



Uttar Pradesh Electricity Regulatory Commission

Notification No.: UPERC/Secretary/RSPV Regulations/

Dated:

In exercise of powers conferred under section 61, 66, 86(1)(e) and 181 of the Electricity Act, 2003 and all other powers enabling in this behalf, the Uttar Pradesh Electricity Regulatory Commission hereby makes the following Regulations, namely:

UPERC (Rooftop Solar PV Grid Interactive Systems Gross / Net Metering) Regulations, 2019 (RSPV Regulations, 2019)

1. Short Title and commencement

1. These Regulations shall be called the UPERC (Rooftop Solar PV Grid Interactive Systems Gross / Net Metering) Regulations, 2019, (hereinafter referred to as RSPV Regulations, 2019).
2. These Regulations shall come into force from the date of their notification in the Official Gazette of the State and shall remain in force till, unless otherwise reviewed/extended.
3. These Regulations supersede the "UPERC (Rooftop Solar PV Grid Interactive Systems Gross / Net Metering) Regulations, 2015".
4. Words and expressions used in these Regulations and not defined herein but defined in the Electricity Act, 2003 (hereinafter referred to as 'the Act'), as amended from time to time, shall have the meaning as assigned to them under the Act.

2. Definitions and Interpretations

In these regulations, unless the context otherwise requires,

- a) "**Accuracy class index**" shall mean the index as specified in Central Electricity Authority (Installation & Operation of Meters) Regulations 2006 and subsequent amendments thereof;
- b) "**Act**" means the Electricity Act, 2003 (36 of 2003) and subsequent amendments thereof;
- c) "**Billing cycle**" or "**Billing period**" means the period for which electricity bills shall be prepared for different categories of consumers by the Licensee.
- d) "**Commission**" means the Uttar Pradesh Electricity Regulatory Commission constituted under the Act;



- e) **“Consumer”** means any person who is supplied with electricity for his own use by a Licensee or the Government or by any other person engaged in the business of supplying electricity to the public under the Act or any other law for the time being in force and includes any person whose premises are, for the time being, connected for the purpose of receiving electricity with the works of a Distribution Licensee, the Government or such other person, as the case may be;
- f) **“Connected load”** expressed in kW, kVA or HP, refers to aggregate of the manufacturer’s rated capacities of all the energy consuming devices or apparatus connected with the Distribution licensee’s service line on the consumer’s premises which can be operated simultaneously. For the purpose of levy of any charges and for deciding the supply voltage, the connected load shall be determined as per the method prescribed in the UPERC (Electricity Supply Code) Regulations 2005 and subsequent amendments thereof;
- g) **“Contracted load or Contracted demand or Sanctioned load”** means the maximum demand in kW, kVA or HP, agreed to be supplied by the licensee and indicated in the agreement executed between the licensee and the consumer;
- h) **“Distribution Licensee” or “Licensee”** means a person granted a license under Section 14 of the Act authorizing him to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply;
- i) **“Electricity Supply Code”** means the UPERC (Electricity Supply Code) Regulations 2005 and subsequent amendments thereof;
- j) **“Eligible consumer”** means a consumer of electricity in the area of supply of the Distribution Licensee, who uses or intends to use a grid connected rooftop Solar PV system installed in the consumer premises given that such systems can be self-owned or third party owned;
- k) **“Financial year” or “Year”** means the period beginning from first of April in an English calendar year and ending with the thirty first of the March of the next year;
- l) **“Gross Metering”** means the arrangement of measurement of energy in a system under which entire energy generated from rooftop solar PV system installed at eligible consumer premises is delivered to the distribution system of the Licensee;
- m) **“Inter-Connection Agreement”** means the agreement entered into for connecting rooftop Solar PV system to the distribution system;
- n) **“Interconnection point”** means the interface point of the Solar PV power generation facility with the distribution system of the Licensee. The interface point shall be the appropriate meter as per CEA (Installation and Operation of Meters), Regulations, 2006 and subsequent amendments thereof, installed at consumer’s premises or distribution substation;



- o) **“Invoice”** means either a Monthly Bill / Supplementary Bill or a Monthly Invoice/Supplementary Invoice raised by the Distribution Licensee.
- p) **“kWp”** means kilo Watt peak;
- q) **“Net metering”** means an arrangement for measurement of energy in a system under which rooftop solar PV system installed at eligible consumer premises delivers surplus electricity, if any, to the Distribution Licensee after off-setting the electricity supplied by Distribution Licensee during the applicable billing period.
- r) **“Net meter”** means an appropriate energy meter capable of recording both import & export of electricity or a pair of meters one each for recording the import and export of electricity as the case may be;
- s) **“Obligated entity”** means the entity mandated under clause (e) of subsection (1) of section 86 of the Act to fulfill the renewable purchase obligation and identified under UPERC (Promotion of Green Energy through Renewable Purchase Obligation) Regulations, 2010 and subsequent amendments thereof;
- t) **“Premises”** means rooftops or/and elevated areas on the land, building or infrastructure or part or combination thereof in respect of which a separate meter or metering arrangements have been made by the Licensee for supply of electricity;
- u) **“Rooftop solar PV system or Rooftop solar PV Plant”** means the grid interactive solar photo voltaic power system installed on the rooftops/ground mounted or open land of consumer premises that uses sunlight for direct conversion into electricity through photo voltaic technology;
- v) **“Renewable Energy Certificate (REC)”** means the certificate issued in accordance with the procedures approved by the Central Electricity Regulatory Commission;
- w) **“Renewable Energy Meter”** shall have the meaning as per definition assigned to it in the Central Electricity Authority (Installation and Operation of Meters) Amendment Regulations 2014 and subsequent amendments thereof;
- x) **“Settlement period”** means the period beginning from first of April in a calendar year and ending with the thirty first of the March of the next year.
- y) **“Tariff order”** in respect of a Licensee means the most recent order issued by the Commission for that Licensee indicating the rates to be charged by the Licensee from various categories of consumers for supply of electrical energy and services;



- z) **“Third party owner”** means a developer who is generating solar energy on a rooftop but does not own the rooftop but enters into a lease / commercial agreement with the rooftop owner. In case of gross metering arrangement owned by third party, he shall also enter into an agreement with the Distribution Licensee. However, if a consumer installs rooftop solar PV system in his premises through a third party and wishes to avail net metering facility, then only the eligible consumer shall enter into an agreement with the Licensee;

All other words and expressions used in these Regulations although not specifically defined herein above, but defined in the Act, shall have the meaning assigned to them in the Act. The other words and expressions used herein but not specifically defined in these Regulations or in the Act but defined under any law passed by the Parliament applicable to the electricity industry in the State shall have the meaning assigned to them in such law.

3. Scope and application

- 3.1 These Regulations shall apply to the Distribution Licensees, the eligible consumers of the Distribution Licensees and third party owners of gross metering arrangement of rooftop solar PV system in the State of Uttar Pradesh.
- 3.2 The eligible consumer may install the rooftop solar PV system under either gross metering arrangement or net metering arrangement which:
- a) Shall be within the permissible rated capacity as defined under these Regulations;
 - b) Shall be located in the premises of the consumer;
 - c) Shall interconnect and operate safely with the distribution system of the Licensee.
- 3.3 These Regulations do not preclude the right of the State authorities to undertake rooftop solar projects above 2MWp capacity through alternative mechanisms.
- 3.4 Any consumer or third party owner claiming accelerated depreciation benefits on the rooftop solar PV system shall only be eligible to avail net metering arrangement under these Regulations.

4. General Principles

- 4.1 Subject to the limits and other terms and conditions specified in these Regulations, the eligible consumers of the Distribution Licensee shall be entitled to install rooftop solar PV system under either gross metering arrangement or net metering arrangement.

Provided that third party owners who have entered into a lease or commercial agreement for the rooftop in the premises of the eligible consumers, shall also be



entitled to install rooftop solar PV system under gross metering arrangement with the Distribution Licensee, for such capacity which shall be cumulative of the prescribed limits of rooftop solar PV capacity for each eligible consumer whose

rooftop has been leased by the third party owner.

