

DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED

Sales Circular No.-04/2023

From

Chief Engineer/Commercial,
DHBVN, Hisar.

To

All CEs/ (OP)/SEs (OP) XENs/SDOs/OP,
JEs-I, Incharge Sub-offices in DHBVN

Memo No: Ch-04/SE/C/R-16/67/06/2018/VoI-2

Dated: 03.01.2023

Subject: Guidelines for implementation of MNRE Phase-II of Grid Connected Rooftop Solar (RTS) Programme.

I. Introduction

As you are aware that DISCOMs are at forefront and the nodal agencies for implementation of Solar Programmes (subsidized/non subsidized) in the State under Phase-II of Grid Connected Rooftop Solar Programme of Ministry of New and Renewable Energy, GoI. The programme was initially launched by Nigam vide Sales Circular No. D-06/2020. However, owing to the fresh empanelment of vendors and new rates, the Sales Circular No. D-06/2020 is hereby superseded and updated guidelines are as under:-

- i) Component-A of the programme envisages setting up of 4,000 MW (in country) of Grid Connected Rooftop Solar Programme in the residential sector with Central Financial Assistance (CFA) (subsidy). CFA is provided for the household owner and Group Housing Societies to set-up RTS on the Rooftop of their residence/residential complex which shall be provided through MNRE to DISCOMs for further disbursement which is detailed hereinafter.
- ii) Operational guidelines issued by MNRE, in this regard, are as per MNRE Office Memorandum no. 318/331/2017-Grid Rooftop dated 20 Aug 2019.

II. Central Financial Assistance (CFA)

Component-A of the Phase II of Grid Connected Rooftop Solar Programme is only applicable to residential sector and Group Housing Societies/Residential Welfare Associations with CFA for installation of Grid Connected Rooftop Solar Power Plant of the capacity 1 kWp to 500 kWp. The residential sector users may install RTS plant of even higher capacity as per their requirement and as per

net metering regulation. However, the CFA shall be limited for the first 10 kWp capacity only for individual residential sector users. For GHS and RWA the CFA shall be limited for common facilities up to 500 kWp (@ 10 kWp per house), with the upper limit being inclusive of individual rooftop plants already installed by individual residents in that GHS/RWA at the time of installation of RTS for common activity. The solar power system may be installed mainly on the roof of a residential building or GHS and RWA having an active residential power connection and would also include installations on open contiguous land within the premises.

The applicable Central Financial Assistance (CFA)/Subsidy shall be as follows:

Type of residential sector***	Subsidy (as percentage of benchmark cost or cost discovered through competitive process whichever is lower)
Maximum up to 3 kW capacity	40 % of benchmark cost**
Above 3 kW capacity and up to 10 kW capacity*	40 % up to 3 kW plus 20% for RTS system above 3 kW and up to 10 kW
Group Housing Societies/Residential Welfare Associations (GHS/RWA) etc. for common facilities up to 500 kWp (@ 10 kWp per house), with the upper limit being inclusive of individual rooftop plants already installed by individual residents in that GHS/RWA at the time of installation of RTS for common activity	20% of benchmark cost

The CFA will be based on the scheme guidelines of Ministry of New and Renewable Energy (MNRE) which are amended from time to time.

** The residential sector users may install RTS plant of even higher capacity as provisioned by respective HERC Regulations; however, the subsidy will be limited up to 10 kWp capacity of RTS plant.*

*** The subsidy shall be on benchmark cost of MNRE or lowest of the costs discovered in the tenders floated by DHBVN, whichever is lower. Benchmark cost applicable at the time of issuance of Letter of Empanelment will be applicable for the purpose of calculating subsidy/CFA for the projects completed within sanctioned timelines. For projects completed during extended timeline subsidy/CFA will be calculated on the basis of 95% of the applicable benchmark cost or 95% of tender cost, whichever is lower.*

**** No CFA will be admissible for consumers other than residential sector.*

III Empanelment of Agencies

To implement the programme in DHBVN, Nigam has empanelled firms and discovered rates through open competitive tendering. The list of empanelled firms, their eligible category and discovered rates are as under: -

(i) For capacity upto 1 kWp

Sr. No.	Name of firm (M/s)	Unit rate in Rs/Wp (including GST & all other taxes, levies, duties etc.)
1	Aggarwal Traders, Bhiwani	Rs.42.5 (Rupees Forty Two and Fifty paise only)
2	Pinak Infra Projects Limited, Hisar	
3	JM Power Technologies Pvt Ltd, Sirsa	
4	Pomera & Company Ltd.	

(ii) More than 1 kWp & upto 2 kWp

Sr. No.	Name of firm (M/s)	Unit rate in Rs/Wp (including GST & all other taxes, levies, duties etc.)
1	Aggarwal Traders, Bhiwani	Rs.41.00 (Rupees Forty one only)
2	Pinak Infra Projects Limited, Hisar	
3	JM Power Technologies Pvt Ltd, Sirsa	
4	Pomera & Company Ltd.	

(iii) More than 2 kWp & upto 3 kWp

Sr. No.	Name of firm (M/s)	Unit rate in Rs/Wp (including GST & all other taxes, levies, duties etc.)
1	Aggarwal Traders, Bhiwani	Rs.40.00 (Rupees Forty only)
2	Goldy Inverter and Stabilizer, Tohana	
3	JK Solar Private Limited, Gurugram	
4	Sach Collection Point, Gurugram	
5	Vats Solar Private Limited, Bhiwani	
6	Suntrik Solutions, Sirsa	
7	JM Power Technologies Pvt Ltd, Sirsa	
8	Fidus Energy Private Limited, Gurugram	
9	Pomera & Company Ltd.	

iv) More than 3 kWp & upto 10 kWp

Sr. No.	Name of firm (M/s)	Unit rate in Rs/Wp (including GST & all other taxes, levies, duties etc.)
1	Aton Rural Development Pvt. Ltd, Uttar Pradesh	<p style="text-align: center;">Rs.38.99 (Rupees Thirty Eight and Ninety nine paise only)</p>
2	Aggarwal Traders, Bhiwani	
3	Divine Energy Solutions, Hisar	
4	RamjiDass Om Parkash, Tohana	
5	Divvy Solar Power & Solutions Pvt. Ltd, Hisar	
6	JK Solar Private Limited, Gurugram	
7	Sach Collection Point, Gurugram	
8	TSE Renewables Pvt. Ltd. Fatehabad	
9	Vats Solar Private Limited, Bhiwani	
10	Maven Solar Pvt. Ltd, Rohtak	
11	Suntrik Solutions, Sirsa	
12	Fidus Energy Pvt.Ltd.Gurugram	
13	JM Power Technologies Pvt Ltd, Sirsa	
14	Isotech India PvtLtd.Gurugram	
15	Lohia Sales, Rewari	
16	Universal Solar, Gurugram	
17	Pomera& Company Ltd.	

(v) More than 10 kWp & upto 500 kWp

Sr. No.	Name of firm (M/s)	Unit rate in Rs/Wp (including GST & all other taxes, levies, duties etc.)
1	Aton Rural Development Pvt. Ltd, Uttar Pradesh	<p style="text-align: center;">Rs.34.9 (Rupees Thirty Four and Ninety paise only)</p>
2	Divvy Solar Power & Solutions Pvt. Ltd.Hisar	

“The above rates are inclusive of cost of Solar PV panels (with domestic cell and modules), inverter (single/3 phase wherever applicable), balance of system e.g. cable, switches/circuit breaker/connectors/junction box, mounting structure, earthing, lightning arrester, and civil works, installation & commissioning, CMC for 5 years, transportation, insurance, applicable taxes, etc. The above rates are excluding of net metering cost and battery back-up costs.”

IV. As per the above rates, the cost to be paid by the consumer to the vendor and eligible subsidy to be released by the Nigam to the vendor shall be as under:-

Capacity (kWp)	Total cost (INR)	Subsidy (INR) 40% upto 3kW 20% from 3-10kW	Cost to be paid by consumer to the vendor (INR)
1	42500	17000	25500
2	82000	32800	49200
3	120000	48000	72000
4	155960	54586	101374
5	194950	62384	132566
6	233940	70182	163758
7	272930	77980	194950
8	311920	85778	226142
9	350910	93576	257334
10	389900	101374	288526

The CFA shall be admissible only if, consumer installs RTS plants on his residential/GHS premises through aforementioned empanelled firms.

- V. The main terms and conditions of the tender documents are attached herewith as **Annexure-I.**
- VI. Technical Specifications of the RTS plants are attached as **Annexure-II.**
- VII. **Use of Indigenous manufactured Solar Panels (both cells and modules) (Mandatory Condition)**

The CFA for residential sector as stated above shall be permissible only if domestically manufactured Solar Panels (using domestically manufactured solar cells and modules) are used by the beneficiary.

