



H.P STATE ELECTRCITY BOARD Ltd.

Subject:- Instructions/Guidelines regarding net metering for Grid Interactive Roof Top Solar Voltaic Power Plants.

In compliance to HPERC (Rooftop Solar PV Grid Interactive System based on Net Metering) Regulation, 2015 notified on dated 31st, July 2015 (herein after called regulations) for encouraging solar power generation to harness vast solar potential in the state, HPSEBL is pleased to formulate instructions on net metering for grid interactive Roof Top Solar Photo Voltaic Power Plants. The salient features of the policy are detailed below.

All the consumers of the HPSEBL who intend to set up roof top solar PV plants in their premises shall be eligible to do so with project capacity ranging from minimum 1 kWp upto 1 MWp (AC side) with/without battery back-up support. Those consumers, who have already installed Roof Top Solar PV System before commencements of these regulations, shall also be eligible subject to compliance of these regulations.

The electricity generated from such a system shall be used to meet the rooftop owner's internal electricity needs while the excess generation shall be fed into the grid on net metering basis.

1) Procedure/Salient Features

1. The consumer intending to set up the Roof Top Solar Top Solar PV system can download the solar net metering Application Form – I & net metering connection Agreement Form – II (it shall be supplementary to original A&A form) from the website of the HPERC and shall submit the same to the concerned Subdivision for grant of permission to set up the plant. For grant of permission to set up the plant on first-come first serve basis. The permission shall be granted (Form-B) after checking the feasibility by the concerned officer as per table below :-

Capacity of Roof Top Solar PV system	Competent Authority to check the feasibility
Upto 50 kWp on AC side	AE/AEE of concerned Subdivision
Exceeding 50 kWp and upto 500 kWp	Sr. Xen/Addl. SE of concerned Division
Exceeding 500 kWp and upto 1MWp	S.E./Dy. C.E. Incharge Operation Circle

The concerned AE/AEE/Sr.EE/SE/Dy.CE shall issue approval letter to the feasibility cleared applicant within 30 days of the receipt of application on Form-C. The consumer shall set up the plant and submit the work completion report along with Single Line Diagram of the synchronizing and protection arrangement issued by the plant supplier/

EPC contractor within 240 days envisaging that the plant has been installed as per the standards and specifications approved by State Nodal Agency. In case of delay, the consumer shall have to get further extension from HPSEBL within original (240days) allowed period. Such extension shall be granted for a maximum period of 2 months only and the approval granted shall lapse automatically, if the project is not set up even in the extended 2 months period. Such consumer shall have to apply afresh.

The following officers of HPSEBL are authorized to approve the single line diagram, protection arrangements and site verification of the solar plant to be set-up by the consumer.

Capacity of Roof Top Solar PV system	Competent Authority to approve single line diagram & to carryout site verification
Upto 50 kWp on AC side	AE/AEE of concerned Subdivision
Exceeding 50 kWp and upto 500 kWp	Sr. Xen/Addl. SE of concerned Division
Exceeding 500 kWp and upto 1 MWp	S.E./Dy. C.E. Incharge Operation Circle

HPSEBL shall install and seal the Bi-directional and unidirectional energy meter(s) (as per ESIM Clause- 53) within 10 days of the submission of work completion report and plant shall be treated as commissioned for net-metering commercial operations from that date. In accordance with Regulation (5) of the said Regulations stipulates about the maximum capacity of Roof Top Solar PV System which has been fixed at 1MWp for HT/EHT systems.

2. Capacity of Rooftop Solar PV Systems:-

1) All eligible consumers of electricity in the area of supply of the distribution licensee can participate in the rooftop solar net metering arrangement, in accordance with the provisions of these of these regulations.