Provided that third party owners who have entered into a lease or commercial agreement for the rooftop in the premises of a group of consumer, shall also be entitled to install rooftop solar PV system under Net metering arrangement with the Distribution Licensee, for such capacity which shall be cumulative of the prescribed limits of rooftop solar PV capacity for each eligible consumer of the group whose rooftop has been leased by the third party owner.

- 4.2 Provided that the eligible consumer or third party owner as the case may be availing gross metering arrangement under these Regulations shall not be allowed to apply for net metering arrangement within the same premises.
- 4.3 Provided that the eligible consumer availing net metering arrangement under these Regulations shall not be allowed to apply for gross metering arrangement within the same premises.
- 4.4 Provided that the Distribution Licensee shall offer the provision of gross metering arrangement and net metering arrangement to the eligible consumer or third party owner as the case may be, who intends to install grid connected rooftop solar PV system, in its area of supply on non-discriminatory and first come first serve basis.
- 4.5 If the eligible consumer or third party owner installs solar rooftop system under the gross metering scheme, the entire power generated from such an installation shall be injected to the distribution system of the Licensee at the interconnection point.
- 4.6 If the eligible consumer installs solar rooftop system under the net metering scheme, such eligible consumer shall be entitled to use the power generated from the rooftop solar PV system at his premises. The surplus power can be injected to the distribution system of the Licensee at the interconnection point.
- 4.7 In addition to above, to provide flexibility to rooftop solar power prosumer, taking a progressive view, the Commission is proposing provision of mutual sale and purchase of electricity through peer-to-peer transaction in a secured and reliable way with proper accounting and billing mechanism implemented with the help Block chain technology. Provided that for such arrangement prior approval of the Commission shall be required. To further take up development of peer-to-peer transaction of electricity generated through renewable sources, the Commission directs that UPPCL and UPNEDA shall put up a proposal jointly

5 Capacity of Rooftop PV System.

- 5.1 The maximum peak capacity of the grid connected rooftop solar PV system to be installed by any eligible consumer shall not exceed 100% of the sanctioned load/ connected load / contracted demand of the consumer.

Provided the capacity of the grid connected rooftop solar PV system to be installed by any eligible consumer or third party owner shall not be less than 1 kWp and shall not exceed 2 MWp..

- 5.2 Provided that the capacity of the grid connected rooftop solar PV system shall be in conformity with the provisions relating to the connected load or contract demand permissible under the UPERC (Electricity Supply Code) Regulations, 2005 and subsequent amendments thereof.

6 Capacity of Transformer

- 6.1 The Distribution Licensee shall provide information on its website regarding capacity available on distribution transformer(s) for feeding the eligible consumer at different locations for connecting rooftop solar PV system within three months from the date of commencement of these Regulations, and shall update the same within one month of the start of the subsequent financial year under intimation to the Commission.

- 6.2 Provided that the capacity to be allowed in the area fed from the distribution transformer (DT) or any other transformer from which power is fed to the eligible consumer is 100% of that DT or any other transformer.

Provided that if augmentation of transformer/distribution network is required, then upto total 10 kWp solar rooftop installation the consumer would not pay any system upgradation charges whereas, above this the consumer will pay at the rate of Rs 1000 per kWp as cost of augmentation of system. e.g. a consumer willing to install a 15 kW RSPV Plant shall be paying Rs 5,000 (5×1000) as RSPV cost to the utility.

- 6.3 Provided further that in case of multiple applications from the consumers or third party owners fed by a transformer for participation in the scheme, the connectivity with the rooftop solar PV system shall be allowed on first come first serve basis.

7 Procedure for Application and Registration

- 7.1 The eligible consumer or third party owner hereinafter referred to as applicant who intends to install grid interactive rooftop solar PV system in his/her premises may apply offline otherwise online through <https://upnedasolarrooftopportal.com/> or <http://apps.uppcl.org/solar>

7.2

- 7.3 For applying offline the applicant shall apply in the application form at Annexure- I of these Regulations along with the application fees as specified in Annexure-II of these Regulations. The Distribution Licensee shall make available all the forms on their website and local offices. For simplification of the system:



- (i) Consumers shall submit the application to the Executive Engineer of the concerned Distribution Licensee along with a copy to UPNEDA officer in the district;
- (ii) UPNEDA shall take monthly progress from Distribution Licensees and submit quarterly progress to the Commission;

7.4 The Licensee shall acknowledge the receipt of the application form, register the application and shall process the application in the order of the receipt. The Licensee shall prepare a priority list having validity of one eighty (180) days on the basis of the order of such receipts. The priority list shall be prominently displayed in the local offices of the Licensee and shall also be uploaded on the website of the Licensee.

7.5 In order of priority, the Distribution Licensee shall complete the feasibility analysis for connecting the rooftop solar PV system to the distribution system within thirty (30) days from the date of receipt of the application. The feasibility shall be valid for a period of one month unless extended by the Distribution Licensee. Provided that if the Distribution Licensee determines that an interconnection study is necessary, the Distribution Licensee shall intimate feasibility or otherwise within sixty (60) days from the receipt of the completed application.

7.6 While intimating the feasibility of the connection of the rooftop solar PV system as specified in Regulation 7.3, the Distribution Licensee shall also intimate the applicant:

- (a) The details of documents to be submitted by the applicant;
- (b) Particulars of any deficiencies, if noticed, along with instructions to remove such defects.

Provided that if such deficiency is not removed within a period of thirty (30) days from date of receipt of intimation to such applicant, the application shall stand cancelled and the application fee shall be forfeited.

7.7 The Distribution Licensee shall on receipt of documents (if any) and removal of defects (if any), submitted under Regulation 7.4, inform the approval within ten (10) days from the date of receipt.

Provided that on feasibility analysis, if it is found that due to certain reasons including operational constraints it is not feasible for the Distribution Licensee to provide connectivity at all or up to the applied capacity i.e. connectivity is feasible for a reduced capacity, the Distribution Licensee shall specifically record the reasons thereof and, intimate in writing the same to the applicant(s) specifically mentioning that: the applicant has the option, to be exercised in writing, to

- (i) either accept the connectivity for the reduced capacity and approach the Distribution Licensee to process the case;



- (ii) or seek refund of its application fee either within seven (7) days of the receipt of the intimation;
- (iii) or to stay in the priority list till its validity i.e. up to one hundred and eighty (180) days under clause 7.2 of these Regulations, for re-consideration and approval in case of future availability of applied capacity at the distribution transformer level etc. within such period.

Provided that if the applicant seeks refund, the Distribution Licensee shall refund the application fee within seven (7) days from the date of receipt of intimation from the applicant in this regard. Thereafter, the Distribution Licensee shall notify the updated position of the remnant applicants in the priority list.

Provided also that in case the applicant opts to stay in the priority list and even in the validity period of priority list of one hundred and eighty (180) days the required capacity does not get available, the Distribution Licensee shall refund the application fee on its own within seven (7) days of expiry of such one hundred and eighty (180) days period;

- 7.8 On receipt of approval of Distribution Licensee under Regulation 7.5, the applicant shall apply for registration of the scheme for rooftop solar PV system by completing the registration form provided at Annexure-III of these Regulations along with the registration fees as specified in Annexure-II of these Regulations.
- 7.9 At the time of submission of Registration Form, the Distribution Licensee shall perform preliminary checks of all the documents submitted along with the Registration Form in the presence of applicant or his representative, and if found complete, shall receive the form and acknowledge its receipt.
- 7.10 The Distribution Licensee shall provide written intimation to the applicant within fifteen (15) days from the date of receipt, deficiencies or additional documentation requirement (if any)
- 7.11 The applicant shall re-submit the Registration Form, along with the requisite documents, after curing the deficiencies contained therein within thirty (30) days of receipt of such intimation.
- 7.12 The Distribution Licensee within fifteen (15) days of receipt of completed Registration form:
 - (i) register the scheme and assign a registration number if Registration Form is found complete and in order;
 - (ii) give a personal hearing to the applicant and also intimate in writing the deficiencies, found if any, in the Registration Form and/or the documents submitted by the applicant giving him a final opportunity to cure the deficiencies and its re-submission.
- 7.13 The applicant within fifteen (15) days from such intimation shall cure the deficiencies and re-submit the Registration Form along with documents to the



Distribution Licensee. If the Registration Form is found complete and in order, the Distribution Licensee shall register the scheme and assign a Registration Number to it. However, if it is observed that certain deficiencies still persist, the application for registration may be rejected.

