Schemes for Grid Interacted Rooftop and Small SPV Power Plants in Uttarakhand

1.0 Background

There is a large potential available for generating solar power using unutilized space on rooftops and wastelands around buildings. Small quantities of power generated by each individual household, industrial building, commercial buildings or any other type of building can be used to partly fulfill the requirement of the building occupants and surplus, if any, can be fed into the grid. In order to utilize the existing roof space of buildings, the roof-top SPV systems on buildings can be installed to replace DG genets installed for minimum load requirement for operation during load shedding.

The Ministry of New and Renewable Energy (MNRE), Govt. of India has been implementing a programme on **"Off-grid and Decentralized Solar Applications"** for the first phase of the Jawaharlal Nehru National Solar Mission (JNNSM). The programme has been amended time to time and with the recent amendment a provision on this ongoing scheme has been made to connect the small SPV Plants with grid to export excess power. MNRE may provide one time subsidy upto 30% of the benchmark cost of the project as follows (current rate):

S.No.	Type of system	Benchmark cost (Rs./Wp)
1.	Solar Power plants/Packs (with battery bank with 6 hours autonomy)	
	>300 Wp to 1 kWp	210
	>1 kWp to 10 kWp	190
	>10 kWp to 100 kWp	170
2.	Solar Power plants/Packs(without battery)	
	Upto 100 kWp	100
	>100 kWp to 500 kWp	90

2.0 The Scheme

Uttarakhand state has a good potential of Solar Energy. About 300 sunny days are available in the State which provides an excellent potential for installation of Rooftop and other Small Solar Power Plants in the State.

Keeping the above in view, grid interactive rooftop or small SPV system will be supported under this scheme. The generated power from such SPV system/project will be

utilized fully by powering captive loads during the day time and excess power will be fed into the grid as long as grid is available. In case, where solar power is not sufficient due to cloud cover etc., the captive loads will be served by drawing power from the grid. The connectivity of such projects will be either at 33 kV/11 kV three phase lines or of 440/220 Volt three/single phase line depending on the system installed.

The grid-interactive rooftop system can work on net metering basis wherein the beneficiary pays to the utility on net meter reading basis only. Alternatively two meters can also be installed to major the export and import of power separately.

Ideally, grid interactive systems do not require battery back-up as grid acts as the back-up for feeding excess solar power and vice-versa. However, to enhance the performance reliability of the overall systems, a minimum battery back-up of one hour of load capacity is recommended. In grid interactive systems, it has, however to be ensured that in case the grid fails, the solar power has to be fully utilized or stopped immediately feeding to the grid (if any in excess) so as to safe-guard any grid person/technician from getting shock (electrocuted) while working on the grid for maintenance etc.

The feed in tariff for the power generated from the Solar Power Plant will be decided by Hon'ble Uttarakhand Electricity Regulatory Commission (UERC) in such a manner that it provides a safeguard to all stakeholders including DISCOMs. The availability of electricity grid near the solar installation is an essential component which needs to be provided by the concerned agencies i.e. UPCL/PTCUL.

3.0 Eligibility and Targets under Scheme

The policy aims to utilize the existing roof space of buildings for the roof-top SPV systems to replace DG gensets installed for minimum load requirement for operation during load shedding. Also harness the available potential for generating solar power using unutilized space and Promoting green and clean power using solar energy to reduce the dependence on conventional source of energy.

All the individuals, residential/commercial/Institutional/Govt. building owners, Industrial units are eligible to set up Solar Power Plant within the prescribed capacity limit. Eligible capacity limit under the scheme will be as under:-

a) Project capacity with battery backup – 300 Watt to 100 KW.

b) Project capacity without battery backup – upto 500 KW.

The projects of total capacity 5 MW is proposed for 2013-15, this scheme announced by MNRE vide No. 5/23/2009-P&C dated 8th July, 2010.