2) The maximum peak capacity of the rooftop solar system to be installed by any individual consumer covered under two parts tariff shall not exceed 80% of the sanctioned contract demand and such maximum limit in case of an individual consumer, covered under single part tariff shall be 30% of the sanctioned connected load'

Provided that the capacity of Roof Top Solar PV system to be installed by an eligible consumer shall not exceed the following limits:-

Sr. No.	Voltage at which consumer getting supply	Maximum Capacity of Roof Top Solar PV system
1	LT Single Phase	5 kWp
2	LT Three Phase	15 kWp
3	HT/EHT	1 MWp

Provided further that the cumulative capacity to be allowed in the area, fed from a distribution transformer or any other transformer from which power is fed to the eligible consumer, shall not exceed 30%, or any other percentage as may be fixed by the Commission, of the rated capacity of such transformers(s):

Provided further that in case of multiple applications from the consumers covered by a transformer for participation in the scheme, the connectivity with the grid interactive rooftop solar PV system shall be allowed on first come first serve basis.

3) Operation and Maintenance:

The solar plant should comply with the relevant standards specified by the MNRE/BIS and CEA/HPERC. The responsibility of operation and maintenance of the solar photovoltaic (SPV) generator including all accessories and apparatus lies with consumer. The design and installation of the rooftop SPV should be equipped with appropriately rated protective devices to sense any abnormality in the system and carry out automatic isolation of SPV from the grid. The inverters used should meet the necessary quality requirements and should be certified for their quality by appropriate authority; the protection logics should be tested before commissioning of the plant.

The automatic isolation or islanding protection of SPV should be ensured for, no grid supply and low or over voltage conditions and within the required response time. Adequate rated fuses and fast acting circuit breakers on input and output side of the inverters and disconnect/isolating switches to isolate DC and AC system for maintaining should be provided. The consumer should provide for all internal safety and protecting mechanism for earthing, surge, DC ground fault, transients etc.

To prevent back feeding and possible accidents when maintenance works are carried out by HPSEBL personnel, double pole/ triple pole with neutral isolating disconnect switches which can be locked by HPSEBL Personnel should be provided. This is in addition to automatic sensing and isolating on grid supply failure etc and in addition to internal disconnects switches. In the event of HPSEBL LT/HT supply failure the consumer has to ensure that there will be no solar power being fed to the LT/HT grid of HPSEBL. The consumer is solely responsible for any accident to human beings/ animals due to back feeding from the SPV plant when the grid supply is off. The HPSEBL reserve the right to disconnect the installation at any time in the event of damage to its grid, meter etc or to prevent accident or damage.

The consumer shall abide by all the codes and regulations issued by the HPERC to the extent applicable and in force from time to time. The consumer shall comply with HPERC/HPSEBL/CEA requirements with respect to safe, secure and reliable function of the SPV plant and the grid. The power injected into the grid shall be of the required quality in respect of wave shape, frequency, absence of DC components etc.

The consumer shall restrict the harmonic generation within the limit specified in the agreement or specified by the CEA.

The SPG (individual homes/ commercial establishment) may establish LT grid interactive solar power plant in the rooftop or elevated surface with the following options

- a) Grid interactive solar PV system without battery
- b) Grid interactive solar PV system with battery backup

However, in both the options features as per above shall be available so as to ensure islanding of SPV system and prevent back feeding to grid system of HPSEBL. The inverter standard shall be such that it should not allow solar power /battery power to extend to HPSEBL's LT grid on failure of supply, irrespective of the LT connectivity options.

4) Interconnectivity, Standards and Safety:-

- i) The distribution licensee and the eligible consumer shall ensure that –
 - a) The interconnection point of the rooftop solar system with the consumer installations and the distribution system of the licensee conforms to the specifications, standards and provisions as provided in the Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Regulation. 2013;
 - b) The relevant provisions of the Central Electricity Authority (Measures relating to Safety and Electricity Supply), Regulations, 2010 are adhered to.
- ii) The eligible consumer may install rooftop solar system with or without battery backup & ensure the following safety measures/parameters.

Parameter	Reference	Requirement
Overall conditions of service	State Distribution/Supply Code	State Distribution/Supply Code
Overall Grid Standards	Central Electricity Authority Grid Standard Regulations 2010	Central Electricity Authority Grid Standard Regulations 2010
Equipment	BIS/IEC/IEEE	BIS/IEC/IEEE
Meters	Central Electricity authority (Installation &	Central Electricity authority (Installation &