Provided that in case the application for registration is rejected, the Distribution Licensee shall provide a written intimation to the applicant detailing reasons for rejection within fifteen (15) days of receipt of re-submitted Registration form.

Provided further that fifty (50%) of the registration fee shall be refunded to the eligible applicant within seven (7) days from issue of written intimation for rejection of application for Registration.

- 7.14 For the applicant who has applied under the gross metering scheme, the inter connection agreement provided at Annexure-V(A) of these Regulations shall be executed by the Distribution Licensee within thirty (30) days of issue of Registration number to the eligible applicant.
- 7.15 For the applicant who has applied under the net metering scheme the inter connection agreement provided at Annexure-V(B) of these Regulations shall be executed by the Distribution Licensee within thirty (30) days of issue of Registration number to the eligible applicant.
- 7.16 The applicant must execute the inter connection agreement and return it to the Distribution Licensee within thirty (30) days from the date of receipt.

8 Interconnection with the distribution system

- 8.1 The interconnection of the rooftop solar PV system with the distribution system of the Distribution Licensee shall be made as per the technical specifications and standards for connectivity as specified by the Central Electricity Authority. The cost of evacuation system and interconnection of the rooftop solar PV system with the distribution system shall be borne by the eligible consumer or third party owner, as the case may be. Information related to technical & interconnection standards are given at Annexure IV of these Regulations. The Distribution Licensee shall ensure that:
 - (i) The interconnection of the rooftop solar PV system with the distribution system conforms to the specifications, standards and provisions as provided in the Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations, 2013 as amended from time to time.
 - (ii) The inter connection of the rooftop solar PV system with the distribution system of the Licensee confirms to the relevant provisions of the Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.

- (iii) The interconnection of the rooftop solar PV system with the distribution system conforms to the specifications, standards and provisions as provided in the UPERC (Grant of connectivity to intra-state Transmission System) Regulations, 2010 as amended from time to time.

Provided that in case of a conflict between these Regulations and the regulations specified under the UPERC (Grant of connectivity to intra-state Transmission System) Regulations, 2010 as amended from time to time, these Regulations shall be applicable to the eligible consumers or third party owner as the case may be.

- (iv) Regulations and provisions framed under Section 53 of the Electricity Act, 2003 and subsequent amendments thereof;

- 8.2 The connectivity levels at which the rooftop solar PV system shall be connected with the distribution system are as specified below:

S.No.	Connected Load / Contract Demand of Eligible Consumer	Connectivity Level
1.	Up to 5 kW	Single phase at 230 V
2.	5 kW and above up to 50 kW / 63 kVA	3 Phase, 4 wire at 415 V
3.	Above 50 kW and up to 1 MW	3 Phase at 11 kV
4	Above 1 MW and upto 2 MW	3 Phase 33 kV

- 8.3 The eligible consumer shall be responsible for safe operation, maintenance and rectification of any defect of the rooftop solar PV system up to the interconnection point beyond which the responsibility of safe operation, maintenance and rectification of any defect in the distribution system including the gross meter /net meter as the case may be shall rest with the Distribution Licensee.
- 8.4 The Distribution Licensee shall have the right to disconnect the rooftop solar PV system at any time in the event of possible threat/damage, from such rooftop solar PV system to its distribution system, to prevent an accident or damage. Subject to Regulation 8.3, the Distribution Licensee may call upon the eligible consumer to rectify the defect within a reasonable time.

9 Metering arrangement

- 9.1 All the meters shall adhere to the standards and provisions specified in CEA (Installation and Operation of Meters), Regulations, 2006 and subsequent amendments thereof.
- 9.2 The appropriate meter(s) shall be single phase or three phase as per requirement. All the meters to be installed shall be of the same or better Accuracy Class Index than the existing meter installed at the premises.

- 9.3 The appropriate meter(s) at the premises of the consumer shall be procured, installed and maintained by the Distribution Licensee at the cost of the eligible consumer. However, if the eligible consumer wishes to procure the appropriate Meter(s), he may procure such meter(s) and present the same to the Distribution Licensee for testing and installation.
- 9.4 The location of appropriate meter(s) shall be in accordance with the CEA (Installation and Operation of Meters), Regulations, 2006 as amendments from time to time and the UPERC (Grid Code) Regulations, 2007 as amendments from time to time.
- 9.5 The installation of check meters shall be mandatory for rooftop solar PV system having rated capacity more than 50 kWp. The charges for testing, installation and maintenance of the check meter shall be borne by the eligible consumer. The Distribution Licensee shall own the check meter.
- 9.6 For installations having rated capacity up to 50 kWp, the eligible consumer or the Distribution Licensee who so ever if desires, may install check meter at their own cost. The Distribution Licensee shall own the check meter.
- 9.7 The check meter shall be installed after the inverter of the solar rooftop system.
- 9.8 The specification and standards of the check meter shall be same as or better than the consumer meter installed at the premises of the eligible consumer.
- 9.9 All the meters installed shall be jointly inspected and sealed on behalf of both the parties.

Provided that the meter reading taken by the Distribution Licensee shall form the basis of commercial settlement.

10 Energy Accounting and Settlement

- 10.1 Meter readings shall be taken as per the applicable cycle as provided in the UPERC (Electricity Supply Code) Regulations 2005 and subsequent amendments thereof;
- 10.2 The case of rooftop solar PV system under gross metering arrangement the Licensee shall undertake energy accounting and settlement with either the eligible consumer or the third party owner whosoever is a signatory of the interconnection agreement with the Licensee.
- 10.3 The energy accounting and settlement procedure for eligible consumers / third party owners installing and operating rooftop solar PV system under gross metering arrangement shall be as per the following procedure:
 - (i) For each billing period, the Licensee shall show the quantum of electricity injected by the rooftop solar PV system installed at the premises of the eligible consumer in the billing period.



- (ii) The Distribution Licensee shall reimburse the eligible consumer or the third party owner as the case may be for the quantum of injected electricity by the rooftop solar PV system during the billing period by way of 'Solar Injection Compensation'.

Provided that the Solar Injection Compensation to be paid by the Distribution Licensee to the eligible consumer or third party owner as the case may be shall be the weighted average tariff of Competitive Bidding projects adopted by the Commission in last Financial Year. E.g. For FY 2018-19, weighted average tariff of projects discovered through Competitive Bidding in FY 2017-18 and adopted by the Commission shall be applicable.

- (iii) Rebate and late payment surcharge on early or delayed payment of the Solar Injection Compensation as the case may be shall be levied in the same manner as per the procedure laid down by the Commission in the UPERC (Electricity Supply Code) Regulations, 2005 and subsequent amendments thereof;

Provided that such rebates/ delayed payment surcharge as the case may be shall also be payable to the third party owner in the same manner as per procedure specified for the consumer of the Licensee in the UPERC (Electricity Supply Code) Regulations, 2005 and subsequent amendments thereof;

- (iv) There shall be no deemed generation charges payable to the eligible consumer or third party owner of the solar rooftop system.
- (v) The Distribution Licensee shall be responsible for billing of the electricity injected by the rooftop solar PV system into the distribution system. The bills prepared by the distribution license shall necessarily include the following:

- a) Quantum of electricity injected into the distribution system by the rooftop solar PV system.
- b) Quantum of Solar Injection Compensation payable by the Licensee.

Provided that the billing period and due date of the bills shall be the same as that of the eligible consumer in whose premises the solar system has been installed.

Provided also that Licensee shall reimburse the eligible consumer or third party owner of the solar rooftop system as the case may be, within the due date of the electricity bill of the consumer in whose premises the rooftop solar PV system has been installed.