Further, with a view to ensure quality of solar cells and solar modules used in solar PV plants, MNRE has decided to enlist the eligible models and manufacturers of solar PV Cells and modules and publish the same in a list called the "Approved List of Models and Manufacturers" (ALMM). ALMM shall consist of LIST I – List of Models and Manufacturers of Solar PV modules and LIST II – List of Models and Manufacturers of

Solar PV Cells. Only the models and manufacturers included in this list will be eligible for use in the subsidized solar PV plants.

Approved list of Models and Manufacturers shall be uploaded on DHBVN solar web portal and shall be updated time to time in accordance to the notification from MNRE.

It is also the responsibility of SDO 'OP' to obtain a Undertaking/Self-Declaration for Domestic Content Requirement fulfillment from the empanelled firm for every RTS system installed (As per Annexure-III) w.r.t to the declaration that the PV modules installed in the project are domestically manufactured using domestic manufactured solar cells. This certificate shall be re-checked by XEN 'OP' before approving/releasing subsidy to the vendor.

If at any stage, it is found that the firm has misused the policy of using domestic manufactured solar PV Cells and Modules by way of mis-declaration and imported solar cells and modules have been used instead of domestic then following action shall be taken against the firm: -

- a) Filing of criminal case under IPC 420 and related sections.
- b) Immediate intimation to CE/Commercial, DHBVN for following actions: -
 - (i) Blacklisting for a period of 10 years.
 - (ii) Forfeiting of relevant Bank Guarantees.
 - (iii) Immediate de-empanelment.

VIII. Payment by customer and release of CFA

The beneficiary will have the option of installing RTS system through any of these empanelled vendors at net of CFA amount i.e., making payment to vendors after deducting the eligible CFA amount. The vendor will claim the CFA from the Nigam. It is reiterated that CFA for residential sector as stated above shall be permissible only if domestic manufactured Solar Panels (using domestic manufactured solar cells and modules) are used by the beneficiary. However, CFA will be limited up to 20%/40% (as the case may be) of the project cost mentioned above.

The CFA will be released by the Nigam to the empanelled vendor through XEN(OP) concerned directly into the account of vendor through RTGS after commissioning and inspection of RTS plant and fulfillment of other obligations on Nigam's web-portal like filling Work Completion Report, Joint commissioning Report and Project Completion Reports (PCR).

IX. Implementation procedure

- i. The applicant/user interested to install RTS plants shall apply and submit the requisite documents/details/fees on the DHBVN website www.dhbvn.org.in.
- ii. The entire process of receiving proposals, processing them and giving approvals is IT enabled. For this purpose, user id's and passwords for XENs(OP) and SDOs(OP) have been created by SE/IT, DHBVN.
- iii. After the site verification and checking of technical feasibility by RTS cell and sanction of the project by Executive Engineer (XEN), letter of approval will be issued to the applicants / consumer. Thereafter, Consumer will install the RTS of approved capacity as per the provisions of HERC (Net/Gross metering) Regulations, 2021 (circulated vide Sales Circular No. D-33/2021. The CFA, however, shall only be admissible for capacity upto 10kW for residential consumer and upto 500 kW for GHS and RWA.
- iv. List of documents are as under: -
 - ID proof – Aadhar Card and PAN No.
 - Mobile Number
 - Residential/Address proof – Aadhar Card or any other document if address differs from the Aadhar Card.
 - Land ownership proof
 - Site photo
 - Self photo
 - Copy of last paid electricity bill
 - Name of the empanelled firm
- v. Metering: The metering shall be provided as per HERC Net Metering/Gross Metering Regulations, 2021.
- vi. Other than residential sector: CFA will not be available for other categories i.e., institutional, educational, social, government, commercial and industrial sectors.
- vii. A separate RTS Cell at each Divisional level headed by Executive Engineer has been created. Respective SDO shall act as Nodal Officer for implementation of the RTS Project in his area. The other members of the RTS Cell are as under: -
 - a) Junior Engineer of the sub-division
 - b) Lower Divisional Clerk
 - c) Data Entry Operator

- viii. For efficient and smooth implementation of the programme, it should be ensured that all necessary approvals/connectivity be provided in time bound manner detailed herein below:-

ACTIVITY	RESPONSIBILITY	TIMELINE (Max Working Days)
Submission of Application online on DHBVN website along with processing charges of Rs.1000/-	Consumer	Zero Date
Acknowledgment of Application by DISCOM	SDO(OP)/JE(OP)	Same Day
Site Verification / Technical Feasibility / Termination ^[1]	SDO(OP)/JE(OP)	15 (10 days if system size is equal to or less than 5kWp)
Issuance of Letter of Approval (LOA) alongwith In-Principle Approval for CFA if eligible	XEN(OP)	7
Execution of Metering Agreement	SDO & CONSUMER	30 (From date of LoA)
Installation of Rooftop Solar System, submit work completion report/certificate.	CONSUMER & Empanelled Vendor	180 (From date of LoA)
Meter Procurement Intimation	CONSUMER	30 (prior to the expected date of submission of Work Completion Report).
Inspection by CEI (if applicable) and Issuance of Safety Certificate	CEI (For System size greater than 20kWp)	7 (From date of Submission of WCR)
Inspection by DISCOM, installation of meter & commissioning & synchronization of the system with Grid	SDO	7
Submission of Project Completion Report (PCR)	Vendor/Consumer	10
Inspection for Release of CFA	DISCOM	10
Release of CFA to vendor after receipt of subsidy from MNRE	DISCOM	30
Billing Process	DISCOM	30 After synchronization with Grid

- ix. The officers of DHBVN or MNRE officials or designated agency may inspect the ongoing installation or installed plants. In case the systems are not as per standards, non-functional on account of poor quality of installation, or non-

compliance of AMC, DHBVN/MNRE reserves the right to blacklist the vendor. Blacklisting may inter-alia include the following: -

- a. The Vendor/Firm will not be eligible to participate in tenders for Government supported projects.
- b. In case, the concerned Director(s) of the firm/company joins another existing or starts/ joins a new firm/company, the company will automatically be blacklisted.

X. Warranty Period

- i. The complete Solar power plant shall be warranted for five years after the date of commissioning of the plant for replacement in case of any manufacturing, operation failure, non-performance as per design standards.
- ii. Any defect noticed in the power plant during the period of five (5) years from the date of commissioning of the power plant shall be rectified/replaced by the empanelled firm/agency on its own motion or on due intimation by DHBVN or by the owner/beneficiary of the plant, as the case may be, free of charges.
- iii. The PV module(s) shall be warranted for its performance for a minimum period of 25 years from the date of commissioning of the project. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty-five (25) years.
- iv. The replacement of defective component at the cost of empanelled firm/agency shall be made with similar and/or equivalent make. The replaced component shall not, under any circumstances, reduce the performance of the plant.
- v. The Warranty Card to be supplied to the beneficiary/consumer with the system must contain the details of the system. The empanelled firm will have to furnish a warranty certificate of the system.

XI. SDO 'OP' shall ensure that the warranty certificate as per **Annexure-IV** is provided by the empanelled firm to the consumer.

XII. Empanelled firm shall upload DCR undertaking on their letter head on the Performa attached as **Annexure-V**.

The sales circular no. D-06/2020 and D-28/2020 are superseded.

The above instructions may be brought to the notice of all concerned for careful and meticulous compliance with immediate effect.

DA/As above


Superintending Engineer/Commercial,
For Chief Engineer/Commercial,
DHBVN, Hisar

Annexure-I

Terms and Conditions:

1. Eligible Central Financial Assistance

The MNRE will provide CFA up to 40 % for RTS systems up to 3 kW capacity. For RTS systems of capacity above 3 kW and up to 10 kW, the CFA of 40% would be applicable only for the first 3 kW capacity and for capacity above 3 kW the CFA would be limited to 20 %. The residential sectors users may install RTS plant of even higher capacity as per their requirement and the respective HERC regulation; however, the CFA would be limited for first 10 kWp capacity RTS plant as mentioned above.

For Group Housing Societies/Residential Welfare Associations (GHS/RWA) CFA will be limited to 20% for installation of RTS plant for supply of power to common facilities. The capacity eligible for CFA for GHS/ RWA will be limited to 10 kWp per house and total not more than 500 kWp, inclusive of RTS already installed on individual houses in that GHS/ RWA at the time of installation of RTS for common activity.

The Residential RTS plant would be the solar power system installed mainly on the roof of a residential building having an active residential power connection from the DHBVN, and would also include installations on open contiguous land within the premises of the Residential building.