	operation of meters) Regulation 2006 as amended time to time	operation of meters) Regulation 2006 as amended time to time
Safety and supply	Central Electricity Authority (measures of safety and electricity supply), Regulations, 2010	Central Electricity Authority (measures of safety and electricity supply), Regulations, 2010
Harmonics Standard	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013
Synchronization	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	Photovoltaic system must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system it shall not cause voltage fluctuation greater than +/- 5% at the point of connection.
Voltage	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	The voltage operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second the Photovoltaic system must isolate itself from

		the grid
Flicker	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	Operation of Photovoltaic system should not cause voltage flicker in excess of the limits stated in IEC 61000 standards or other equivalent Indian standards if any
Frequency	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), there should be over and under frequency trip functions with a clearing time of 0.2 seconds.
DC Injection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	Photovoltaic system should not inject DC power more than 0.5% of the full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.
Power Factor	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate.
Islanding and Disconnection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation	The Photovoltaic system in the event of fault, voltage or frequency variations must

	Resources) Regulations, 2013.	island/disconnect itself within IEC standard on stipulated period.
Overload and Overheat	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.
Paralleling Device	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.	Paralleling device of Photovoltaic system shall be capable of withstanding 220% of the normal voltage at the interconnection point.

Note:- The standard/specifications/parameters shall be subject to amendments/revisions from time to time.

5) **Metering**

The metering shall be as per CEA (Installation and Operation of Meters) Regulations, 2006 as amended from time to time.

The solar meter (a unidirectional meter) is required to be installed as an integral part of the net metering system at the point at which the electricity is generated by Solar Energy System and delivered to the main panel.

The eligible consumer shall, for recording the electricity generation, install and maintain the Solar Meter at his cost. The net metering equipment (Bi-direction) meter shall be installed and maintained, at the cost of eligible consumer, by the distribution licensee and the meter shall be compliant to the system of recording meter reading through (MRI) or through wireless.

Provided the eligible consumer may procure the net meter/solar meter and present the same to the distribution licensee for testing and installation as per section 4.2 & 4.3 of the Supply Code 2009. No meter rental shall be charged from the consumer. In case meters are provided by the distribution licensee, the consumer shall be liable to

pay meter rental as approved by the Commission. The location of the meter shall be as per CEA Metering Regulations.

The installed meters shall be jointly inspected and thereafter sealed by the distribution licensee in the presence of the consumer as per procedure laid down in Supply Code.

The meter reading taken by the distribution licensee shall form the basis of commercial settlement.

Meter reading shall be taken as per ESIM clause 81.

6) Energy Accounting and Settlement:-

The procedure for billing and energy accounting shall be as under:-

- 1)** The accounting of electricity generating, consumed and injected by the Rooftop Solar system under these regulations shall become effective from the date on which the said system is treated as commissioned as per sub regulation (5) of regulation 7 of HPERC (Rooftop Solar PV Grid Interactive Systems based on Net Metering) Regulations, 2015
- 2)** Billing shall be done on the basis of the net flows recorded by the Net Meter over the billing period subject to provisions contained in the regulation (10) of HPERC Regulations.
- 3)** In the event, the eligible consumer exports energy, on net basis, to the distribution system during a billing period, the energy so exported on net basis, shall be carried forward in shape of electricity credit to the immediately next billing period, forming part of the settlement period.
- 4)** In the event, the eligible consumer imports energy, on net basis and after adjusting the electricity credits if any, carried forward from the immediately preceding the billing period, from the distribution system during a billing period, the distribution licensee shall recover energy charges for such chargeable energy so drawn (i.e. chargeable net energy) at the applicable rates of energy charges as per Regulation (10)
- 5)** The distribution licensee shall make payment to the eligible consumer , by way of adjustment in the electricity bills, for the electricity credits, if any, remaining unadjusted at the end of the settlement period, at the rates mentioned in Regulation (10).
- 6)** There shall be no carried forward of any electricity credit, pertaining to a settlement period beyond that settlement period.
- 7)** The distribution licensee shall effect in the bill the energy units exported or imported, by the consumer as well as the electricity credits brought/carry forward or adjusted as the case may be, during the billing period and the amount payable by the eligible consumer for each component of tariff (i.e. Energy Charges and Demand Charges etc.).
- 8)** In case the eligible consumer is under the ambient of time of day tariff, as determined by the Commission from time to time, the net flows of electricity over the billing period shall be recorded separately for the respective times of day and the energy accounting shall be carried out separately for each Time of Day (ToD) and the net flows during any time period, including the electricity credit if any, shall not be adjusted against the flows or the electricity credit, pertaining to any other time of the day even at the stage of settling the unadjusted electricity credits as per sub-regulation (5). Provided that incase of consumer

availing open access, the energy accounting shall also be done in accordance with open access regulations on the basis of flows and deviation for the respective time blocks in which open access is availed and the same shall be duly accounted for while raising bills.