4.0 Various Options for Installation of Solar Power Projects:-

For the success and smooth operation of rooftop and small solar power plants, various situations and conditions needs to be worked out to make it a workable business model. There can be many possible business models, some of which can be considered are as follows:

(a) Solar installations owned by consumer

i) Solar Rooftop facility owned, operated and maintained by the consumer(s).

ii) Solar Rooftop facility owned by consumer but operated and maintained by the 3rd party.

(b) Solar installations owned, operated and maintained by 3rd Party

The 3rd party implements the solar facility and provides services to the consumers. The surplus electricity may be injected to the electricity grid. The combinations could be:

i) Arrangement as a captive generating plant for the roof owners

The 3rd party implements the facility at the roof or within the premise of the consumers; the consumer may or may not invest as equity in the facility as mutually agreed between them. The 3rd party may also make arrangement of undertaking operation and of maintenance of the facility. The power is then sold to the roof owner.

ii) Solar Lease Model, Sale to Grid

The 3rd party implementing the solar facility shall enter into a lease agreement with the consumer for medium to long term basis on rent. The facility is entirely owned by the 3rd party and consumer is not required to make any investment in facility. The power generated is fed into the grid and the roof top owner gets a rent.

(c) Solar Installations Owned by the Utility Ownership of

i) *Solar installations owned operated and maintained by the DISCOM*

The DISCOM may own, operate and maintain the solar facility and also may opt to sub contract the operation and maintenance activity. The DISCOM may recover the cost in the form of suitable tariff. The electricity generation may also be utilized by DISCOM for fulfilling the solar renewable purchase obligation.

ii) *Distribution licensee provides appropriate viability gap funds*

The DISCOM may appoint a 3rd party to implement the solar facilities on its behalf and provide appropriate funds or viability gap funds for implementing such facility. It may also enter into an agreement with the 3rd party undertaking the operation and maintenance of the solar facilities.

5.0 Site Requirement:-

i. The project site/rooftops at office buildings, commercial buildings, residential complexes etc. can be selected on the basis of total energy requirement of the premise and the area available for installation of roof top Solar PV system.

ii. Solar PV system on the roof top of selected buildings can be installed for meeting the requirement of the building as much as possible.

iii. Though rooftop systems shall be generally connected on LV supply, large solar PV system may have to be connected to 11kV system. Following criteria has been made by Hon'ble UERC for selection of voltage level in the distribution system for ready reference of the solar suppliers:

- Load upto 4 KW: low voltage single phase supply
- Load >4 kW and upto 75 kW: low voltage three phase supply
- Load >75 kW and upto 1.5 MW: at 11 kV
- Load >1.5 MW and upto 3 MW: at 11/33 kV or as per site condition

iv. Export Import meters/two way meters shall be installed with the facility of net metering. Two way meters can also be used as they are cheaper and give better idea about power exported. The meter may also be finalized in consultation with the DISCOM.

6.0 Power Purchase Agreement:-

i. A Power Purchase Agreement (PPA) should be signed between the owner of buildings, 3rd party and the DISCOMs as applicable.

ii. An agreement between DISCOM and the owner of building/premise/SPV plant needs to be signed for the net metering and billing on the monthly/bi-monthly basis as applicable. Suitable payment security mechanism to be provided by the DISCOM/State Nodal Agency/Utility.

7.0 How to Apply & Register:-

a) Application form will be made available on UREDA website (www.ureda.uk.gov.in), with effect from 12/08/2013.

b) Photocopies of the application form may be used. When the targets available (total capacity 5 MW) get exhausted, application process will be closed and the matter intimated on UREDA's website. Applicants are advised to verify this status on UREDA's website, before sending the application.

c) Applicant has to apply to UREDA in the prescribed format along with an application fee @ Rs. 500/- per KW or part thereof in the form of DD drawn in favor of Director, UREDA, Dehradun. The maximum application fee will be Rs. 30,000/- per project.