The CFA pattern for the residential sector as defined in Operational Guidelines issued by MNRE, Gol for implementation of Phase-II of Grid Connected Rooftop Solar Programme will be as follows: -

Type of residential sector	CFA (as percentage of benchmark cost or cost discovered through competitive process whichever is lower)
Residential sector (maximum up to 3 kW capacity)	40 % of benchmark cost**
Residential sector (above 3 kW capacity and up to 10 kW capacity)*	40 % up to 3 KW Plus 20% for RTS system above 3 kW and up to 10 kW
Group Housing Societies/Residential Welfare Associations (GHS/RWA) etc. for common facilities up to 500 kWp (@ 10 kWp per house), with the upper limit being inclusive of individual rooftop plants already installed by individual residents in that GHS/RWA at the time of installation of RTS for common activity	20% of benchmark cost

* The residential sector users may install RTS plant of even higher capacity as provisioned by respective State electricity regulations; however, the subsidy/CFA will be limited up to 10 kWp capacity of RTS plant.

** The CFA shall be on benchmark cost of MNRE for the state/ UT or lowest of the costs discovered in the tenders for that state/ UT, whichever is lower. Benchmark cost applicable at the time of issuance of Letter of Empanelment will be applicable for the purpose of calculating CFA for the projects completed within sanctioned timelines. For projects

completed during extended timeline CFA will be calculated on the basis of 95% of the applicable benchmark cost or 95% of tender cost, whichever is lower.

The CFA will be based on the scheme guidelines of Ministry of New and Renewable Energy (MNRE) which are amended from time to time.

The Central Financial Assistance (CFA) for residential sector as stated above shall be permissible only if indigenously manufactured PV modules with Solar cells are used in the system. In this regard, a Certificate (As per **Annexure-II**) from Manufacturer on its letter head certifying that the Modules supplied with system (with Sr. Nos.) are domestic manufactured solar modules in which domestic manufactured solar cells are used shall be provided with every system installed.

If at any stage, it is found that your firm has used imported solar cells and modules instead of domestic then following action shall be taken against your firm: -

- c) Filing of criminal case under IPC 420 and related sections.
- d) Blacklisting for a period of 10 years.
- e) Forfeiting of Performance Bank Guarantees.
- f) Immediate de-empanelment.

2. Scope of Work

- a) Scope of work covers Design, Supply, Installation, Testing & Commissioning including warranty and comprehensive maintenance Contract for 5 years of 1kWp to 500kWp of Grid Connected SPV Rooftop Plant under Net Metering as per the technical specification given in this bid.
- b) Wiring upto Distribution Board from the SPV Rooftop system will be in the scope of the successful bidder(s). The maximum cable length of 25m for every solar power plant installed shall be in the scope of the bidder and supply of excess cable length if required shall be provided by consumer/beneficiary.
- c) Performance testing of the complete system.
- d) A copy of Work Order, Invoice, Commissioning report Statement of Expenditure, Joint Inspection Report, Net Metering Work Completion & Synchronization reports, installed system photographs, beneficiary photo, aadhar card, mobile no & Electricity bill and bill of material has to be submitted to DHBVN for release of CFA of MNRE/State subsidy.
- e) The empanelled firm shall undertake to supply spares free of cost for the maintenance of the offered items during the warranty period.
- f) A leaflet containing the details of operation and the service centres shall be provided to each purchaser as well as to DHBVN.
- g) The Operation & Maintenance of Solar Photo voltaic Power Plant would include warranty against wear, tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors/ Power Conditioning Unit (PCU), spares, consumables & other parts for a period of 5 years.
- h) The empanelled firm shall do necessary coordination with concerned office of DHBVN for providing tested metering equipment to the consumers. However the cost

of bi-directional meter, CT/PT shall applicable as approved by the HERC from time to time.

- i) The empanelled firm shall Install RTS plant within the specified timeframe, as per guidelines specified by the DHBVN (**Annexure-I**).
- j) For projects covered under Central Financial Assistance (CFA), only indigenously manufactured PV panels (both cells and modules) should be used.
- k) Vendors for supply and installation of the RTS shall establish a service centre in each District. In case if it is not economically viable for an individual vendor then Group of vendors can establish service centre in each District. Their contact details will be made available on the website of DHBVN.
- l) These service centres have to provide services to the RTS owners within the timelines decided by the DHBVN, free of cost for first five years (Warranty period) of commissioning of the RTS. Non-performing/Under-performing PV Panels will be replaced free of cost in the warranty period. Non-compliance of the service standards by the vendor will make it ineligible for future work orders by the Government.
- m) The empanelled firm shall not claim any subsidy / incentive directly from MNRE / any other organization for the projects sanctioned by New & Renewable Energy Department, Haryana. An undertaking to this effect has to be submitted with each subsidy claim. DHBVN shall submit the all subsidy claim details to MNRE, GOI.
- n) The Solar Photo Voltaic (SPV) power plants should be supplied, installed & commissioned by the companies as per latest specifications given in technical specifications which comply with the MNRE, GOI Guidelines.
- o) Metering: The existing service connection meter needs to be replaced with a bidirectional (import kWh and export kWh) service connection meter for the purpose of net-metering for eligible categories. Installation of the net meter will be carried out by DHBVN. Beneficiary will submit application to DHBVN to enable the connectivity of Solar rooftops with Grid and to avail net metering benefits. The beneficiaries can also purchase the Net meter from market and get it install by the DHBVN.

3. Requirements for Compulsory Registration of Solar Photovoltaic Modules and Solar Cell Manufacturers with MNRE

- a) The Ministry of New & Renewable Energy has issued Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order Dated 02.01.2019. The effective dates for operationalizing of Approved list of Model Manufacturers for Solar PV Modules and Cells would be from 31.03.2020.
- b) As per the MNRE order, only the models and manufacturers included in ALMM Lists (of solar PV Cells and Modules) will be eligible for use in Government/ Government assisted Projects/Projects under Government Schemes & Programmes, to be implemented in the country, including Projects set-up for sale of electricity to Government under "Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects dated 03.08.2017 and the amendments

thereof". The word "Government" shall include Central Government, State Governments, Central Public Sector Enterprises, State Public Sector Enterprises and, Central and State Organizations/ Autonomous bodies.

- c) The MNRE vide its office memorandum F.No. 283/54/2018-GRID SOLAR- Part(1) dated 10.03.2021 has notified ALMM list for Solar PV Modules i.e., List I - List of Models and Manufacturers for Solar PV Modules as on 10.03.2021.
- d) You shall be required to use only the models and manufacturers included in ALMM Lists (of solar PV Cells and Modules) in the solar plants to become eligible for CFA/Subsidy.
- e) You shall ensure compliance to the MNRE notification no 283/54/2018-GRID SOLAR dated 02.01.2019 and its amendment from time to time.

4. Other Terms and Conditions

- a) The selected bidders shall follow the quality control orders and standards for all components of RTS system and its installation procedure, if any, issued by MNRE/DHBVN from time to time.

The beneficiary will have option of installing RTS system through any of the empanelled vendors at net of subsidy amount i.e. making payment to the vendors after deducting the eligible CFA amount. The vendor will claim the CFA from the DHBVN. The CFA for residential sector as stated above shall be permissible only if indigenous manufactured Solar Panels (using domestic manufactured Solar cells and modules) are used by the beneficiary. However, subsidy will be limited up to 20% / 40% (as the case may be) of the benchmark cost of RTS system as defined by MNRE from time to time or the rate discovered through transparent bidding by the DHBVN, whichever is lower.

The subsidy of the pre-sanctioned projects will be released through DHBVN to the empanelled vendor after commissioning and inspection of RTS plant on availability from MNRE.

The payment to the supplier is to be made by the user on the mutual agreed terms and conditions between user and the supplier after deduction of eligible subsidy. DHBVN will not be responsible for any dispute between user & supplier regarding payment. However, the CFA, if sanctioned by DHBVN prior to installation, shall be released to the vendor only after the commissioning of the project in all respect as per guidelines.

- b) The Implementing agency or Ministry officials or designated agency may inspect the ongoing installation or installed plants. In case the systems are not as per standards, non-functional on account of poor quality of installation, or non-compliance of AMC, the Ministry/MNRE/DHBVN reserves the right to blacklist the vendor. Blacklisting may inter-alia include the following: -
 - i. The Vendor/Firm will not be eligible to participate in tenders for Government supported projects.