10.4 The energy accounting and settlement procedure for consumers installing and operating rooftop solar PV system under net metering arrangement shall be as per the following procedure:

- (i) For each billing period, the Licensee shall show the quantum of electricity injected by the rooftop solar PV system in the billing period, supplied electricity

by Distribution Licensee in the billing period, net billed electricity for payment by the consumer for that billing period and net carried over electricity to the next billing period separately;

- (ii) If the electricity injected exceeds the electricity consumed during the billing period, such excess injected electricity shall be carried forward to next billing period as electricity credit and may be utilized to net electricity injected or consumed in future billing periods but within the settlement period;
- (iii) If the electricity supplied by the Distribution Licensee during any billing period exceeds the electricity generated by the eligible consumer's rooftop solar PV system, the Distribution Licensee shall raise invoice for the net electricity consumption after taking into account any electricity credit balance remaining from previous billing periods;

Provided, in case the eligible customer is under the ambit of time of day tariff, as determined by the Commission from time to time, the electricity consumption in any time block (e.g., peak hours, off-peak hours, etc.) shall be first compensated with the electricity generation in the same time block. Any excess generation over consumption in any time block in a billing cycle shall be carried forward to the corresponding time block in the subsequent month for adjustment purpose.

Provided also that the excess electricity measured in kilo-watt hour may only be utilized to offset the consumption measured in kilo-watt hour and may not be utilized to compensate any other fee and charges imposed by the Distribution Licensee as per the instructions of Commission

Provided also at the end of each settlement period, any electricity credits, which remain unadjusted, shall be paid at a rate of Rs 2/kWh by the Distribution Licensee or as notified by the Commission from time to time.

Provide further that at the beginning of each settlement period, cumulative carried over electricity credits shall be reset to zero.

- (iv) In case of Group Net Metering, the settlement between the individual consumer in the group and the third party (if involved) will be the responsibility of the group or third party itself and shall be driven by the agreement between them. The third party aggregator shall not be charged by DISCOM any fixed charges on this account but shall be charged for imported energy as per prevailing Rules and Regulations.
- (v) There shall be no deemed generation charges payable to the eligible consumer.
- (vi) In case the applicable tariff provides for billing on kVAh basis, the net drawl or injection of energy shall also be measured in kVAh.
- (vii) When an eligible consumer leaves the system, that consumers unused electricity credits shall be paid at a rate of Rs 2/kWh by the Distribution Licensee or as notified by the Commission from time to time.

- (viii) Regardless of availability of electricity credits with the eligible consumer during any billing period, the consumer shall continue to pay applicable charges such as fixed/ demand charges, Government levy etc.
- (ix) The Distribution Licensee shall necessarily provide the following details along with the electricity bill relating to each billing period:
- Quantum of electricity generated from the rooftop solar PV system.
 - Quantum of electricity injected into the distribution system by the rooftop solar PV system.
 - Quantum of electricity supplied by the Distribution Licensee to the eligible consumer.
 - Quantum of net electricity that has been billed for payment by the eligible consumer.
 - Quantum of electricity credits available to the eligible consumer which is carried over from the previous billing period.
 - Quantum of electricity injected into the distribution system in excess of the drawl by the eligible consumer (quantum of electricity credits) which shall be carried forward to the next billing period.

10.5 In case of any dispute in billing it would be settled by the Consumer Grievance Redressal Forum and if issue still remains unresolved, it shall be settled by the Ombudsman following appropriate procedure.

11 Applicability of other charges

In rooftop solar PV system under gross metering scheme / net metering scheme, whether self-owned or third party owned and installed on eligible consumer premises shall be exempted from wheeling and cross subsidy surcharge.

12 Solar Renewable Purchase Obligation

12.1 In case of gross metering scheme the quantum of electricity generation by eligible consumer, who is not defined as Obligated entity, from the rooftop solar PV system shall qualify towards compliance of Renewable Purchase Obligation (RPO) for the Distribution Licensee in whose area of supply the eligible consumer is located.

12.2 In case of net metering scheme the total quantum of solar electricity generated under the net metering arrangement for eligible consumer, who is not defined as Obligated entity, shall qualify towards deemed Renewable Purchase Obligation (RPO) for the Distribution Licensee in whose area of supply the eligible consumer is located.

13 Eligibility to participate under Renewable Energy Certificate Mechanism

13.1 Nothing contained in these Regulations shall apply to the Solar PV generator intending to sell power under the Renewable Energy Certificate Mechanism and he shall be free to sell power under such mechanism as per the provisions of



Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 and subsequent amendments thereof and UPERC (Promotion of Green Energy through Renewable Purchase Obligation) Regulations, 2010.

- 13.2 The eligibility for Renewable Energy Certificate and issuance of such renewable energy certificate shall be as per the eligibility criteria specified under Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 and subsequent amendments thereof.

14 Penalty or Compensation

In case of failure of gross metering or net metering system as the case may be, the provisions of penalty or compensation shall be as per the provisions of the provided in the UPERC (Electricity Supply Code) Regulations, 2005 and subsequent amendments thereof or as determined by the Commission from time to time.

15 Power to give directions

The Commission may from time to time issue such directions and orders as considered appropriate for the implementation of these Regulations.

16 Power to relax

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected may relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

17 Power to amend

The Commission may from time to time add, vary, alter, suspend, modify, amend or repeal any provisions of these Regulations.

By the order of the Commission

Secretary



Annexure-I

Application Form Number

APPLICATION FOR INTENT TO SEEK CONNECTIVITY OF ROOFTOP SOLAR PV SYSTEM

1.	Name			
	Full Address of Consumer / Applicant			
2.	Consumer No. (CA. No.) (Owner of the premises)			
3.	Category (Domestic / Non Domestic/Commercial etc. specify) (Owner of the premises)			
4.	Telephone No	Res:		Mob:
5.	E-mail address			
6.	Sanctioned Load			
7.	Capacity of Rooftop Solar PV System proposed to be connected			
8.	Whether the Consumer is under ToD billing system (Owner of the premises)			Yes/No
9.	Whether the Consumer or third party owner shall avail accelerated depreciation benefits on the Rooftop Solar PV system			Yes/No
10.	Type of Rooftop Solar PV System proposed (Gross/Net metering)			
11.	Location and address of Proposed Rooftop Solar PV System (roof top, ground mounted, any other – specify)			
12.	Preferred mode of Communication (Post/ By Hand/ Electronic etc. – specify)			
	Place:		Signature of Eligible Consumer/Third Party owner	



ACKNOWLEDGEMENT

Application Number

Received the application for connectivity of Rooftop Solar PV System

Name: CA. No.:

Date, Time, Serial No.

Application Fee Paid or Not:

Rooftop Solar PV Plant Capacity.....

Mode of payment (Cheque / DD/RTGS/NEFT):

Details of Cheque /DD/RTGS/NEFT:

Name of Officer
Seal

Signature
(Designation of Officer)
(To be specified at the time of signing)



Annexure-II		
APPLICATION FEES		
S.No.	Connected Load / Contract Demand of Eligible Consumer	Amount
1.	Up to 50 kW / 63 kVA	Rs 250
2.	Above 50 kW and up to 1 MW	Rs 750
3.	Above 1 MW (for upto each additional MW)	Rs 750

The amount of application fee for eligible consumer and third party other than the owner of the premises shall be the amount mentioned above.

REGISTRATION FEES

S.No.	Connected Load / Contract Demand of Eligible Consumer	Amount
1.	Up to 50 kW / 63 kVA	Rs 1000
2.	Above 50 kW and up to 1 MW	Rs 2500
3.	Above 1 MW (for upto each additional MW)	Rs 2500

The amount of registration fee for eligible consumer and third party other than the owner of the premises shall be the amount mentioned above.