- 9) For the energy to be billed or settled as per the provisions under sub-regulation 4, 5 and 8, the distribution licensee shall raise bills or carry out necessary out necessary adjustment, as the case may be, in the following manner and the following rates :-

i) Energy Charges :-

- a) The quantum of energy for which the energy charges are to be recovered by the distribution licensee for a billing period as per sub-regulation (4), the distribution licensee shall recover energy charges for such chargeable energy so drawn (i.e. chargeable net energy) at the applicable rates of energy charges as per sub-regulation (9).

Provided that where different rates of energy charges are applicable for different times of the day (normal, peak and night hours etc.) as per the applicable tariff, the energy accounting shall be done separately for each time of day as per sub-regulation (8) and energy charges shall be recovered at respective rates for respective quantum of chargeable net energy.

- b) For the quantum of energy to be settled for any time of the day at the end of the settlement period in accordance with sub-regulation 5 & 8, the distribution licensee shall pay, by way of adjustment of amount in future electricity bills, at

- c) the fixed rate of Rs.5.00 per kWh of the energy to be settled in case of consumer covered under single part tariff and at a fixed rate Rs. 4.50 p. per kVAh in case of consumer covered under two parts tariff.

Provided that if the amount of subsidy or grant or both, available to eligible consumer from Government agencies exceeds 50% of the capital cost of the rooftop solar PV system, the aforesaid rates of Rs. 5.00 per kWh and Rs. 4.50 per kVAh, as applicable, shall be reduced to 50%;

Provided further that the Commission may, by order, revise the aforesaid rates of Rs. 5.00 per kWh and Rs. 4.50 per kVAh, as and when it finds it expedient to do so;

Provided further that in the event of revision of such rates as per the second provision of this sub-regulation, such revised rates shall be applicable only for such cases in which letter of approval is yet to be issued in accordance with the [provisions contained in sub-regulation 7]

ii) Demand Charges:-

The licensee shall recover the demand charges, including the additional demand charges for peak load hours and the contract demand violation charges, from the consumer as per the provisions of the applicable tariff;

Provided that actual net demand of power, drawn from the distribution system, during any demand period (time block of 30 months or any other time block as per

the tariff order) shall be considered as the actual demand of the consumer in that demand period;

Provided further that average demand for any time of day block of the billing period shall also be worked out on the basis of the net import, if any, of energy by the eligible consumer during the billing period (but without adjustment of electricity credits) from the distribution system in respect of respective times of the day over the billing period.

iii) Other Charges :-

Any other charges as per the applicable tariff shall be charged to the consumer at par with other consumers of similar category who are not generating any Roof Top PV power under this scheme.

iv) The licensee shall not be required to pay any charges to the eligible consumer for any deemed generation in case non-evacuation of power due to non availability of grid or any such reason.

v) In case the applicable tariff provides for billing on kVAh basis, the net import or export of energy and electricity credits etc. shall also be accounted in kVAh.

vi) The distribution licensee shall, in addition to applicable tariff, also be eligible to raise invoice for any other charges as allowed by the Commission.

10) The distribution licensee shall also take the reading of solar meter for recording total solar power generated by Solar PV system of consumer for its Renewable Power Purchase Obligation (RPPO).

11) All the rules, regulations and conditions, applicable to the consumers of the distribution licensee for the applicable category, shall also be applicable to the eligible consumer.

7) Penalty or compensation :- In case of failure of net metering system, the provisions of penalty or compensation shall be applicable as per the provisions of the Himachal Pradesh Regulatory Commission (Distribution Performance Standards) Regulation, 2010.