- ii. In case, the concerned Director(s) of the firm/company joins another existing or starts/ joins a new firm/company, the company will automatically be blacklisted.
- c) The beneficiary interested to install RTS plants will submit their application online and after sanction of the application, applicant may install the system through enlisted vendors/manufacture/system integrators. Only the system which have been installed as per guidelines issued by DHBVN/MNRE and as per Technical Specifications will qualify for CFA. The system shall be installed within time line mentioned in the sanction letter issued to the applicant.
- d) The entire process of receiving proposals, processing them and giving approvals would be IT enabled.
- e) The consumer will pay only the balance amount, after excluding CFA portion, to the empanelled vendor. The CFA will be released through DHBVNL to the empanelled vendor after commissioning and inspection of RTS plant.
- f) While releasing any RTS connections to the consumer, all the updated, current and prevalent guidelines of HERC Net Metering Regulations shall be adhered to.
- g) You shall follow the quality control orders and standards for all components of RTS system and its installation procedure, if any, issued by MNRE/DHBVN/HAREDA from time to time.

5. Security Deposit/Performance Bank Guarantee

- a) The successful enlisted firm shall arrange to furnish performance bank guarantee @ Rs. 2000 per KW subject to maximum of Rs 15,00,000/-(Fifteen Lac) within 15 days from the date of issue of detailed letter of empanelment. The PBG shall be issued in the favour of CE/Commercial, DHBVN, Hisar. The amount of PBG shall be as follows:-

Capacity Range	Minimum initial allocated Capacity (in kWp)	Minimum Security Amount (Rs.)
1kW	50	100000
>1kW to 2KW	100	200000
>2KW to 3KW		
>3KW to 10KW	250	500000
>10KW to 500KW		

- b) In the event DHBVN allocate less/more than the above prescribed allocation, security amount shall be calculated as per point 4(a) above subjected to maximum of Rs. 15,00,000/- (Fifteen lac).
- c) The Performance Bank Guarantee must be valid for a period of 63 months from last day of validity of empanelment.
- d) In case the validity of empanelment is extended by DHBVN, then the bidder will be required to increase the validity of the PBG to 63 months from extended last date of empanelment.
- e) Failing to furnish the PBG by the empanelled firm within the time limit specified in point 4(a) above, following action shall be taken by the DHBVN:-

- i. No CFA shall be released to the firm. This amount shall be released after submission of BG.
- ii. Further penalty @0.35% per week or part thereof of subject to maximum of 2% of the value of the Bank Guarantee shall be imposed by the DHBVN, if the bank guarantee is not submitted within 15 days from the date of issue of letter of empanelment.
- iii. In case BG is not submitted within 45 days from the issue of letter of empanelment by CE Commercial, DHBVN the employer reserves the right to withdraw the letter of empanelment in addition to suspend the bidder as per Clause 3 of ITB.
- f) The Performance Bank Guarantee will be refunded after warranty period of last system installed.
- g) The performance security /BG shall be encashed by DHBVN if the Empanelled company failed to provide the services towards the CMC of plants installed during Empanelled period or the plant will not install as per specifications or in the case of any fraudulent practices
- h) If the firm has serious complaints related to the installation of system during the period warranty, then the system will be got rectified at the risk and cost of the firm and the expenditure incurred on rectification will be recovered from the due payments of the firm and also forfeit the security deposit. Other penal actions as mentioned in this documents will also be taken against the firm.
- i) If the empanelled firm does not receive any order during empanelment period than security deposit will be returned after the completion of Empanelment period.

6. Capacity Distribution

The empanelled firms/agencies shall initially be allocated capacity as mentioned in clause 4 (a) of ITB above which can be enhanced at later stage. Once the allocated capacity is met by the bidder, additional capacity if available can be applied for by the empanelled firms/agencies along with additional security deposit as per clause 4 of ITB above. Any decision regarding allocation of quantity to bidders/vendors shall be sole discretion of DHBVN and binding to all.

During execution of work, the allocated capacity/quantity can be altered keeping in view of performance of empanelled individual firm/agency. The decision of DHBVN in this regard shall be final and binding to all.

In case empanelled firm/agency is facing genuine difficulty in execution of project as per letter of empanelment, DHBVN reserves the right to transfer the allocated capacity in full or part to the other empanelled firms/agencies. Apart from this DHBVN shall review the progress in order to complete the work within stipulated period and if required the capacity of allocation may change.

DHBVN at any point of time during execution of work can reduce or enhance/alter the allocated capacity of any empanelled firm/agency. The decision of DHBVN in this regard shall be final and binding to all.

7. Period of validity

The Security Deposit shall be valid until the Enlisted firm has executed, completed and remedied defect in the Works in accordance with the Contract. No claim shall be made against the Security Deposit after the issue of the Defects Liability Certificate and Security Deposit shall be returned to the Enlisted firm within 14 days of the issue of the Defects Liability Certificate.

8. Non-compliance

Failure of successful Bidder to comply with the requirement mentioned Scope of work, shall constitute sufficient grounds for annulment of empanelment and for forfeiture of the Bid Security.

9. Payment Terms

- i. Payment of the project cost, excluding the MNRE subsidy/CFA, shall be paid by the beneficiaries directly to the empanelled firm. The MNRE CFA/Subsidy shall be paid by the DHBVN directly to the empanelled Firms on completion of the project, inspection by DHBVNL/Third party inspector appointed by DHBVN/MNRE and on receipt/availability of the MNRE CFA/subsidy as per MNRE relevant guidelines.
- ii. Copies of invoices after joint inspection shall also be uploaded on DHBVNL/SPIN Solar Rooftop Web Portal along with Inspection Report, photographs, Project Completion Reports(PCRs) and any of the required documents required by the DHBVN.
- iii. The eligible Central Financial Assistance (CFA) of MNRE shall be claimed as per MNRE guidelines. DHBVNL will release the eligible CFA to the firm based on MNRE guidelines and sanction by MNRE, Gol and availability of funds. Any delay in releasing the CFA/Subsidy by MNRE will not be attributed towards DHBVNL.

10. Taxes and Duties

The price quoted should include all GSTs, any other taxes, duties and Insurance expenditure etc. if any. A contractor/ bidder shall be entirely responsible for all taxes, duties, license fees, etc. All taxes payable as per Government income tax & service tax norms will be payable by the contractor/ bidder. If any new tax/duty is levied during the contract period the same will be borne by the contractor exclusively.

11. Service Centres

Empanelled firm shall establish a service centre in each district. In case if it is not economically viable for an individual firm then Group of firms can establish service centre in each District. Their contact details will be made available on the website of DHBVN.

12. Warranty Period

- a) The complete Solar power plant shall be warranted for five years after the date of commissioning of the plant for replacement in case of any manufacturing, operation failure, non-performance as per design standards.
- b) Any defect noticed in the power plant during the period of five (5) years from the date of commissioning of the power plant shall be rectified/replaced by the empanelled firm/agency on its own motion or on due intimation by DHBVN or by the owner/beneficiary of the plant, as the case may be, free of charges.
- c) The PV module(s) shall be warranted for its performance for a minimum period of 25 years from the date of commissioning of the project. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty-five (25) years.
- d) The replacement of defective component at the cost of empanelled firm/agency shall be made with similar and/or equivalent make. The replaced component shall not, under any circumstances, reduce the performance of the plant.
- e) The Warranty Card to be supplied to the beneficiary/consumer with the system must contain the details of the system. The bidder will have to furnish a warranty certificate of the system.

13. Comprehensive Maintenance Contract during Warranty Period of Five Years

- a) Visit to the site on call basis to provide maintenance services within three days of lodging of complaint. Failure to arrange for the immediate repair/replacement within 15 days, the firm will be liable for penalty per complaint of Rs. 500/- per day for each day delay after 15th day from the date of complaint lodged by beneficiary. The amount of penalty will be recovered from Security Deposit during warranty period. If the supplier failed to maintain/repair the plant during 5 years maintenance period within stipulated time period then DHBVN shall have every right to forfeit the BG lying with DHBVN and the company will be blacklisted.
- b) Corrective & remedial maintenance services to set right the malfunction of the SPV-projects include supply and replacement of all damaged parts/ components including electronics/ charge controller, Inter connected cables/parts and fuse etc. with new parts.
- c) Scope Of CMC Of SPV Power Plant For A Period Of 5 Year From Date Of Commissioning:
 - i. Proper CMC of the SPV Power Plant for a period of five years after commissioning along with supply of consumable items as and when necessary shall come, under the CMC contract. The break down maintenance of the entire system including supply of necessary spare parts, if any, are already under the coverage of warranty clause for a period of 60 months from date of commissioning of power plant.
 - ii. The security of the power plant will rest with the supplier/agency till such time operation and maintenance of the power plant is not handed over to the purchaser/department.
 - iii. The deputed personnel shall be qualified and well trained so that they can handle any type of operation hazard quickly and timely.

- iv. The deputed personnel shall be in a position to check and test all the equipment regularly, so that, preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behaviour of any equipment shall be brought to the notice of Engineer-in- Charge immediately for appropriate action.
- v. Normal and preventive maintenance of the power plant such as cleaning of module surface, tightening of all electrical connections etc. should be responsibility of bidder.
- vi. During CMC period of 5 years of the power plant, if there is any loss or damage of any component of the power plant due to miss management/miss handling or due to any other reasons, what-so-ever, the supplier/firm shall be responsible for immediate replacement/rectification. The damaged component may be repaired, if it is understood after examination that after repairing performance of the component shall not be degraded, otherwise the defective component shall have to be replaced by new one without any extra cost.