Annexure-III		
APPLICATION FOR REGISTRATION OF THE SCHEME FOR ROOFTOP SOLAR PV SYSTEM		
1.	Name	
2.	Address for Communication	
3.	Consumer No.,	
4.	Telephone No.,	
5.	E-Mail	
6.	Application No.	
7.	Serial No. of receipt of Application	
8.	Contract Demand of Consumer	
9.	Capacity of Rooftop Solar PV System to be connected (Capacity not to exceed as approved by the Distribution Licensee and as per RSPV Regulations 2015)	
10.	Technical specifications and other particulars of Renewable Panel, Grid Tied Inverter and Interlocking System etc. proposed to be installed – whether attached (Yes/No)	
11.	Technical specifications and other particulars of Renewable energy meter to be installed – whether attached (Yes/No)	
12.	Whether Consumer opts to purchase meter himself or from Distribution Licensee	
13.	Drawings for installing the Rooftop Solar PV System – whether attached (Yes/No)	
14.	Proposed date of completion of the installation	

Place:

Signature of Eligible Consumer/ Third Party Owner



ACKNOWLEDGEMENT

Received the application for registration of the scheme for Rooftop Solar PV System

Name:

Date:

Registration Number:

Consumer Number:

Solar Energy Plant Capacity:

Mode of payment (Cheque / DD/RTGS/NEFT):

Details of Cheque/DD/RTGS/NEFT:

Name of Officer

Signature

Seal

(Designation of Officer)

Annexure-IV

INFORMATION RELATED TO TECHNICAL & INTERCONNECTION STANDARDS

Parameter	Reference	Requirement
Overall conditions of service	State Distribution/Supply Code	Reference to State Distribution code
Overall Grid Standards	Central Electricity Authority (Grid Standard) Regulations 2010 and subsequent amendments thereof;	Reference to regulations
Equipment	BIS/IEC/IEEE	Reference to standards
Meters	Central Electricity Authority (Installation & operation of meters) Regulation 2006 and subsequent amendments thereof	Reference to regulations and additional conditions issued by the Commission.
Safety and supply	Central Electricity Authority (measures of safety and electricity supply) Regulations, 2010 and subsequent amendments thereof	Reference to regulations
Harmonic Current	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and Subsequent amendments thereof;	Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519
Synchronization	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and Subsequent amendments thereof;	Rooftop Solar PV 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 point of connection
Voltage	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and Subsequent amendments thereof;	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 sec the Rooftop Solar PV System must isolate itself from the grid
Flicker	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and Subsequent amendments thereof;	Operation of Rooftop Solar PV 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 and Subsequent amendments thereof;	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 sec
DC injection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and Subsequent amendments thereof;	Rooftop Solar PV System should not inject DC power more than 0.5% of 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 and Subsequent amendments thereof;	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 Resources) Regulations	The Rooftop Solar PV System in the event of fault, voltage or frequency variations must island/disconnect itself within IEC standard on



Parameter	Reference	Requirement
	2013 and Subsequent amendments thereof;	stipulated period.
Overload and Overheat	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and Subsequent amendments thereof;	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 and Subsequent amendments thereof;	Paralleling device of Rooftop Solar PV System shall be capable of withstanding 220% of the normal voltage at the interconnection point.



Annexure-V (A)

Inter connection agreement (Gross Metering Arrangement)

This Agreement is made and entered into at (location)on this (date)day of (month)year
.....between

The Eligible Consumer or third party owner, by the name ofowning
or leasing or having commerce rights to the premises at (address)as
first party

AND

Distribution Licensee (herein after called as Licensee) and represented by
(Designation of office) and having its registered office at (address) as second party
of the agreement

And whereas, the (Name of the Licensee) agrees to provide grid connectivity to the
eligible consumer for injection of the electricity generated from his RSPV plant of capacity kW into the
power system of Licensee and as per conditions of this agreement and net- metering regulations/orders issued by the
Uttar Pradesh Electricity Regulatory Commission.

Both the parties hereby agree to as follows:

1. Eligibility

- 1.1. Eligibility for gross metering arrangement has been specified in the UPERC (Rooftop Solar PV Grid Interactive System Gross / Net Metering) Regulations, 2019 (hereinafter referred to as RSPV Regulations, 2019). Eligible consumer or third party owner 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. The First Party agrees that his Rooftop Solar PV generation plant gross metering system will conform to the standards and requirements specified in these regulations and in the following Regulations and codes as amended from time to time.
 - i. Central Electricity Authority (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013 and subsequent amendments thereof;
 - ii. Central Electricity Authority (Installation and Operation of Meters) Regulation 2006 and subsequent amendments thereof;
 - iii. Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010 and subsequent amendments thereof;
 - iv. UPERC Electricity Grid Code, 2007 and subsequent amendments thereof;
 - v. UPERC (Grant of Connectivity to intra-State Transmission System) Regulations, 2010 and subsequent amendments thereof to the extent specified in the UPERC RSPV Regulations, 2019;
 - vi. UPERC Supply Code Regulations 2005 and subsequent amendments thereof;
 - vii. Any other provisions 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 Licensee's distribution system, an isolation device (both automatic and inbuilt within inverter and external manual relays) and agrees for the Licensee to have access to and operation of this, if required and for repair & maintenance of the distribution system.
- 2.3. First Party agrees that in case of a power outage Licensee's system, photovoltaic system will disconnect/isolate automatically and his plant will not inject power into Licensee's distribution system.



- 2.4. All the equipment connected to distribution system shall be compliant with relevant International (IEEE/IEC) or Indian standards (BIS) and installations of electrical equipment must comply with Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010.
- 2.5. First Party agrees that Licensee will specify the interface/interconnection point and metering point.
- 2.6. First Party and Second Party agree to comply with the relevant CEA and UPERC Regulations in respect of operation and maintenance of the plant, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage, frequency, flicker etc.
- 2.7. Due to Licensee's obligation to maintain a safe and reliable distribution system, First Party agrees that if it is determined by the Licensee that the respective owner's photovoltaic system either causes damage to and/or produces adverse effects affecting other consumers or Licensee's assets, First Party will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Licensee and correct the problem at his own expense prior to a reconnection.

3. Clearances and Approvals

- 3.1. The 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. Licensee shall have access to metering equipment and disconnecting means of the solar photovoltaic system, both automatic and manual, at all times.
- 4.2. In emergency or outage situation, where there is no access to the disconnecting means, both automatic and manual, such as a switch or breaker, Licensee may disconnect service to the premises of the eligible consumer.

5. Liabilities

- 5.1. Eligible consumer and Licensee will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Licensee's distribution system.
- 5.2. Licensee and eligible consumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.
- 5.3. Licensee shall not be liable for delivery or realization by eligible consumer for any fiscal or other incentive provided by the Central/State Government beyond the scope specified by the Commission in its relevant Order
- 5.4. The Licensee may consider the quantum of electricity generation from the Rooftop Solar PV system towards RPO.

6. Commercial Settlement

- 6.1. All the commercial settlement under this agreement shall follow the RSPV Regulations, 2019 issued by the UPERC.

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 photovoltaic system to the grid in case it is required.

8. Termination

- 8.1. The First Party can terminate agreement at any time by providing Licensee with 90 days prior notice.
- 8.2. Licensee has the right to terminate Agreement on 30 days prior written notice, if First Party commits breach of any of the term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Licensee of the breach.



8.3. First Party shall upon termination of this Agreement, disconnect the photovoltaic system from Licensee's distribution system in a timely manner and to Licensee's satisfaction.

In witness, whereof, Mr. for and on behalf of (Eligible consumer or third party owner) and Mr. for and on behalf of (Licensee) sign this agreement in two originals.

Eligible Consumer/ Third Party

Name

Address

Service connection No.

Distribution Licensee

Name

Designation

Office Address



Annexure-V (B)

Inter connection agreement (Net Metering Arrangement)

This Agreement is made and entered into at (location)on this (date)day of (month)yearbetween

The Eligible Consumer(s) by the name ofhaving or leasing the premises at (address)as first party

AND

Distribution Licensee (herein after called as Licensee) and represented by (Designation of office) and having its registered office at (address) as second party of the agreement

And whereas, the (Name of the Licensee) agrees to provide grid connectivity to the eligible consumer for injection of the electricity generated from his RSPV plant of capacity kW into the power system of Licensee and as per conditions of this agreement and net-metering regulations/orders issued by the Uttar Pradesh Electricity Regulatory Commission.