8) Applicability of Other Provisions :-

The provisions of HP Electricity Supply Code, HP Electricity Distribution Code, HP Grid CODE and tariff orders issued by the Commission from time to time, shall be applicable, in respect of matters, not specifically dealt in these regulations.

In case of any dispute in billing, the consumer can approach the Dispute Settlement Committee, Consumer Grievances Redressal Forum and Electricity Ombudsman in accordance with HPERC Regulations.

All charges on net electricity consumed from HPSEBL shall be livable as usual. All the instructions, rules and regulations applicable to the consumers of the HPSEBL for the applicable class/category including but not limited to the tariff rates, Payment schedule, Late payment surcharge, connected load/ contract demand, Load surcharge, peak load restrictions, security consumption deposit etc. shall also be applicable to the Roof Top Solar plant owner as a consumer of HPSEBL.

NOTE :-

These instructions/ guidelines shall be read with provisions of HPERC Regulation for Grid Interactive Roof Top Solar Photo Voltaic Power Plants System issued vide notification No. HPERC – H (1)-11/2015 dated 31st July, 2015 and in case of any inconsistency the provisions of the Regulation shall prevail. (Copy of HPERC (Rooftop Solar PV Grid Interactive Systems based on Net Metering) Regulations, 2015 is attached herewith.)

Form-1

(see sub-regulation (1) of regulation 7 of HPERC)

Net Metering Application

To

Designated officer*

(Name of office)

Date -----

I/We herewith apply for a solar energy net metering connection at the service connection and for the Rooftop Solar PV Plant, detail of which are given below.

1	Name of consumer/firm/industry/institutions/office etc.	
2	Location of plant.	
3	Account No.	
4	K –No.	
5	Sanctioned Connected Load (kW)	
6	Sanctioned Contract Demand (kVA)	
7	Applicable tariff /category	
8	Telephone Number	
9	Email ID	
10	Rooftop Solar PV Plant Capacity (kWp)	
11	Solar grid inverter make and type	
12	Solar grid inverter has automatic isolation protection (Y/N)	
13	Has a Solar Generation Energy Meter been installed (Y/N)	
14	Expected date of commissioning of Solar PV System	

Name :-

Signature :

Net Metering Application Acknowledgement

Received an application for a solar energy net-metering connection from.

Name :

Date :

Account No. :

K-Number

Application registration No. :

Solar Plant Capacity :

Name of Officer :

Signature

Designation/Distribution Licensee

**TECHNICAL DATA FORM FOR FEASIBILITY CLEARANCE OF ROOF TOP SPV POWER PLANT
Form -B**

(to be filled by JE/AE of the area)

1	Name of Consumer	
2	Address/Location of Consumer/Location	
3	Contact No. and E-mail ID	
4	Account No.	
5	Name of Sub-Division with Code	
6	Name of Division with Code	
7	Name of Circle with Code	
8	Sanctioned load/CD OF Consumer with supply voltage	
9	Category D/S,C/S,NDNC, Ind. /Agri.	
10	Capacity of proposed SPV Plant in kWp/kVp (it should not be more 80% of the sanctioned load/CD for individual consumer covered under two parts tariff & shall be 30% of the sanctioned connected load in case of an individual consumer covered under single part tariff)	
11	Name and code of Distribution Transformer	
	i)Capacity of Distribution Transformer	
	ii)Connected Load kW/kVA	
	iii)Maximum Demand in Amps	
	iv)No. of LT Circuits	
12	i)Length of LT Feeder (mtrs)	
	ii)Size of conductor (sq.mm)	
	iii)Maximum Demand in Amps	
13	i)Name of feeder with code	
	ii)Size of Conductor/Capacity	
14	Name of feeding s/stn with code	
15	SPV PPs already connected on this distribution transformer (in kW/kVA)	No. of SPV PPs Total capacity in kW/kVA
16	No. of pending SPVPPs to be connected on the T/F	No. of SPVPPs Total capacity in kW/kVA
17	Capacity of proposed SPVPP on the T/F in kW/kVA	
18	Total load on this T/F (in KW/KVA)= Sum total of columns (15+16+17) should not be more than 30% of the capacity of T/F	No. of SPVPPs Total capacity in kW/kVA
19	Voltage level at which the consumer is being fed	
20	Recommendation of Field Office :0 (Whether capacity of SPVPP as per column 10 approved or not, if approved mention the approved capacity, if not assign the reasons	kW/kVA

Date

Signature of Authorized officer

Signature of HPSEBL Official

Form-C

Letter of Approval

To

Mr./Ms/M/s.....