14. Operation & Maintenance Manual

An Operation, Instruction and Maintenance Manual in English/Hindi languages should be provided with the Solar PV projects. The following minimum details must be provided in the Manual:-

- a) Basic principles of Photovoltaic.
- b) A small write-up (with a block diagram) on the Solar PV project - its components, PV module, inverter, junction boxes and expected performance shall be provided.
- c) Type, Model number, Voltage & capacity of inverter, used in the system.
- d) The make, model number, country of origin and technical characteristics of all the component are required to be provided.
- e) Clear instructions on regular maintenance and troubleshooting of the Solar PV Projects.
- f) DO's and DONT's.
- g) Name, address and Mobile No. of the contact person for repair and maintenance, in case of non-functionality of the SPV Projects.
- h) Training to the consumer will be provided by the empanelled firm.

15. Project Inspection

- i. All the SPV Rooftop plants installed will be inspected by the representative of DHBVN.
- ii. The SPV Rooftop Plants may be got inspected by MNRE from any third party or MNRE itself.
- iii. During the Inspection, if the system installed is found faulty (or) not in compliance to the technical specification, the cost for re-inspection by DHBVN after rectification/replacement shall be borne by the bidder.
- iv. The eligible subsidy will be released only for the systems installed in compliance to the technical specification of MNRE /DHBVN.

16. Set Off & Risk Procedure

16.1 Set Off

Any such money due and payable to the Enlisted firm under the Contract may be appropriated by the Owner and set-off against any claim of the Owner for the payment of a sum of money arising out of or under this Contract or any other Contract entered into by the Enlisted firm with the Owner.

16.2 Enlisted firm's Default Liability

In the event of breach of any of the terms and conditions by the Enlisted firm, the Employer can de-empanel the firm and shall encash the PBG without any notice to the Enlisted firm at any stage and the Enlisted firm shall have no claim whatsoever on the Employer on this account. But the Enlisted firm shall be liable to pay to the Employer a sum equivalent to 5% of the value of the Contract as liquidated damages and not as penalty. The Enlisted firm shall in addition and without prejudice to the above said damages, make good any loss or damage that may be incurred by the Employer in getting the left out Works executed from elsewhere at the risk and cost of the Enlisted firm. In case of delay in the execution of Works, the Owner will have the right to get the Work executed from any alternative source, at the sole risk and cost of the Enlisted firm. Any extra expenditure incurred in such action shall be recoverable in full from the Enlisted firm in addition to Owner's right of claim for liquidated damages.

17. Taxation

17.1 The Enlisted firm shall be entirely responsible for payment of all GSTs, duties, license fees etc.

17.2 The Enlisted firm shall be solely responsible for the taxes that may be levied on the Enlisted firm's persons or on earning of any of his employee and shall hold the Employer indemnified and harmless against any claims that may be made against the Employer. The Employer does not take any responsibility whatsoever regarding taxes under Income Tax Act, for the Enlisted firm or his employees. If it is obligatory under the provisions under the Indian Tax Act, deduction of Income Tax at source shall be made by the Employer.

18. Advertising

Any advertising stating the subject of this EOI by the Enlisted firm in India or in other foreign countries shall be subject to approval of the Employer prior to the publication. Publication of approved articles, photographs and other similar materials shall carry approval of the Employer.

19. Compliance of Laws

The successful bidder will certify that he has complied with the provisions of Industrial & Labour Laws including PF Act, ESI Act etc. as may be applicable.

20. Corrupt or fraudulent practices

The Employer requires that Tenderers/ Suppliers/ Enlisted firms observe the highest standard of ethics during the procurement and execution of Employer contracts. In pursuance of this policy, the Nigam:-

- (a) defines, for the purposes of this provision, the terms set forth as follows:
 - (i) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution: and
 - (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer, and includes collusive practice among tenderers (prior to or after tender submission) designed to establish tender prices at artificial, non- competitive levels and to deprive the Employer of the benefits of free and open competition;
- (b) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
- (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a Nigam contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Employer contract.

21. Settlement of Disputes

If any dispute or difference of any kind whatsoever will arise between the Employer and the firm in connection with or arising out of the conditions of EoI Document, the parties will make every effort to resolve amicably such dispute or difference by mutual consultation.

If, after thirty (30) days the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Employer or the firm may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of the matter may be commenced unless such notice is given.

22. Arbitration

All the matter questions, disputes, differences and /or claims arising out of and/or concerning and/or in connection and/or in consequences or relating to this EoI whether or not obligations of either or both parties under this EoI be subsisting at the time of such dispute and whether or not this EoI has been terminated or purported to be terminated or completed, shall be referred to the sole arbitrator to be appointed by the MD, DHBVN. The award of the Arbitrator shall be final and binding on the parties to this contract. Provision of Arbitration and cancellation act 1996 and the Rules made there under the statutory modification thereof for the time being in force shall be deemed to apply for the Arbitration proceeding under this clause.

23. Blacklisting of the Firms

The contractor will be blacklisted,

1. If the Enlisted firm backs out of the work at any stage, the firm will be issued two 15 days notices to commence the work failing which no further notices will be issued and the firm will be straightway Blacklisted, without prejudice to other terms and conditions of the contract.
2. If the firm Indulge in fraudulent and illegal practices such as forgery, cheating or any civil/criminal wrongdoing or any grave misconduct of similar nature which has a direct impact on the contract and the Nigam., In such case no notice of default will be issued and the firm will be straightway blacklisted in addition to initiating the legal proceedings etc., without prejudice to the other terms and conditions of the contract.
3. The Performance Bank Guarantee of the Blacklisted firms will be forfeited and the firm shall have no claim whatsoever on the same.
4. Period of Blacklisting shall be 5 years and all Power Utilities in the country and MNRE shall be intimated about the same.

	<p style="text-align: center;">DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED (A Power Distribution & Retail Supply Utility, Govt. of Haryana) Regd. & Corp. Office Vidyut Sadan, Vidyut Nagar, Hisar-125005, Haryana Ph no. 01662-223153, 223338 Website-www.dhbvn.org.in CIN No. U99999HR1999SGCO34165, Email: cecommercial@dhbvn.org.in</p>
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DETAILED TECHNICAL SPECIFICATIONS

(Grid Connected Solar Rooftop Photo Voltaic (SPV) power plant)

The projects shall be installed and commissioned as per the technical specifications given below.

DEFINITION

A Grid Connected Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Inverter/Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), and Controls & Protections, interconnect cables and switches. PV Array is mounted on a suitable structure. Grid connected SPV power plant should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, inverters/PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

- Solar PV system shall consist of following equipments/components.
- Solar PV modules consisting of required number of Crystalline PV cells.
- Grid interactive Inverter with Remote Monitoring System
- Mounting structures
- Junction Boxes.
- Earthing and lightening protections.
- IR/UV protected PVC Cables, pipes and accessories

SOLAR PHOTOVOLTAIC MODULES:

- (i) Only domestic manufactured Solar Panels with domestic manufactured Solar cells are to be used in the system.
- (ii) The efficiency of the PV modules should be minimum 16% and fill factor should be more than 70%.
- (iii) Modules of mono/poly crystalline type can be used.