Both the parties hereby agree to as follows:

1. Eligibility

1.1. Eligibility for net-metering has been specified in the UPERC (Rooftop Solar PV Grid Interactive System Gross / Net Metering) Regulations, 2019 (hereinafter referred to as RSPV Regulations, 2019). Eligible consumer 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. The eligible consumer agrees that his Rooftop Solar PV generation plant and net metering system will conform to the standards and requirements specified in these regulations and in the following Regulations and codes as amended from time to time.

- i. Central Electricity Authority (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013 and subsequent amendments thereof;
- ii. Central Electricity Authority (Installation and Operation of Meters) Regulation 2006 and subsequent amendments thereof;
- iii. Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010 and subsequent amendments thereof;
- iv. UPERC Electricity Grid Code, 2007 and subsequent amendments thereof;
- v. UPERC (Grant of Connectivity to intra-State Transmission System) Regulations, 2010 and subsequent amendments thereof to the extent specified in the UPERC RSPV Regulations, 2019;
- vi. UPERC Supply Code Regulations 2005 and subsequent amendments thereof;
- vii. Any other provisions applicable to the electricity consumer of the Distribution Licensee.

2.2. Eligible consumer agrees that he has installed or will install, prior to connection of Photovoltaic system to Licensee's distribution system, an isolation device (both automatic and inbuilt within inverter and external manual relays) and agrees for the Licensee to have access to and operation of this, if required and for repair & maintenance of the distribution system.

2.3 Eligible consumer agrees that in case of a power outage on Licensee's system, photovoltaic system will disconnect/isolate automatically and his plant will not inject power into Licensee's distribution system.



- 2.4 All the equipment connected to distribution system shall be compliant with relevant International (IEEE/IEC) or Indian standards (BIS) and installations of electrical equipment must comply with Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010.
- 2.5. Eligible consumer agrees that Licensee will specify the interface/interconnection point and metering point.
- 2.6. Eligible consumer and Licensee agree to comply with the relevant CEA and UPERC Regulations in respect of operation and maintenance of the plant, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage, frequency, flicker etc.
- 2.7. Due to Licensee's obligation to maintain a safe and reliable distribution system, eligible consumer agrees that if it is determined by the Licensee that eligible consumer's photovoltaic system either causes damage to and/or produces adverse effects affecting other consumers or Licensee's assets, eligible consumer will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Licensee and correct the problem at his own expense prior to a reconnection.

3. Clearances and Approvals

- 3.1. The eligible consumer 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. Licensee shall have access to metering equipment and disconnecting means of the solar photovoltaic system, both automatic and manual, at all times.
- 4.2. In emergency or outage situation, where there is no access to the disconnecting means, both automatic and manual, such as a switch or breaker, Licensee may disconnect service to the premises of the eligible consumer.

5. Liabilities

- 5.1. Eligible consumer and Licensee will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Licensee's distribution system.
- 5.2. Licensee and eligible consumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.
- 5.3. Licensee shall not be liable for delivery or realization by eligible consumer for any fiscal or other incentive provided by the Central/State Government beyond the scope specified by the Commission in its relevant Order
- 5.4. The Licensee may consider the quantum of electricity generation from the Rooftop Solar PV system towards RPO.

6. Commercial Settlement

- 6.1. All the commercial settlement under this agreement shall follow the RSPV Regulations, 2019 issued by the UPERC.

7. Connection Costs

- 7.1. The eligible consumer shall bear all costs related to setting up of photovoltaic system including metering and interconnection costs. The eligible consumer agrees to pay the actual cost of modifications and upgrades to the service line required to connect photovoltaic system to the grid in case it is required.

8. Termination

- 8.1. The eligible consumer can terminate agreement at any time by providing Licensee with 90 days prior notice.



- 8.2. Licensee has the right to terminate Agreement on 30 days prior written notice, if eligible consumer commits breach of any of the term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Licensee of the breach.
- 8.3. Eligible consumer shall upon termination of this Agreement, disconnect the photovoltaic system from Licensee's distribution system in a timely manner and to Licensee's satisfaction.

In witness, whereof, Mr. for and on behalf of (Eligible consumer) and Mr. for and on behalf of (Licensee) sign this agreement in two originals.

Eligible Consumer

Name
Address
Service connection No.

Distribution Licensee

Name
Designation
Office Address

**Uttar Pradesh Electricity Regulatory Commission,
Lucknow**

In the matter of Uttar Pradesh Electricity Regulatory Commission (Rooftop Solar PV Grid Interactive Systems Gross / Net Metering) Regulations, 2019

Date: 02.11.2018

STATEMENT OF REASONS

Background:

The Electricity Act, 2003 and the Regulations framed thereunder envisage promotion of Renewable Sources of energy generation and consumption. The Government of India has pronounced the National Electricity Policy, Tariff Policy etc. which also envisage generation and consumption of energy from the Renewable Energy Sources including the Solar energy in the country. As a part of the same, the installation of Rooftop Solar Projects is being encouraged at the consumers' place. This also facilitates utilization of idle space available with Rooftop owners to enable reduction in the distribution loss, and reduce the dependency on fossil fuel-based generation.

The Commission, to promote the use of Green Energy by the consumers, in exercise of powers conferred under Section 61, 66, 86(1)e and 181 of the EA, 2003 and all other enabling power in this behalf, notified UPERC (Rooftop Solar PV Grid Interactive Systems Gross / Net Metering) Regulations 2015 vide Notification No. **UPERC/Secretary/RSPVRegulations/2015/2150** on dated 20.03.2015. The Regulations enable all the consumers in the State of UP to install rooftop solar system in their premises under Net Metering or Gross Metering mechanism. The consumers are eligible to set up Rooftop Solar Power Plants of capacity upto 100% of their Contracted demand/Sanctioned Load. Further, it is provided that the installed capacity shall not be less than 1kW. It was also provided that only 15% of the capacity of the Distribution Transformer (DT) could be installed which was later increased to 25% vide Order dated 29.06.2016.

The Commission received a number of Petitions seeking permission to install Rooftop Solar system of above 1 MW capacity under net metering system arguing that clause 3.3 of the Regulations is limiting maximum capacity to 1 MW. Considering these representations, the Commission on case to case basis allowed the installation of more than 1 MW Solar rooftop.

Over the period, taking cognizance of issues raised by several stakeholders in the implementation of RSPV Regulations, it was felt by the Commission to review the aforementioned Regulations to further facilitate the rooftop solar system in the State of UP.

Accordingly, the Commission issued a Concept Paper to frame issues for amendments in Regulations. The Concept Paper along with public notice was hosted on the Commission's website and Public Notice in this regard was issued vide Notification No.UPERC/Secy/JD(G)/2018/ dated 20th August, 2018 for inviting comments and suggestions from the stakeholders upto 21.09.2018. Considering all the comments and suggestions, the Commission has revisited the provisions of RSPV Regulations, 2015 and proposes a draft of new Regulations, which shall repeal the existing Regulations once the new Regulations are finalised. Statement of Reasons that captures the comments received from Stakeholders along with analysis and decision of the Commission on the same are as follows:

VIEWS OF THE STAKEHOLDERS AND ANALYSIS AND DECISION OF THE COMMISSION ON IMPORTANT ISSUES

I. PV system capacity limitation:

Commission's Proposal: To allow the maximum installed capacity of RSPV system upto 2 MWp.