A/c No.....

Memo No:

Dated:

Ref: Your request of RID No.....

Your request for installing Rooftop PV system forKWP capacity is considered and approval is accorded with the following conditions:-

1. You shall set up the plant and submit the work completion report along with Single Line Diagram of the synchronizing and protection arrangement issued by the plant supplier/EPC contractor duly approved by HIMURJA, that the plant has been installed as per approved standard and specification within 180 days. In case of delay you shall have to get further extension from HPSEBL. Such Extension will be granted for a maximum period of 2-months only and the approval granted will lapse automatically if the project is not set-up even in the extended 2-months period. However you will be eligible to apply in the next financial year but your application will be kept at the bottom of the list of application and you will be permitted to set-up the plant only if all the applicant above you are selected and there is still capacity available for allotment.
2. You will abide by the guidelines on net metering for Grid Interactive Rooftop solar Photo Voltaic Power Plant issued by Govt. of HP/HPERC/HPSEBL.
3. The Solar plant shall comply with the relevant standards specified by the MNRE/BIS and CEA. The responsibility of operation and maintenance of the solar photo voltaic (SPV) generator including all accessories and apparatus lies with the consumer. The design and installation of the rooftop SPV should be equipped with appropriately rated protective devices to sense any abnormality in the system and carry out automatic isolation of the SPV from the grid. The inverter used should meet the necessary quality requirements and should be certified for their

quality by appropriate authority, the protection logics should be tested before commissioning of the plant.

4. The automatic isolation or islanding protection of SPV should be ensured for no grid supply and low or over voltage conditions within the required response time. Adequate rated fuses and fast acting circuit breakers on input and output side of the inverters and disconnect/isolating switches to isolate DC and AC system for maintenance shall be provided. The consumer should provide for all internal safety and protective mechanism for earthling surge, DC ground fault, transients etc.

To prevent back feeding and possible accidents when maintenance works are carried out by HPSEBL personnel, Double pole/Triple pole with neutral isolating disconnecting switches which ever applicable can be locked by HPSEBL personnel should be provided. This is in addition to automatic sensing and isolating on grid supply failure etc and in addition to internal disconnecting switches. In the event of HPSEBL LT/HT supply failure, the consumer has to ensure that there will not be any solar power being fed to the LT/HT grid of HPSEBL. You will be solely responsible for any accident to human beings/animals whatsoever (fatal/non fatal/departmental/non departmental) that may occur due to back feeding from the SPV plant when the grid supply is off. HPSEBL have the right to disconnect the rooftop solar system at any time in the event of possible threat/damage, from such rooftop solar system to its distribution system, to prevent any accident or damage, without any notice.

You shall abide by all the codes and regulations issued by the commission to the extent applicable and in force from time to time and shall comply with HPERC/HPSEBL/CEA requirements with respect to safe, secure and reliable functioning of the SPV plant and the grid. The power injected into the grid shall be of required quality in respect of wave shape, frequency, absence of DC components etc.

The inverter standard shall be such that it should not allow solar power/battery power to extend to HPSEBL's Grid on failure of HPSEBL's Grid supply irrespective of connectivity options.

You shall restrict the harmonic generation within the limit specified in IEEE 519 or as may be specified by the Central Electricity Authority.

AE/AEEE/SR.XEN/SE/Dy.CE

Of Sub division/Division/Circle

HPSEBL.....

Agreement From for Solar Roof-top Net Metering

This Agreement is made and entered into at (location).....on this (date).....day of (month).....(year).....between----- ----- who is a consumer of the distribution licensee with sanctioned contract demand of -----kVA at his premises------(address)-----as First party, and----- distribution licensee (herein after called as------(Name of Discom.)----- and having its registered office at ------(address)-----as Second party of the agreement.