- (iv) The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules. In addition, the modules must conform to IEC 61730 Part-1 - requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS. a) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701. Certificate for module qualification from IEC or equivalent to be submitted as part of the bid offer. Self-undertaking from manufacturer / supplier that the modules being supplied are as per above. The Potential Induced Degradation (PID) test for solar modules will be mandatory. It should be valid during the operational period.
- (v) Module shall consists of Solar Cell of minimum 5 Bus Bar technology. At the time of supply the supplier shall submit the certificate from the manufacturer of the module certifying that he has supplied the modules to (name of supplier) strictly manufactured as per BOM of IEC certificate mentioning the technology of the solar cell (as per Annexure-E).
- (vi) The modules of the manufacturers who are having OEM and co-certification will not be considered as qualified modules.
- (vii) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 300 Wp (with 72 cells) and above wattage for the project above 5 kWp and of minimum 250 Wp (with 60 cells) and above wattage for the project upto 5kWp. Module capacity less than minimum of these wattage shall not be accepted.
- (viii) Protective devices against surges at the DC side shall be provided. Low voltage drop bypass diodes shall be provided.
- (ix) PV modules must be tested and approved by one of the IEC authorized test centres and shall meet the latest higher side specifications prescribed by MNRE/HAREDA/DHBNL.
- (x) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- (xi) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid.
- (xii) Other general requirement for the PV modules and subsystems shall be the Following:

- a) The rated output power of any supplied module shall have tolerance of plus 3% or above.
 - b) The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
 - c) The module shall be provided with a junction box with weather proof lid of sealed type and IP-65 rated.
 - d) I-V curves at STC shall be provided with the module.
- (xiii) The module should have the following minimum information laminated inside the module.
- Made in India (to be subscribed in words)
 - Company name /logo
 - Model number (it should indicate the voltage and rated wattage of the module)
 - Serial number
 - Year of make

WARRANTIES

a) Material Warranty:

- (i) Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (5) years from the date of commissioning of the system
- (ii) Defects and/or failures due to manufacturing
- (iii) Defects and/or failures due to quality of materials
- (iv) Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option.

b) Performance Warranty:

- (i) The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

ARRAY STRUCTURE (MODULE MOUNTING STRUCTURE)

Module mounting structure (MMS) should be of anodised aluminium or Hot Dipped Galvanised Iron (HDGI), of prescribed Specifications given below, for mounting of SPV modules at site. The panel frame structure should be capable of withstanding a minimum wind speed load of 150 KM per hour, after grouting and installation. MMS should be sturdy & designed to assist SPV Modules to render maximum output. The hardware (fasteners) used for installation of SPV Modules & MMS should be of suitable Stainless Steel (SS 304). Each MMS should be with minimum four legs grouted on pedestals of minimum 300X300X250 mm with anchoring/ chipping & chemical sealing of foundation based on RCC roof. Foundation bolts of stainless /GI steel should be at least 300 mm long.

Its size should be with reference to the specifications of the selected make SPV modules. Anti Theft Nut Bolts of SS (with washers) should be used for mounting modules for better theft proofing.

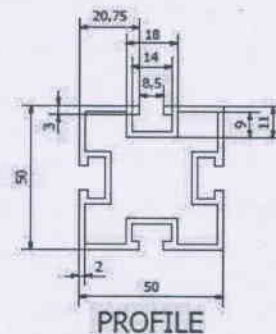
4.1 Aluminium structure should meet the following minimum specifications:

A. Structure Assembly Main Components:

1. Purlin
2. Leg & Base Plate
3. Rafter (with cleat)

B. Component Details:

1. Purlin/Rafter (Design is indicative)



- Cross section Length: 50mm, Cross section Width: 50mm, Thickness: 02mm
- Component Length – As per PV modules table designed
- Tolerance: $\pm 5\%$

Cleat:

- Cross sectional length – 135mm, Cross sectional width – 50mm,

Thickness – 5mm

- Tolerance: ±5%

2. Leg & Base Plate

(a) Base Plate:

- Cross sectional Length: 75mm, Cross sectional Height: 75mm, Thickness: 5mm
- Component Length: 150mm with two holes on base area for fixing of J Bolts
- Tolerance: ±5%

(b) Leg attached to base plate

- Cross sectional length – 50mm, Cross sectional width – 50mm, Thickness – 5mm
- Component Length – 3808mm ((or as per site requirement of tilt angle and may vary with the required height of structure) with two holes on bottom area for fixing with base plate and one hole on top are for fixing of Rafter
- Tolerance: ±5%

4.2 Hot Dipped Galvanised Iron (HDGI) structure should meet the following minimum specifications:

Rafter	:	60mmX60mmX3.2mm or 60mmX45mmX15mmX2.6mm
Purlin	:	90mmX45mmX15mmX2.6mm
Vertical Post	:	60mmX60mmX3.2mm or 60mmX45mmX15mmX2.6mm
Base Plate	:	200mmX200mmX8mm
Top Plate	:	176mmX176mmX8mm

4.3 Foundation:

The CC foundation shall have to be designed on the basis of the weight of the structure with module and minimum wind speed of the site, i.e. 150 Km/hour. Normally, each MMS should be with minimum four legs grouted on pedestals of proper size. However, for sheds CC work will not be required. The structure shall be grouted with fasteners with chemical sealing to withstand the required wind velocity. Angle of inclination shall be between 15° to 30°, however, maybe changed as per site requirement.

- CC Pillar size shall be: 300X300
- For Pillars: Cement: Concrete: Sand Ratio :: 1:2:3
- Screws shall be Grouted in the Slab of roof up to depth of 50 mm.
- Lengths of rafter/Purlin may be changed as per site requirement.

Sufficient numbers of vertical post shall be provided so that the structure may not bent.

SPECIFICATIONS FOR INVERTER/POWER CONDITIONING UNIT

(PCU)

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Inverter". In addition, the inverter shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter should also be DG set interactive, if necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:-

Specifications of Inverter	
Parameters	Detailed Specifications
Switching devices	IGBT
Capacity	The Rated Capacity of the Inverter shall not be less than the solar PV array capacity.
Control	Microprocessor /DSP
Nominal Voltage	230V / 415V as the case may be
Voltage range	Single Phase: Shall work from 180 Volts to 270 Volts; Three Phase: Shall work from 180 Volts to 270 Volts per phase
Operating frequency/ range	50 Hz(47to52 Hz)
Grid Frequency Synchronization range	± 3 Hz or more (shall also compatible for Synchronization with DG Set)
Waveform	Sine Wave
Harmonics	AC side total harmonic current distortion<5%
Ripple	DC voltage ripple on tent shall not be more than 1%.
Efficiency	<ol style="list-style-type: none"> 1. The inverters should be tested as per IEC standards/ as per latest MNRE Specification. The following criteria should be followed : 2. The benchmarking efficiency criteria for the Grid tied (central/string) inverter <ul style="list-style-type: none"> • At nominal voltage and full load is >95% • For load >25% is >92%. 3. The benchmarking efficiency criteria for Grid Tied PCU of capacity < 5KW: >85%and for capacity

	<p>≥ 5KW: ≥90%</p> <p>4. No load losses should not be more than 5%.</p>
Losses	<p>Maximum losses in sleep mode: 2W per 5kW</p> <p>Maximum losses in stand-by mode: 10W</p>
Casing protection levels	Degree of protection: Minimum IP-21 and 22 for indoor use and IP65 certification for outdoor use
Temperature	Should withstand from -10 to +50 deg Celsius
Humidity	Should withstand up to 95% (relative humidity)
Operation	Completely automatic including wake up, synchronization (phase-locking) and shutdown
MPPT	<p>Maximum power point tracker shall be integrated in the inverter to maximize energy drawn from the array.</p> <p>MPPT range must be suitable to individual array voltages in power packs</p>
Protections	<p>Mains Under / Over Voltage</p> <p>Overcurrent</p> <p>Over / Under grid frequency</p> <p>Over temperature</p> <p>Short circuit</p> <p>Lightening</p> <p>Surge voltage induced at output due to external source</p> <p>Anti Islanding (for grid synch. mode)</p> <p>Battery Under Voltage and Over Voltage</p>
System Monitoring Parameters	<p>Inverter/PCU voltage & current</p> <p>Mains Voltage, Current & Frequency</p> <p>PV Voltage, Amps & KWH</p> <p>System Mimic & Faults</p>
Recommended LCD Display on Front Panel	<p>Accurate displays on the front panel:</p> <p>DC input voltage</p> <p>DC current</p> <p>AC Voltage (all 3 phases, in case of 3 phase)</p> <p>AC current (all 3 phases in case of 3 phase)</p> <p>Ambient temperature</p> <p>Instantaneous & cumulative output power</p> <p>Daily DC energy produced</p> <p>Battery Voltage (in case of Hybrid PCU)</p>
Communication interface	<p>RS 485 / RS 232</p> <p>PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array to the power conditioning unit/inverter should also be DG set interactive.</p>
Power Factor	> 0.9
THD	<3%
Test Certificates	The inverter should be tested from the MNRE approved test centres / NABL / BIS / IEC accredited/authorised testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

- a) Three phase inverter shall be used with each power plant system (10kW and/or above) but in case of less than 10kW single phase inverter can be used as per site requirement. The inverter of single phase shall be installed if grid supply is of single phase and that of three phase shall be installed if grid supply is of three phase.
- b) Inverter/PCU shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- c) The output of power factor of inverter/PCU is suitable for all voltage ranges or sink of reactive power; inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- d) Built-in meter and data logger to monitor plant performance through external computer shall be provided (Providing Computer is not part of DNIT & is in the scope of user).
- e) **Anti-islanding (Protection against Islanding of grid):** The inverter/PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116/IS16169 or equivalent BIS standard.
- f) Successful Bidders/Supplier shall be responsible for galvanic isolation of solar roof top power plant (>100kWp) with electrical grid or LT panel.
- g) In Inverter/PCU, there shall be a direct current isolation provided at the output by means of a suitable isolating transformer. If Isolation Transformer is not incorporated with Inverter, there shall be a separate Isolation Transformer of suitable rating provided at the output side of inverter units for capacity more than 100 kW.
- h) The inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.
- i) The inverter should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IS/IEC 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std./EN50530,IEC 61727 (all clauses except clause

5.2.2). in case of clause 5.2.2, it should withstand the over/under frequency in the range 47 to 52 Hz.