Comments:

- 1. UPPCL:** The installation of Rooftop Solar Projects is being encouraged by the Government and the Commission at the consumers' place so that it will result in reduction in the distribution loss, utilization of idle space available with small Rooftop owners and reduce the dependency on fossil fuel-based generation. **Proposed increase in RSPV system capacity from 1 MWp to 2 MWp will be benefiting only the big consumers – who are cross subsidising consumers and paying higher tariff vis-à-vis average cost of supply, thus increasing the financial losses of the UP Discoms.** Under the existing provisions, these consumers are not required to pay cross subsidy surcharge for the consumption they are netting off against the generation from RSPV plant. **Therefore, it is requested to the Hon'ble Commission to keep the PV system capacity upper limit to 1 MWp only as per existing UPERC RSPV Regulation, 2015.**
- 2. Amplus:** In recent time, the Commission has provided permission for rooftop Solar Plant over and above 1 MWp but limited to contract demand, on case to case basis. **So, maximum capacity of rooftop project under net metering should be allowed to 100% of the contract demand (KVA) or sanctioned load (KW).** To keep promoting the rooftop solar, state commissions of Bihar and Odisha have recently removed the maximum capacity cap of 1 MWp and extended the capacity of the plant up to sanctioned load of the consumer. We welcome the initiative taken by the Commission to increase the maximum limit, **however to keep the approval**

process modest, Commission should allow rooftop Solar Plant up to the sanction load based on feasibility check.

3. NPCL

- i) The proposed PV system capacity limitation should be in MWp.
- ii) If a consumer applies for higher PV system capacity (i.e. more than 2 MWp) and Discom has no objection for installation of higher PV system capacity, **the Regulations should provide authority to the Discom for allowing the installation of PV system of more than 2 MWp up to the contracted load of the consumer.** In such cases, the Discom shall initiate for approval of the Commission.

Analysis and Decision of Commission:

The aforementioned proposal of the Commission to allow capacity upto 2 MW is in consideration to the following:

1. **Demand Supply gap**-The state experienced energy deficit during FY 2017-18 of (-)1.5% which is more than double the all-India average of (-)0.7%. To improve this demand supply Gap in the State, the Commission proposes to encourage the installation of Roof top Solar PV.
2. **High AT&C Losses**- The utilities in the State have very high AT&C losses of around 37.92%. A push to RSPV installation in the State will help the Discoms in reducing their AT&C losses and improve their financial health.
3. **MNRE suggestion**- MNRE vide its letter dated 18.07.2018 has made few suggestions with respect to Rooftop solar Regulations. In regard to rooftop PV system installation capacity, it has proposed to increase the limit to 2 MWp. The state government also vide its Solar Policy 2017 has set a target to install 4,300 MW rooftop solar projects, by 2022.
4. **Renewable Purchase Obligation (RPO)**- Ministry of Power in its Order regarding trajectory of Solar and Non- solar RPO, has increased the Solar RPO target from 6.75% in 2018-19 to 7.25% in 2019-20, 8.75% in 2020-21 and 10.50% in 2021-20. To achieve this target, the Solar installations in the State have to be encouraged.

Hence, taking into consideration Demand- supply gap, high AT&C losses and DISCOM's short fall in meeting solar RPO targets in the state, the Commission finds it appropriate to allow upto 2 MWp rooftop solar PV plant under these

Regulations.

II. Distribution transformer capacity:

Commission's Proposal: RSPV Regulations, 2015 provided the total rooftop solar PV installation capacity connected to a DT upto 15% consumer DT capacity, which was later increased to 25% vide Commission's order dated 29.06.2016. UPERC propose to further increase this % of DT capacity from 25% to 50%.

Comments:

- 1. UPPCL:** The proposed amendment, if approved, **will create technical difficulty for the distribution licensees in designing its network** and catering to the demand of its consumers as the network is designed by taking into consideration the forecast of load/demand. It will create a situation of net export which will raise the issues of safety since existing network does not have the capacity to evacuate the excess energy. This will also lead to the Residential consumers installing Solar PV Power Plant not for captive consumption but for commercial consideration.
- 2. Amplus:** Limiting the rooftop plant capacity by Distribution Transformer is not decisive. Acknowledging it, other states of India like Karnataka, Kerala, Odisha have increased the limit on DT capacity up to 80%. Further, consent of setting up rooftop project in the state is going through a feasibility check process. **So, we request the Commission that the capacity cap on rooftop Solar Plant should be increased up to 80 % of the DT rating.**
- 3. NPCL:** If the Discom has no objection for higher limit the Discom with mutual agreement with the consumer **may allow the installation of the RSPV plant of more than 50% of the DT capacity of the Discom** subject to the other conditions provided in the RSPV Regulations.

Analysis and Decision of Commission:

<p>Although, UPPCL on behalf of the State Discoms has opposed the increase in limit of available DT capacity for rooftop solar PV from 25% to 50% but they have not given any substantive reason. On the other hand, Amplus and NPCL have supported for increase in available DT capacity. The Commission finds that theoretically such generation would help in decongesting the local distribution by supplying additional power at consumption side which would also reduce the system losses as the consumption would be on local level only, hence, rooftop solar power should be encouraged by increasing the available DT capacity. Therefore, the Commission opines that for further promotion the restriction on DT</p>
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capacity should be done away with.

III. Cost of augmentation of distribution network:

Commission's Proposal: UPERC proposed that consumers should not bear the cost of augmentation of available system capacity in case it is required to provide the net metering or gross metering connection.

Comments:

1. **UPPCL:** The proposed amendment, if approved, will burden all the consumers with the cost of augmentation of the distribution network for an individual consumer. Although this will be allowed in the ARR of the Discoms, it is humbly submitted that **either the entire cost of augmentation or some portion (which can be fixed per kVA) should be recovered from the Consumer installing the RSPV system.**
2. **NPCL: Concerned consumer should bear the cost of argumentation of distribution network**, else, the burden of such cost would be borne by other consumers who don't get any direct benefit.

Analysis and Decision of Commission:

The utilities have unanimously opposed the cost on them for augmentation of system for rooftop solar PV, if required. But, the Commission opines that it would not be justified if the burden of such additional cost is put on consumer alone. Hence, the Commission has proposed that for upto total 10 kWp solar rooftop installation the consumer would not pay any system upgradation charges whereas, above this the consumer will pay at the rate of Rs 1000 per kWp as cost of augmentation of system. e.g. a consumer willing to install a 15 kWp RSPV plant shall be paying Rs 5,000 (5×1000) as RSPV cost to the utility.

IV. Settlement of Solar Energy (Banking of solar power)

Commission's Proposal: UPERC proposed not to introduce any new provision for the Settlement (Banking) of solar power at the end of settlement period in addition to the existing provisions in the Regulations.

Comments

1. **UPPCL:**UPPCL agrees with the Commission's approach and requests to continue with carryforward of the excess injected electricity credits and may be utilized to net electricity injected or consumed in future billing periods but within the settlement period.
2. **Amplus:** According to the present energy accounting and settlement procedure, industries/ Commercial properties having less consumption in daytime block could not avail the advantage of exported energy on the subsequent months. **Commission should remove same time slot adjustment for the exported energy in the subsequent month**, total exported energy should be net off against total consumption for the subsequent month, so that beneficiaries can avail the benefit of total generated energy against their consumption.
3. **NPCL:** No Comments

Analysis and Decision of Commission:

The Commission opines to keep the existing provisions and not to have any separate/additional provision for Settlement (Banking) of solar power.

V. Freedom of choosing between CAPEX and RESCO model:

Commission's Proposal: UPERC proposeno change in the existing model which already provides freedom of choosing between CAPEX and RESCO model to a consumer.

Comments:

1. **UPPCL:** No comments
2. **Amplus:** No comments
3. **NPCL:** No comments

Analysis and Decision of Commission:

The Commission would like to continue with the existing provisions of the Regulations.

SOPs

1. Timelines for Site Verification/ technical feasibility and Issuance of letter of approval/Termination

UPERC Proposal: MNRE has suggested to change the total number of days for the entire activity to 15 days.

Comments:

UPPCL: State of UP is a large state and managing all the activities of Site Verification/ technical feasibility and Issuance of letter of approval/ agreement signing will not be possible within 15 days. **It is suggested to continue with the existing timelines as per the existing regulations.**

NPCL: 15 working days will be reckoned from the date of submission of application form complete in all respect along with complete required documents as per the applicable Regulations and Indian standards.

2. Submission of Application of Subsidy

UPERC Proposal: Zero date for the subsidy process should be from the date of LOA from Discom.

