Promotion of distributed generation by educational institutions – Comments requested from Stakeholders.

Introduction and Context

On 31st May 2018 the Hon’ble Minister for Electricity announced in the Tamil Nadu Assembly that educational institutions will be permitted to set up solar energy plants with capacities in a range of 1MW to 5MW each.

The promotion of distributed solar energy generation by educational institutions will offer the following advantages and opportunities:

i. The educational institution may use the solar energy plants to carry out (applied) research on various solar system technologies, monitoring systems, forecasting tools and energy storage solutions.

ii. The presence of solar energy systems in the campus of an educational institution will make students aware of the need for a sustainable energy future and how distributed solar energy generation can contribute to this future.

iii. Educational institutions often have open spaces and rooftops where the solar systems can be installed. These spaces can now be made use of.

iv. The solar energy can be self-consumed while the surplus can be exported to the public electricity grid, under the net feed-in mechanism. Optionally the entire solar energy may be exported to the grid under the gross feed-in mechanism. These solar PV systems therefore support the Tamil Nadu Government’s vision for a sustainable energy future for all.

Eligibility

“Educational institutions” shall mean schools, colleges, universities where primary, higher secondary or higher education (college, university) is provided.
All Government educational institutions, local body educational institutions, private-aided educational institutions and private unaided institutions are eligible under this program.

**Solar PV systems**

Educational institutions may install solar PV systems in roofs, elevated structures or on the ground. The maximum system capacity under this program is 5MW.

**Grid net feed-in and gross feed-in options**

Educational institutions may opt for a net feed-in or gross feed-in mechanism. In the case of the net feed-in mechanism the solar energy is not self consumed by the educational institutions is exported to the TANGEDCO electricity grid through the existing electricity service connection. For this purpose the existing service connection energy meter will be replaced with a bidirectional energy meter that is configured for the display of imported, exported and net active energy.

In the case of the gross feed-in mechanism, all solar energy produced by the educational institution is exported to the TANGEDCO electricity grid through an energy meter that will be installed in addition to the existing service connection meter. The energy meter to be installed to record energy export to the TANGEDCO electricity grid will be of the bidirectional type so that self-consumed energy, if any, can be deducted to arrive at the net exported energy. This meter will be connected with the output of the solar PV system on the source side(S) and the grid on the load side of the meter terminals (L).

In both the net feed-in and gross feed-in mechanisms the educational institution gets paid for the exported energy as per a tariff to be determined by Tamil Nadu Electricity Regulatory Commission (TNERC).

**Implementation Process**

*Step 1:* The educational institution prepares a proposal, which includes the following details:
i. Proposed location(s) of the solar systems;

ii. Proposed capacity / capacities

iii. Present annual energy consumption

iv. Present TANGEDCO consumption tariff

v. Estimated annual generation of the solar system(s)

vi. Estimated annual self consumption and grid export of solar energy generated

vii. Estimated levelised cost of energy (LCOE) of the solar energy system

viii. Proposed financing model (own funds, debt, others)

ix. Proposed month and year of commissioning of the solar systems (if there are multiple systems proposed) the commissioning target of each system)

x. Requested metering arrangement: net feed-in or gross feed-in.

Step 2: The above mentioned proposal is sent to TEDA. TEDA will scrutinize the proposal and seek clarifications, if needed. If TEDA accepts the proposal, a provisional energy purchase commitment will be sent by TEDA along with a draft net feed-in agreement.

Step 3: The educational institution and TEDA enter into a solar energy net feed-in or gross feed-in agreement whereby TEDA commits to purchase from the educational institution the solar energy that is exported to the TANGEDCO grid (generation minus self-consumption). The net feed-in tariff for the energy thus purchased by TEDA will be determined by the TNERC on the basis of a tariff petition that TEDA will file. It will be ensured by TEDA that the net feed-in or gross feed-in tariff is based on levelised cost of solar energy calculations that take into account realistic and achievable assumptions. Educational institutions may opt for the net feed-in or gross feed-in mechanism as per their requirement.