- j) The MPPT units environmental testing should qualify IEC 60068-2 (1, 2, 14, 30)/ Equivalent BIS std. The junction boxes/ enclosures should be IP 65 (for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

INTEGRATION OF PV POWER WITH GRID:

- (i) The output power from SPV would be fed to the inverters/PCU which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. 4 pole isolation of inverter output with respect to the grid connection need to be provided. Solar Generation Meter(s) and bidirectional energy meter, as per HERC Net Metering Regulations should also be installed in the campus/building of beneficiary.
- (ii) The solar generation meter and Bi-directional meter along with CT/PT (if required) with Surge Protection Device (SPD) should be of 0.2S accuracy class is in the scope of bidder. For LT connection the accuracy shall be as per requirement of DISCOMs.
- (iii) CEA guideline 2013 for interconnecting solar power with Grid shall be followed.
- (iv) Certification of Islanding protection in the inverter from the manufacturer of the equipment shall be mandatory. This shall be arranged by the supplier from the manufacturer.
- (v) Technical Standards for Interconnection:

S. No.	Parameters	Requirements	Reference
1.	Overall Conditions of Service	Reference to regulations	Conditions for Supply of Electricity of Distribution Licensees
2.	Overall Grid Standards	Reference to regulations	Central Electricity Authority (Grid Standards) Regulations 2010
3.	Equipment	Applicable industry standards	IEC standards/IS
4.	Safety and Supply	Reference to regulations, Chapter III (General Safety Requirements)	Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010 and subsequent amendments
5.	Meters	Reference to regulations and additional conditions issued by the	Central Electricity Authority (Installation & Operation of Meters) regulations 2006 and subsequent amendments

		Commission.	
6.	Harmonic Current	Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519	IEEE 519 relevant CEA (Technical Standards for Connectivity of the distributed generation resource) regulations 2013 and subsequent amendments
7.	Synchronization	Photovoltaic system must be equipped with a grid frequency synchronization device, if the system is using synchronizer inherently built into the inverter than no separate synchronizer is required.	
8.	Voltage	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 seconds, the Photovoltaic system must isolate itself from the grid.	Relevant CEA (Technical Standards for Connectivity of the distributed generation resources) regulations 2013 and subsequent amendments.
9.	Flicker	Operation of Photovoltaic system shouldn't cause voltage flicker in excess of the limits stated in IEC 61000 or other equivalent Indian standards, if any	
10.	Frequency	When the Distribution system frequency deviates outside the specified conditions (52 Hz on upper side and 47 Hz on lower side up to 0.2 sec), the Photovoltaic system shouldn't energize the grid and should shift to island mode.	
11.	DC Injection	Photovoltaic 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	
12.	Power Factor	While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 shall be maintained	
13.	Islanding and Disconnection	The Photovoltaic system in the event of voltage or frequency variations must island/ disconnect itself within IEC standard on stipulated period	
14.	Overload and Overheat	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored	
15	Cable	For interconnecting Modules, Connecting modules and junction Boxes and junction boxes to inverter, DC copper cable of proper sizes shall be used. To connect inverter with AC panel aluminium cable of proper size shall be used. All the internal cables to be used in the systems shall be included in the cost while 100mtr. AC aluminium cable of proper size to be used to connect inverter/PCU to AC panel shall be included in the cost of the system.	Relevant CEA regulations 2013 and subsequent if any, (Technical Standards for Connectivity of the distributed generation resource)

- a) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- b) The change-over switches, cabling work should be undertaken by the bidder as part of the project.

JUNCTION BOXES FOR CABLES FROM SOLAR ARRAY:

The junction boxes shall be made up of FRP (Hensel or equivalent make)/PP/ABS with dust, water and vermin proof. It should be provided with proper locking arrangements.

Series / Array Junction Box (SJB/AJB) (whichever is required): All the arrays of the modules shall be connected to DCCB. AJB shall have terminals of bus-bar arrangement of appropriate size Junction boxes shall have suitable cable entry with suitable glanding arrangement for both input and output cables. Suitable markings on the bus bars shall have to be provided to identify the bus bars etc. **Suitable ferrules shall also have to be provided to identify interconnections. Every AJB should have suitable arrangement Reverse Blocking diode of suitable rating. Suitable SPD, suitable Isolation switches to isolate the DC input to Inverter has to be installed in AJB for protection purpose.** Thus AJB should have DC isolator for disconnecting the arrays from inverter input. **If in any case diodes, HRC Fuses, SPDs and isolators are installed in the string inverters, then there is need to install these again in AJB. If some of these safety gadgets are not installed in String Inverter it should be installed in AJB.** Cable interconnection arrangement shall be within conduit pipe on saddles installed properly. **Cable connection should be done in such a manner that fault findings if any, can be identified easily. The cables should be connected in such a manner that clamp meter can be comfortably inserted around the individual cables to measure the data like current, voltage etc.** AJB should also be marked as A1, A2, & so on. Wherever conduits are laid on wall/roof or ground, then it should be suitably laid in cable tray or appropriate civil structure which should be at least four inches above roof/ground level.

However, if the inverter/PCU is equipped with Junction Box, the cables may be connected directly to the ports provided in the inverter/PCU and no separate Junction Box is required.

PROTECTION & SAFETY:

Both AC & DC lines have suitable MCB/MCCB, Contractors, SPD, HRC Fuse etc to allow safe start up and shut down before & after string inverter installed in the system. String inverters should have protections for overload, surge current, high Temperature, over/ under voltage and over/ under frequency & reverse polarity. The complete operation process & safety instructions should printed on the sticker & suitably pasted on the near inverters.

Inverter should have safety measures to protect inverter from reverse short circuit current due to lightning or line faults of distribution network.

Inverter should be suitably placed in covered area on a suitable platform or wall mounted or concrete platform (on rubber mat) with complete safety measure as per norms.

INVERTER/ARRAY SIZE RATIO:

- The combined wattage of all inverters should not be less than rated capacity of power plant under STC in KW.
- Maximum power point tracker shall be integrated in the inverter to maximize energy drawn from the array

AC COMBINER BOX BOARD (ACCB):

This shall consist of box shall consists of grid inter phase panel of good quality FRP/ suitable powder coated metal casing. One Electronic Energy Meter (0.2S Class), ISI make, Single/Three Phase duly tested by DISCOMs (Meter testing Division) with appropriate CT (if required), of good quality shall have to be installed at suitable placed to measure the power generated from SPV Power Plant, as per HERC Net Metering Regulations. Proper rating MCCB & HRC fuse and AC SPDs shall be installed to protect feeders from the short circuit current and surges as per the requirement of the site. **Operation AC Isolator Switch of Grid Connectivity should be such that it can be switched ON or OFF without opening the ACCB.**

CABLES/WIRE:

All cables should be of copper as per IS and should be of 650V/1.1 KV grade as per requirement. All connections should be properly made through suitable lug/terminal crimped with use of suitable proper cable glands. The size of cables/wires should be designed considering the line losses, maximum load on line, keeping voltage drop within permissible limit and other related factors. The cable/wire should be of ISI/ISO mark for overhead distribution. For normal configuration the minimum suggested sizes of cables are:

Module to module/AJB	: 4 sq mm (single core) DC Cable
AJBs to MJB/DCCB/Inverter/PCU	<ul style="list-style-type: none"> • Up to capacity of 10 kWp Solar Plant, minimum 4sq mm (Single/Double core) DC Cable, with respect to current ratings of designing • For capacity more than 10 kWp& up to 20 kWp Solar Plant, minimum 6sq mm (Single/Double core) DC Cable, with respect to current ratings of designing • For capacity more than 20 kWp Solar Plant, minimum 10sq mm (Single/Double core) DC Cable, with respect to current ratings of designing
Inverter to ACCB/Distribution board	AC Cable as per design & rating

The size & rating of the cables may vary depending on the design & capacity of SPV Power Plant.

CABLE TRAY:

All the cables should be laid in appropriate GI cable tray as per the requirement of the site, No cable should be laid directly on ground or wall cable tray should be laid such that there is gap of at least two inches above ground/roof/wall.