NPCL Comments: Zero date for the subsidy process should be from the date of net metering agreement with the Discom and not from the date of LOA from Discom

3. Execution of net metering and Installation of rooftop Solar system

UPERC Proposal: The net metering arrangement shall be executed before the installation of rooftop solar system.

NPCL Comments: In this regard it is submitted that rooftop solar system should be installed by the consumer before the execution of net metering arrangement

4. Billing Process

UPERC Proposal: Billing process should be 30 working days after synchronization with the Grid.

NPCL Comments: Billing process should be as per the respective billing cycle of the consumer after the synchronisation of the rooftop solar system with the grid.

Analysis and Decision of Commission:

The Commission to continue with the existing provisions of the Regulations in respect of above SOPs.



Other Comments

1. Payment of electricity credits in gross Metering:

UPERC Regulations: Vide Order dtd. 23.08.2017 the Commission decided to keep tariff under gross metering arrangement at APPC of previous FY for every year. For ex. For FY 2018-19 APPC of FY 2017-18 shall be applicable.

UPPCL Comment:

It is humbly submitted that UP Discoms have already tied up power purchase capacity to meet the electricity demand. For buying power from RSPV plants, UP Discoms have to back down the plants, from where it has already contracted the power and pay capacity charge to the generators. The Discoms save only energy / variable charge from long term sources it has tied up while buying power from RSPV Plants. **Therefore, it is requested to allow settlement tariff under gross metering arrangement at Average Variable Power Purchase Cost (AVPPC) of previous FY for every year.** For ex. For FY 2018-19 AVPPC of FY 2017-18 shall be applicable.

It is suggested that for **large consumers, who are cross subsidizing other consumer categories, only gross metering should be allowed**, and the settlement tariff under gross metering arrangement shall be at Average Variable Power Purchase Cost (AVPPC) of previous FY for every year.

It is further submitted that for all cross-subsidising consumer categories, where tariff is more than Average Cost of Supply, if net metering is continued, **the hon'ble Commission may introduce levy Cross Subsidy Surcharge and Additional Surcharge on the energy generated and consumed by these consumers under net metering** arrangement to offset the revenue loss and fixed cost of long term PPA incurred by the Discoms. **For the electricity credit, which remain unadjusted at the end of settlement period under the net metering arrangement**, it is submitted that in line with practice followed in state of Punjab, Bihar, **there should neither be any payment nor it should be carried for next settlement period.**

Analysis and Decision of Commission:

Over the years Renewable Energy sector has not only grown in size but it has further matured resulting in reduction in capital cost as well as tariff. As a matter of fact, the latest bidding conducted by SDA, the discovered tariff was well below APPC. Therefore, the Commission finds it appropriate to revisit the existing provision of

tariff under gross metering arrangement. It is proposed that tariff under gross metering would be the weighted average tariff of Competitive Bidding adopted by the Commission in last Financial Year. e.g. For FY 2018-19 weighted average tariff of projects discovered through Competitive Bidding in FY 2017-18 and adopted by the Commission shall be applicable. if in any year no bidding is done then the rate of last bidding shall be applicable.

However, under net metering for settlement at the end of FY, the tariff would remain at Rs 2/unit.

Some Comments by Amplus

2. Metering:

UPERC Regulations: The check metre shall be installed after the inverter of the Solar rooftop system”

Comments: Metering shall be done by using either a single phase or three phase net meter depending upon requirement at the **interconnection point** as confirmed by the Discom in Clause 9.7 of the UPERC RSPV Regulation 2015 referred “The check metre shall be installed after the inverter of the Solar rooftop system”. Often this create ambiguity between solar meter and main check meter for metering division and consumer/ developer as there are no mandatory provision to install solar meter after inverter to measure the Solar generation. As per the provision in the Grid code of UPERC main metre is installed along with one check meter. So, we suggest the Commission should modify this accordingly **“The Check meter shall be installed along with Main Meter after the inverter of the Solar rooftop system”**.

Analysis and Decision of Commission:

The Commission to continue with the existing provisions of the Regulations.

3. Online application

MNRE in its concept note for grid connected rooftop solar division (sustainable rooftop implementation for solar transfiguration of India) has proposed following responsibilities for expeditious implementation of rooftop solar projects.

- a. Create an RTS cell at each division level headed by Executive Engineer and the respective sub divisional officer shall act as Nodal Officer for implementation of RTS project in its operation area.
- b. Develop dedicated online portal for grid connected RTS projects

Discoms are still following on offline procedure for net metering application when state like Rajasthan, Punjab, Haryana have implemented online application procedure for net metering application. **So, we suggest that the commission should direct state Discoms to adopt online application for net metering application of rooftop solar system.**

Analysis and Decision of Commission:

UPNEDA, the State Development Agency (SDA) has already come up with an online process in this regard.

4. Implementation of virtual and group net metering scheme:

The commission should implement and frame the guideline for virtual and group net metering scheme. This will boost the residential and housing societies to put investment and set up their own solar power plant and consume that energy in different location under the same Discom area.

Analysis and Decision of Commission:

So far as group net metering is concerned, the Commission vide its Order dated 23.08.2017 has made the enabling provisions. However, it opines not to introduce virtual net metering in the state as of now.

Some comments by NPCL

- 5. Standard formats:** Standard formats for application should be prepared by UPNEDA and approved by the Commission which should be available on website of UPNEDA and used by the consumers across the state of Uttar Pradesh.

As SDA has already come up with online system for RSPV, the process already stands standardised.

- 6. Standardization of technical specification:** Technical specification for rooftop solar system up to 25 KW should be standardized as the consumer who is installing lower capacity rooftop solar system do not have required technical expertise and standardization will help him to a great extent.

RSPV Regulations already provided for technical standards which shall be updated accordingly.

7. To ensure the quality of the power through SPV system, the following provisions can also be added in the RSPV regulations:

- The smart inverters which are to be used for the SPV system should have inverter test certificate of IEC 62109 as per IS 16221, 2016 Part 1 & IS 16221 Part 2, 2015 & IEC 62116 as per IS 16169, 2014 as per CEA (Measures relating to safety and Electric Supply) Regulations, 2010 & CEA (Technical standard for connectivity of distribution generation resources) Regulations, 2010 and smart inverter should also comply with the latest BIS Gazette 13th July, 2018.
- Multistage inverters for maintaining the power factor reactive power as well as limiting the harmonics injection to grid when designed, set and tuned properly are to be used.

These multistage inverters are designed with inductance (L), capacitance (C) circuitry and with the harmonic filter circuitry with combination of resistance (R) inductance (L) and capacitance (C) for maintaining the reactive power and harmonics control at the SPV end respectively.

- In case consumer wants to use the power generated by the SPV at the time of grid failure, he has to install an automatic switching system to isolate the system from Grid to prevent back feed to the grid and at the same time use the power internally using the SPV.

RSPV Regulations already provided for technical standards which shall be updated accordingly.

8. **Remote Communication:** The company hereby proposes that data concerning generation capacity above 50 KWp should be remotely captured and monitored by the Discom at the control room on real time. The communication system should be installed by the concerned consumers and cost of the same should also be borne by them.

Analysis and Decision of Commission:

RSPV Regulations already provided for technical standards which shall be updated accordingly.

9. Application Fee and Registration fee for above 1 MW capacity RSPV plants:

The Commission opines that for every MW above 1 MW, Application fee and Registration fee shall be prorated. e.g. above 1 MWp and upto 2 MWp plant, the applicable fee shall be same as that for 2 MWp plant and so on.

Way forward: Block Chain

In addition to above, to provide flexibility to rooftop solar power prosumer, taking a progressive view, the Commission is proposing provision of mutual sale and purchase of electricity through peer-to-peer transaction in a secured and reliable way with proper accounting and billing mechanism implemented with the help Block chain technology. Provided that for such arrangement prior approval of the Commission shall be required. To further take up development of peer-to-peer transaction of electricity generated through renewable sources, the Commission directs that UPPCL and UPNEDA shall put up a proposal jointly.