And whereas the------(Name of discom,)-----agrees to facilitate the Rooftop Solar PV Energy Generator for the electricity generated from his Rooftop Solar PV Grid Interactive System of capacity-----watts and as per the conditions of this agreement and net – metering regulations/orders issued by the Himachal Pradesh Electricity Regulatory Commission.

Both the parties hereby agree to as follows;

1. Eligibility

1.1 Eligibility for net – metering shall be as specified in the Himachal Pradesh Electricity Regulatory Commission (Rooftop Solar PV Grid Interactive System based on Net Metering) Regulation, 2015. First Party is required to be aware, in advance, of the standards and conditions his system has to meet, for being integrated into grid/distribution system.

2. Technical and Interconnection Requirements

2.1 First Party agrees that his Solar PV generation plant and net – metering system will conform to the Standards and requirements mentioned in the following Regulations, codes . LOA and any other relevant provisions and also that he shall be continued to be governed by all such regulations, codes and other relevant provisions;

I) The Central Electricity Authority (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013;

ii) The Central Electricity Authority (Installation and Operation OF meters), Regulation 2006;

iii) The Himachal Pradesh Electricity Distribution Code, 2008.

iv) The Himachal Pradesh Electricity Supply Code, 2009 & further amended in 2014.

v) any other provision applicable to the electricity consumer of the distribution licensee.

2.2 First Party agrees that he has installed or will install, prior to connection of Photovoltaic System to Second Party's distribution system, an isolation device (both automatic and

- 2.3** inbuilt within inverter in case of Solar PV Generation and external manual relays) and agrees for the Second Party to have access to and operation of this, if required and for repair -----
------(Name of Discom.)-----and maintenance of the distribution system.
- 2.4** First party agrees that in case of a power outage on Second Party's system, Photovoltaic System will shut down, automatically and his plant will not inject power into distribution system.
- 2.5** All the equipments connected to distribution system must be compliant with relevant international (IEEE/IEC) or Indian standards (BIS) and installations of electrical equipment must comply with the Central Electricity Authority (Measures of Safety AND Electricity Supply) Regulation, 2010.
- 2.6** First Party agrees that licensee will specify the interface/interconnection point and metering point.
- 2.7** First Party and Second Party agrees to comply with the relevant CEA regulations in respect of operation and maintenance of the plant, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage frequency, flicker etc.
- 2.8** Due to Second Party obligation to maintain a safe and reliable distribution system, eligible consumer agrees that if it is determined by the Second Party that First Party's Photovoltaic System either caused damage to and/or produce adverse effects affecting other consumers or Second Party's assets, First Party will have to disconnect Photovoltaic System immediately from the distribution system upon direction from the Second Party and correct the problem at his own expense prior to a reconnection.

3. Clearance and Approvals

- 3.1** First Party agrees to obtain all the necessary approvals and clearances (environmental and grid connection related) before connecting the Photovoltaic System to the distribution system.

4. Access and Disconnection

- 4.1** Second Party shall have access to metering equipment and disconnecting means of Photovoltaic System, both automatic and manual, at all times.
- 4.2** In emergency or outage situation, where there is no access to a disconnecting means, both automatic and manual, such as a switch or breaker, Second Party may disconnect service to the premise.

5. Liabilities

- 5.1** First Party and Second Party will indemnify each other for damages or adverse effect from either party's negligence or intentional misconduct in the connection and operation of Photovoltaic System or Second Party distribution system.
- 5.2** Second Party and First Party will not liable to each other for any loss, profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential incidental or special damages of the said liability, loss or damage arise in contract, or otherwise.

5.3 Second Party shall not be liable for delivery or realization by First Party for any fiscal or other incentive provided by the Central/State Government beyond the scope specified by the Commission in its relevant order.

6. Commercial Settlement

6.1 All the commercial settlement under this agreement shall follow the Net – Metering Regulations and relevant Orders of Himachal Pradesh Electricity Regulatory Commission.

7. Connection Costs

7.1 The First Party shall bear all costs related to setting up of Photovoltaic System including metering and interconnection costs. The First Party agrees to pay the actual cost of modifications and upgrades to the service line required to connect the Photovoltaic System in case it is required.

8. Termination

8.1 The First Party can terminate agreement at any time by providing Second Party with 90 days prior notice.

8.2 Second Party has the right to terminate Agreement on 30 days prior written notice, if eligible consumer breaches a term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Second Party of the breach.