DISPLAY BOARD:

The bidder has to display a board at the project site mentioning the following:

- Plant Name, Capacity, Location, Type of Renewable Energy plant (solar), Date of commissioning, details of tie-up with transmission and distribution companies, Power generation and Export FY wise.
- Financial Assistance details from HAREDA/MNRE/Any other financial institution apart from loan. This information shall not be limited to project site but also be displayed at site offices/head quarter offices of the successful bidder
- The size and type of board and display shall be approved by Engineer-in-charge before site inspection.
- **DANGER BOARDS:** Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date.

MANUAL DISCONNECTION SWITCH:

It should be provided to isolate the system from Grid which should be outside of ACCB.

AC DISTRIBUTION PANEL BOARD:

- a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
- b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- c) The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- d) All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single

phase, 415 or 230 volts, 50 Hz

- e) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- f) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- g) Should conform to Indian Electricity Act and rules (till last amendment).
- h) All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.

Variation in supply voltage	+/- 10 %
Variation in supply frequency	+/- 3 Hz

DATA ACQUISITION SYSTEM / PLANT MONITORING

- (i) Data Acquisition System shall be provided for each of the solar PV Project.
- (ii) Web based remote monitoring access of each project shall also be provided to DHBVN through software monitoring system with latest configuration. If needed access to MNRE shall also be provided.
- (iii) PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.2S accuracy class. For Hybrid there shall be provision in built in the PCU to measure generated solar energy as there is no option to install separate solar generation meter.

String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.

- (iv) All instantaneous data shall be shown on the computer screen.
- (v) Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
- (vi) Provision for instantaneous Internet monitoring and download of historical data shall be also incorporated.

PRIORITY FOR POWER CONSUMPTION:

Regarding the generated power consumption, in case of string inverter, priority need to given for internal consumption first and thereafter any excess power can be exported to grid.

PROTECTIONS

The system should be provided with all necessary protections like earthing, Lightning, and grid anti- islanding as follows:

Lightning And Over Voltage Protection:

The SPV Power Plant shall be provided with lightning and over voltage protection. The principal aim in this protection is to reduce the over voltage to a tolerable value before it reaches the PV or other sub-systems components. The source of over voltage can be lightning or any other atmospheric disturbance. The Lightning Arrestor (LA) is to be made of 1¼" diameter (minimum) and 12 feet long GI spike on the basis of the necessary meteorological data of the location of the projects. Necessary foundation for holding the LA is to be arranged keeping in view the wind speed of the site and flexibility in maintenance in future. Each LA shall have to be earthed through suitable size earth bus with earth pits. The earthing pit shall have to be made as per IS 3043. LA shall be installed to protect the array field, all machines and control panels installed in the control rooms. Number of LA shall vary with the capacity of SPV Power Plant & location. Number of LA should be in such a manner that total layout of solar modules should the effective coverage of LA's.

For systems up to 10 kWp the lightning arrester shall of conventional type and for above 10 kWp systems it should be of Early Streamer Emission (ESE) type.

Earthing Protection:

Each array structure of the PV yard shall be grounded properly. In each array every module should be connected to each other with copper wires, lug teathed washers addition the lightning arrester/masts shall also be provided inside the array field. Provision shall be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant shall be thoroughly grounded in accordance with Indian Electricity Act/IE rules as amended up to date. The earthing pit shall be made as per IS: 3043. All the array structures and equipments/control systems shall be compulsorily connected to the earth, separately. Number of earthling shall vary with the capacity of SPV Power Plant & location. G.I. /Copper strips should be used for earthling instead of G.I. wires. LA should be installed to protect the array field & machines installed in the control rooms. Number of LA shall vary with the capacity of SPV Power Plant & location. Earth resistance shall not be more than 5 ohms.

Surge Protection:

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and -ve terminals to earth (via Y arrangement)

Grid Islanding:

In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short

period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as “islands.”

Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

A manual disconnect pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked, if required, by the utility personnel

CONNECTIVITY:

The user has to take approval/NOC from the Concerned DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to DHBVN before commissioning of SPV plant, however the supplier have to extend all technical help to the user for preparing the documents required for getting the above clearance from DISCOMs.

Reverse power relay shall be provided by bidder (if necessary), as per the local DISCOM requirement.

The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code and amended from time to time. Following criteria have been suggested for selection of voltage level in the distribution system for ready reference of the solar suppliers.

Plant Capacity	Connecting voltage
Up to 10 kWp	240V-single phase or 415V-three phase as per requirement of electric connection of the consumer
Above 10kWp and up to 100 kWp	415V – three phase
Above 100kWp	415V – three phase or as per site requirement based on the availability of grid level and as per DISCOM rules

Utilities may have voltage levels other than above, DISCOMS may be consulted before finalization of the voltage level and system shall be designed accordingly.

DRAWINGS & MANUALS:

Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in

their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.

Approved ISI and reputed makes for equipment be used.

SAFETY MEASURES:

The bidder shall take entire responsibility for electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc. All work shall be carried out in accordance with the latest edition of the Indian Electricity Act and rules formed there under and as amended from time to time.

CODES AND STANDARDS

The quality of equipment supplied shall be controlled to meet the guidelines for engineering design included in the standards and codes listed in the relevant ISI and other standards, such as :

IEEE 928 Recommended Criteria for Terrestrial PV Power Systems.

IEEE 929 Recommended Practice for Utility Interface of Residential and Intermediate PV Systems.

IEEE 519 Guide for Harmonic Control and Reactive Compensation of Static Power Controllers.

National Electrical NEPA 70-(USA) or equivalent national standard.

National Electrical Safety Code ANSI C2- (USA) or equivalent national standard.

JRC Specification 503 (Version 2.2 March 1991) or JPL Block V standard for PV modules.

The inverter manufacturer should attach efficiency certificate from Independent Third party Testing laboratory i.e. IEC, TUV, SNL/ERTL & STQC. PCU should confirm to IEC 61683 for efficiency measurements and IEC 60068 2 for environmental testing. MPPT unit should confirm to design qualification IEC 62093.

IEC 62116 for Anti Islanding

IEC 62109-1, IEC 62109-2 for safety

IEC 61727 FOR UTILITY INTERFACE.

Undertaking/Self- Declaration for domestic content requirement fulfillment

(On a plain Paper)

This is to certify that M/S.....[Company Name] has installedKW [Capacity] Grid Connected Rooftop Solar PV Power Plant for..... [Consumer Name] at[Address] under sanction number.....dated.....[sanction date] issued by.....[DISCOM Name].

2. It is hereby undertaken that the PV modules installed for the above-mentioned project are domestically manufactured using domestic manufactured solar cells. The details of installed PV Modules are follows:

1. PV Module Capacity:
2. Number of PV Modules:
3. Sr No of PV Module
4. PV Module Make:
5. Purchase Order Number:
6. Purchase Order Date:
7. Cell manufacturer's name
8. Cell GST invoice No

3. The above undertaking is based on the certificate issued by PV Module manufacturer/supplier while supplying the above mentioned order.

4. I, on behalf of M/S..... [Company Name] further declare that the information given above is true and correct and nothing has been concealed therein. If anything is found incorrect at any stage then the due Central Financial Assistance (CFA) that I have not charged from the consumer can be withheld and appropriate action may be taken against me and my company for wrong declaration. Supporting documents and proof of the above information will be provided as and when requested by MNRE.

(Signature With official Seal)

For M/S.....
Name:.....
Designation:.....
Phone:.....
Email:.....

Annexure-IV

PERFORMA OF WARRANTY CERTIFICATE-CUM-COMPREHENSIVE MAINTENANCE CONTRACT WITH DHBVN/CONSUMER BY EMPANELLED AGENCIES AFTER SUCCESSFUL COMMISSIONING OF SPV POWER PLANT

(On a required stamp paper)

Order No. _____

Date: _____

We _____ (Name of empanelled agency with registered address) do hereby certify that the _____ (make of modules) _____ SPV Modules as used for _____ (Name of the project) shall have warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period. (Detail lists of Solar PV Modules enclosed).

Further, We _____ (Name of empanelled agency with registered address) do hereby certify that the whole system of the _____ (Name of the project) shall have warranty and comprehensive maintenance contract for the period of 5 years from the date of commissioning of the project.

Further, if, we _____ (Name of empanelled agency with registered address) _____ fails to provide the 5 years warranty and comprehensive maintenance contract of whole system and 25 years warranty of SPV Modules as mentioned above, then we are liable for legal action including blacklisting of the firm by DHBVNL.

Signature: _____

Name: _____

Designation with Stamp _____

Annexure-V

(To be given on the letter head of the Modules Manufacturer)

It is certified that the Modules supplied to with Sr. Nos. given below are domestic manufactured solar modules in which domestic manufactured solar cells are used. It is also certified that these Modules are not having OEM/Co-certification.

Sr. Nos. of Modules:

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
- So on

(If large quantity, then list to be attached with certification)

Date:

Signature

Name of Authorised person

Name of Modules Manufacturer.....

(with Seal)