d) The application form must be accompanied by the required application fee, a self-attested copy of a Photo identity card, copy of recent electricity bill, and a self-addressed and Rs.25/- stamped envelope. In the case of Government/Govt. Undertaking/Autonomous body buildings, photo ID card are exempted upon making an official request by the head of office concerned is required.

e) Complete filled in application form along with registration fee and documents has to be sent to The Director, UREDA, Energy park campus, Industrial area, Dehradun-245001 by post/courier.

f) Applications without application fee, required details and documents will be summarily rejected.

g) Selection of beneficiaries will be strictly on first come first served basis (subject to the condition that application is complete in all respects). District wise target allocation may be introduced if found necessary.

h) A registration number will be allotted by UREDA in the acknowledgement letter to the applicant.

i) The registration is not transferable to another beneficiary or site/building.

j) The site will be inspected by UREDA officials for assessing technical feasibility and if found technically feasible, plant will be allotted to the applicant through an Allotment Letter.

k) Plants constructed without getting the Allotment Letter from UREDA or without following the instructions/ specifications contained in the Allotment Letter from UREDA will not be considered for subsidy release.

Application Form

UTTARAKHAND RENEWABLE ENERGY DEVELOPMENT AGENCY
Urja Park Campus, Industrial Area, Patel Nagar, Dehradun 248001
Ph. 0135-2521553, 2521387, Fax: 0135-2521386, E-mail: spv.uredahq@gmail.com, Website: www.ureda.uk.gov.in

For Office Use

Reg. No. : .....

Dt. : .....

Application fee details:

DD No.: .....

Dt. :.....

Bank : .....

1	Name of Applicant	
2	Address in Full	PIN:
3	Mobile phone No.	
4	STD code/Land line No.	
5	Email ID	
6	Category (SC/ST/General)	
7	Beneficiary has to submit self attested copy of Voters ID card/Passport/PAN card/any other photo ID card	
	Type of ID card submitted	ID card No.
Site Details:		
8	Address of the site for Installation	PIN:
9	Nearest land mark	
10	Name of DISTRICT	
11	Grama Panchayat /Minicipality/ Corporation	
12	Ward No./Building No.	
13	Type of Application (Domestic/ Non-domestic)	
14	If non-domestec, specify type of building {shop/ industry/ Govt./ educational/ others (specify)}	
15	Shade free area available for	

	installation of solar panel (Per KW requirements is nearly 15 m^2)	……m^2	
16	Proposed Capacity of the Project in KW		
Electricity Consumption Details:			
16	Do you have electricity connection YES/NO (If YES, attach a copy of recent electricity bill)		
17	Average monthly consumption of electricity	……units	
18	Remittance details of application fee of Rs. ……/-		
	Name of Bank	DD. NO.	Date

Declaration

I ..... Son/Daughter of ....., have read and hereby agree with the terms and conditions and specifications stipulated by UREDA for the selection and installation of roof-top solar power plant. If allotted a plant, I agree to complete the installation within the time allowed and submit the details to UREDA for release of subsidy.

Signature :
Name:

Place :
Date :

CHECK LIST:

1. Copy of photo ID card (YES/NO): …….
2. Copy of recent electricity bill (YES/NO): …….
3. DD for Application Fee (As applicable) (YES/NO): …….
4. Self-addressed Rs.25/- stamped envelope (YES/NO): …….
5. Filled in acknowledgment slip (YES/NO): …….

ACKNOWLEDGEMENT SLIP

Your application for the roof-top solar power plant under the "Grid Interacted Rooftop and Small SPV Power Plants" has been received along with the registration fee with the following details:

Proposed Project Location	
Proposed Capacity	
DD No.	
DD Date	
Issuing Bank	
Application Fee Amount	Rs. ……..

(To be filled in by the applicant)

The following Registration Number has been allotted to your application. Please quote this Registration Number in all your future correspondences.

Registration Number	
Date of Registration	

(To be filled in by UREDA)

Authorized Signatory
UREDA

To

PIN

(Applicant has to write the full postal address with PIN in BLOCK letters in the box above)