Format – 6

CHAMUNDESHWARI ELECTRICITY SUPPLY CORPORATION LIMITED,MYSORE

(A Government, of Karnataka Undertaking)

Office of the

Telephone:

Email ID:

**Ref No.: Date :**

To,

(Name & address of the applicant)

Madam/Sir,

|  |  |
| --- | --- |
| Sub: | Approval for installing Solar RTPV system of ………kWp Capacity to the installation bearing RR No…………….under Net/Gross metering reg. |
| Ref: | 1. Application Reg. No Dtd: 2. Revenue Report of AAO/SA, …………O&M Sub-Division, CESC dated: 3. Technical feasibility Report of SO/AEE, ……O&M section/SD, CESC Mysore No. . ………..dated: 4. PPA executed date.: 5. KERC approval letter No.:………………………….dated:………… |

\*\*\*\*\*\*

With reference to your application , Approval is herewith accorded, after verifying the Technical feasibility Report submitted by Section Officer, ………..O& M Section, CESC/AEE(Elect), …………..O&M Sub-Division, CESC vide ref(3) and as per PPA executed for installing Solar RTPV system of………kWp on the rooftop of your existing installation bearing RR No……………. with sanctioned load of…………kW/KVA/HP under Net/Gross Metering for the Net/Gross energy at Rs……..per kwh with the following conditions:

1. As per CEA guidelines, you are responsible for planning, design, construction, reliability, protection and safe operation of all the equipment’s subject to the regulations for construction, operation, maintenance, connectivity and other statutory provisions.
2. You can select reputed system installer of your choice, who has experience in design, supply, installation and commissioning of SRTPV system.
3. Up gradation of infrastructure, if required, (service main, meter with CT, upgrade) up to the grid connectivity point is to be done at your cost.
4. Technical and Interconnection Requirements of the equipment’s shall be as per the Clause (1) of PPA vide ref (4) and **Annexure-1** (enclosed).
5. The work of grid connectivity shall be carried out in accordance with the Net- metering /Gross metering schematic diagram available in CESC website.
6. In Net –Metering system, Bi-directional meter (whole current/ CT operated) shall be provided before the point of interconnection and the existing meter shall be shifted to the generation side of SRTPV plant to measure solar power generation.
7. Both the meters shall be within the same proximity and easily accessible for taking monthly reading by the meter reader.
8. The Applicant shall provide Bi-directional check meter in series with the proposed Bi-directional meter (Main meter) when the SRTPV system capacity is more than 20 kWp.
9. As per KERC (Implementation of Solar Rooftop Photovoltaic Power Plants) Regulations, 2016 clause 5(3), the SRTPV plant shall be commissioned within 180 days from the date approval PPA i.e. **dd/mm/yyyy**

**Note:**

a. SRTPV capacities from **1kWp to 499 kWp** - Within 180 days from the date of PPA.

b. SRTPV capacities **500kWp & above upto 2000kWp** – As specified in the KERC approval letter.

1. After completion of the work in all respects, you have to submit the work completion report in **Format – 8** along with following documents:

a. Test reports of PV modules and other equipment’s (expect Grid tied inverter and bi-directional meter) as per IS/ IEC standards.

b. Test certificate of Bi-directional meter issued by MT division, CESC.

c. First sheet of Bank pass book containing details of Name of the Bank, Type of account, Account No, Name of the Branch, IFSC code etc.

1. CESC, Mysuru will not be held responsible for any legal disputes between the applicant and SRTPV system installer arising out of the contract.
2. All the terms and conditions mentioned in the Power Purchase Agreement (PPA) vide ref(4) shall be complied.

The SRTPV system is to be commissioned within stipulated period as stated above, failing which the approval will be terminated.

Yours faithfully,

AEE/Executive Engineer (Ele)

O&M Sub-Div/Division,

CESC

Copy:

1. Chief Engineer (Electy), O & M Zone, CESC……………..
2. General Manager (Commercial), Corporate Office, CESC, Mysuru-570017.
3. Superintending Engineer (Elec), O&M Circle, CESC,………

O.C/M.F.