Step 4: The educational institution installs the solar energy system(s). Upon completion of the installation the existing TANGEDCO service connection energy meter will be replaced with a bidirectional energy meter (if the existing meter is not configured for bidirectional energy measuring) in case of the net feed-in mechanism while for
institutions that opt for the gross feed-in mechanism, a new energy meter will be installed in addition to the existing service connection meter. After this the solar system can be commissioned.

**Operation of the Scheme**

The educational institution pays TANGEDCO for the energy imported from the grid on the basis of the prevailing consumption tariff. In the case of the net feed-in mechanism this will be energy import as recorded by the active energy import register of the bidirectional energy meter (OBIS 1.8.0.). In the case of the gross feed-in mechanism, this will be the energy consumption as shown by the existing service connection consumption meter.

TEDA pays the educational institution for the energy exported to the grid. In the case of the net feed-in mechanism this will be energy export as recorded by the active energy import register of the bidirectional energy meter (OBIS 2.8.0.). In the case of the gross feed-in mechanism, this will be the energy consumption as shown by the net active energy register (OBIS 16.8.0) of the gross feed-in energy meter.

TEDA makes payment for the energy thus purchased from the educational institution by direct bank transfer to the educational institution. TEDA may charge a nominal facilitation fee for the aggregation and intermediary services rendered by it.

The solar energy exported by the educational institutions to the TANGEDCO grid under this scheme will count towards renewable energy purchase obligation (RPO) fulfillment of TANGEDCO. If the educational institution is, or becomes, an obligated entity under the RPO mechanism, the self-consumed solar energy (solar energy generation minus energy grid export in case of the net feed-in mechanism) can be claimed by the educational institution towards RPO fulfillment.

**TEDA as an aggregator of green energy**

The solar energy purchased from educational institutions by TEDA will be sold by TEDA to one or more of the following target groups:
i. To TANGEDCO if TANGEDCO desires to obtain such energy to meet Renewable Energy Purchase Obligations (RPOs) or to meet other green energy targets;

ii. To educational institutions that are not able to establish their own on-site solar energy systems;

iii. To departments of the Government of Tamil Nadu

iv. Through TANGEDC to electricity consumers who wish to get a Green Electrical Energy Tariff (see below).

The Green Electrical Energy Tariff

Electricity consumers, who wish to consume only green electrical energy that has been procured from distributed renewable energy sources, will be able to get a special electricity tariff that will be determined by the TNERC on the basis of a tariff petition to be filed by TEDA.

Consumers who opt for this Green Electrical Energy Tariff will be given the guarantee that the quantum of electrical energy supplied to them has been procured from distributed green energy sources.

The Green Electrical Energy Tariff facility will be given on a first-come, first-served basis to ensure that the green energy supply being committed to consumers who opt for the Green Electrical Energy Tariff matches green energy procurement.

For consumers who opt for the Green Electrical Energy Tariff nothing will change with respect to their TANGEDCO service connection wiring or metering. What will change is the tariff that applies to their service connection. Consumers with solar net metering are also eligible for the Green Electrical Energy Tariff.

TEDA as green energy aggregator will procure the green energy from educational institutions (and from other distributed renewable energy generators under various schemes) and sell the energy in bulk to TANGEDCO for the purpose of meeting the demand of green energy by consumers who opt for the Green Electrical Energy Tariff.
Group net-metering and net feed-in

Educational institutions that have more than one electrical service connection in the State may opt for the Group Net Metering and Net Feed-in mechanism whereby the surplus solar energy generated at a service connection can be credited in other service connections of the educational institution anywhere in the State. For the net energy that remains unabsorbed by the service connections of the educational institution, the net feed-in tariff will apply. The Group Net Metering and Net Feed-in mechanism is available for educational institutions that have opted for the net feed-in mechanism.

Research and Development Activities

The educational institutions are encouraged to use the on-site solar energy systems for (applied) research activities, which may include:

i. Testing of new or innovative solar module technologies;

ii. Testing of new or innovative solar grid inverter technologies;

iii. Distributed solar energy monitoring and forecasting;

iv. Testing of new or innovative energy storage solutions.

Note:

Stakeholders are requested to give your valuable comments over the scheme. Please send your comments to schemes@teda.in.