.

4.3 Evacuation Facilities:

- a. The interfacing line of appropriate capacity and voltage as per the CEA (Technical Standard for connectivity to the grid) Regulations, 2007 shall be provided by the STU/Distribution Licensee at their cost. The intending generator shall apply to the STU/Distribution Licensee concerned well in advance.
- b. Clearances, approvals, certificate, if any, required by solar generators shall be issued within a month time.
- c. The cost of switch gear, metering and protection arrangement at generator end shall have to be borne by the owner of solar generators.
- d. No compensation shall be provided to the solar generators by the distribution licensee for deemed generation benefits in case the distribution licensee fails to evacuate power due to failure of the transmission facility. However, the STU/ Distribution Licensee shall have to maintain the standards as per Commission's regulations and orders issued on feeder reliability standards.

4.4 Energy Meters

Special Energy Meters as stipulated in the Commission's Intra State open access regulations, Grid code and CEA's regulations on installation and operation of Meters shall be provided.

4.5 Energy Purchase Agreement (EPA)

The solar generator shall sign an EPA with distribution licensee for a period of ten years or for the period for which the MNRE/IREDA provides generation based incentive to the generators. It is not intended that the Commission would approve EPA for each solar generator. The distribution licensees shall draft EPA taking cognizance of the tariff provisions and EPA related principles elaborated in this order.

The distribution licensee should sign the EPA within one month from the date of submission of the application with all relevant details for such agreement

by the solar generators.

Distribution licensee will frame and file a model EPA for approval of the Commission. This should include a clause for penalty in case the developer winds up his operation before the power purchase agreement period.

4.6 Payment of Security for Power Purchase by Distribution licensee

Section 6.2 of the Tariff Policy requires to ensure adequate and bankable payment security arrangements to the generating companies. In the same line Commission proposes that a bankable security in favour of the generator for an amount equivalent to an average monthly bill shall be opened at the option of the generator by the distribution licensee, in case an EPA is signed for power purchase between distribution licensee and the generator.

4.7 Billing and Payment to solar generator by Distribution licensee

Solar generators will raise the bill every month for the net energy supplied after adjusting to the energy in kind for start up power as per this order. The payments to the generators in respect of the energy supplied shall be made by the distribution licensee within the same period and terms & conditions as provided by the distribution licensee to recover payments from its HT Services.

5.0 APPLICABILITY OF THE ORDER

This order shall be applicable only to the solar power generation plants which are eligible to avail generation based incentive as per the Ministry of New and Renewable Energy (MNRE) guidelines No.32/61/ 2007-08/PVSE issued on 20/02/2008. This order shall come into force from the date of its issue.

(By order of the Tamil Nadu Electricity Regulatory Commission)

**R. Balasubramanian
Secretary**