8.3 First Party agrees that upon termination of this Agreement, he must disconnect the Photovoltaic System from Second Party distribution system in a timely manner and to Second Party's satisfaction.

In the witness, where of Mr. -----for and on behalf of First Party and Mr. -----for Second Party sign this agreement in two originals.

First Party
Name

Second Party
Name

Address
Designation

Office Address

K. Number of consumer
Account No. of consumer

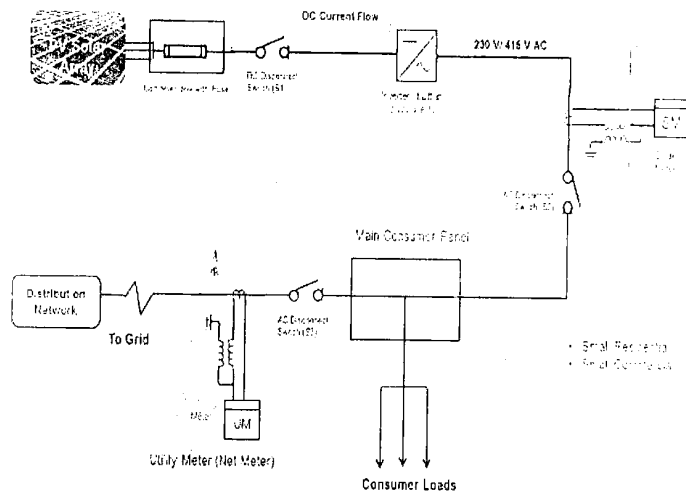
ANNEXURE-VI

Meter Configuration options

The metering system for rooftop solar system, under net-metering arrangement, shall be as elaborated below which should be applicable till such time the Central Electricity Authority notifies the standards in this matter.

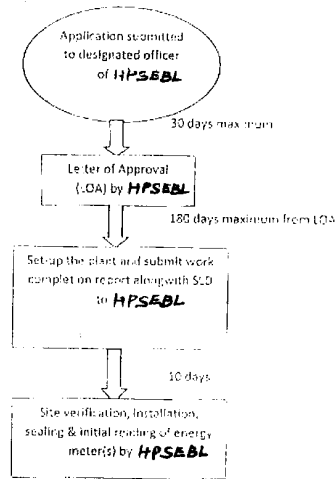
a) Two Meter Configuration without Storage

The metering protocol for 'Grid connected rooftop solar PV system without storage' and location of solar meter and consumer meter shall be in accordance with the schematic below.



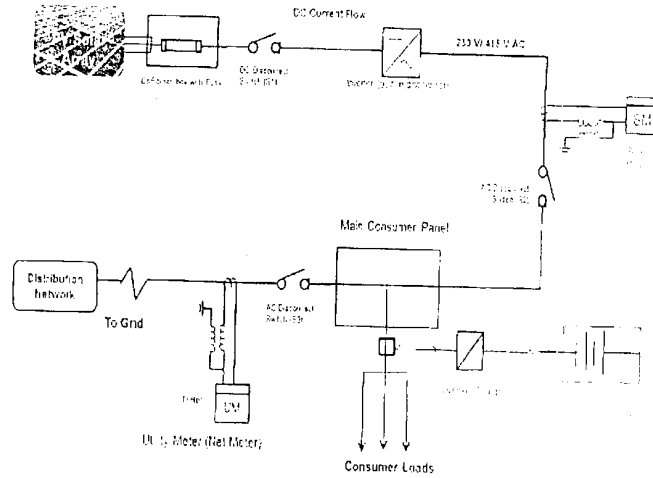
The utility meter (Net-meter) has to be bi-directional meter to register both import grid electricity amount as well as export solar electricity amount.

Timelines to set-up Grid Interactive Roof-Top Solar Photovoltaic Power Plants



b) Two Meter Configuration with Storage

The metering protocol for 'Grid connected rooftop solar PV system with storage' and location of Solar Meter (SM) and Utility Meter (UM) shall be in accordance with the schematic below.



The utility meter (Net meter) has to be bi-directional meter to register both import grid electricity amount as well as export solar electricity amount.