| Annexure-1 | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Technical Specifications of SRTPV system | | | | | | |
| Item / System | Applicable BIS /Equivalent IEC Standards / Applicable MNRE  Specifications | | | | | |
| Standard Description | | | | | Standard Number |
| Solar PV modules | Modules | | | | | |
|  | Crystalline Silicon Terrestrial PV modules Thin film Terrestrial PV modules | | | | IEC 61215/IS14286  IEC 61646 |
|  | Solar PV module safety qualification requirements | | | | IEC 61730 (P1 - P2) |
|  | PV modules to be used in a highly corrosive atmosphere (Coastal area etc,) must qualify Salt Mist corrosion Testing | | | | IEC 61701/ IS 61701 |
| Each PV module must use RFID tag which must contain the following information as per MNRE requirements:   1. Name of the manufacturer of PV Module 2. Name of the manufacturer of Solar Cells 3. Date and year of manufacture (separately for solar cells and module) 4. Peak wattage, Im, Vm and FF for the module 5. Unique Sl. No. and model no. of the module 6. Date and year of obtaining IEC PV module qualification certificate 7. Name of the test lab issuing IEC certificate   WARRANTY:  PV modules used in solar power system must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years | | | | | |
| Grid tied inverters |  | Environmental Testing | | | IEC 60068-2 (1, 2,14,30) / Equivalent BIS Std. | |
|  | Efficiency Measurements | | | IEC 61683 | |
|  | Product safety standard | | | IEC - 62109-1 (2010/4) IEC - 62109-2 (2011/6) | |
|  | Grid Connectivity standard and test procedure for islanding prevention measures for utility/interconnected PV inverters | | | IEC 61727 IEEE 1547 IEEE 1547.1 | |
|  | Electromagnetic compatibility &Electro Magnetic Interference | | | IEC 61000-6-3>16 Amps IEC 61000-6-4<16 Amps | |
|  | Ingress protection | | | IP 65 (for outdoor)/ IP 21 (for indoor)  As per IEC 529 | |
|  | • For testing i,ii,vi beyond 10KVA self- certification by manufacturers are acceptable  • In case if the Charge controller is not built in the inverter, IEC 62093 test is required separately for Charge controller. | | | | | |
| Item/System | Applicable BIS /Equivalent IEC Standards / Applicable MNRE specifications | | | | | |  |  |
| Standard Description | | | Standard Number | | |  |  |
| Cables | 1 | | General Test and Measuring Method PVC insulated cables for working voltage up to and including 1100 V and UV resistant for outdoor installation | [EC 60227 / IS 694 IEC 60502 / IS 1554 (Part. I & II) | | |  | [EC 60227 / IS 694 IEC 60502 / IS 1554 (Part. I & II) |
| Earthing | 1 | | Grounding | IS 3043 | | |  |  |
| Switches/ Circuit Breakers/ Connectors | 1 | | General Requirements Connectors - safety A.C. /D.C. | IEC 60947 part I, II, III / IS 60947 Part I,II,III / EN 50521 | | |  |  |
| Junction Boxes/ Enclosures for Charge Controllers/ Luminaries | 1 | | General Requirements | IP 65 (for outdoor)/  IP 21 (for indoor)  As per IEC 529 | | |  |  |

|  |  |
| --- | --- |
| **Specifications of Inverter** | |
| **Parameters** | **Detailed Specifications** |
| **Nominal Voltage** | 230V / 415V |
| **Voltage range** | + 10% -20% at nominal voltage |
| **Operating frequency range** | 50 Hz ( 47.5 to 52 Hz) |
| **Waveform** | Sine Wave |
| **Harmonics** | AC side total harmonic current distortion < 5% |
| **Ripple** | DC voltage ripple content shall be not more than 1%. |
| **Efficiency** | Efficiency shall >95% |
| **Losses** | Maximum losses in sleep mode: 2W per 5kW Maximum losses in stand-by mode: 10W |
| **Casing protection levels** | Degree of protection: Minimum IP-2 1 for internal units and IP 65 for outdoor units |
| **Temperature** | Should withstand from -10 to +60 deg Celsius |
| **Humidity** | Should withstand up to 95% (relative humidity) |
| **Operation** | Completely automatic including wake up, synchronization (phase- locking) and shut down |
| **MPPT** | MPPT range must be suitable to individual array voltages in power packs |
| **Protections** | Over voltage; both input & output |
| Over current; both input & output |
| Over/Under grid frequency |
| Over temperature |
| Short circuit |
| Lightening |
| Surge voltage induced at output due to external source |
| Islanding |
| **Parameters** | **Detailed Specifications** |
| **Recommended LED indications** | Inverter ON |
| Grid ON |
| Inverter Under / Over Voltage |
| Inverter Overload |
| Inverter Over Temperature |
| **Recommended LCD Display on Front Panel** | Accurate displays on the front panel: |
| DC input voltage |
| DC current |
| AC Voltage ( all 3 phases) |
| AC current ( all 3 phases) |
| Ambient temperature |
| Instantaneous & cumulative output power |
| Daily DC energy produced |
| **Communication**  **interface** | RS485 / RS 232 |