F.no. 318/140/2024- GCRT
Government of India
Ministry of New and Renewable Energy
Rooftop Solar Division

Atal Akshay Urja Bhawan
Lodhi Road, New Delhi 110003,
Dated: 31st August 2026

OFFICE MEMORANDUM

Subject: Amendment in Guidelines for Implementation of PM-Surya Ghar: Muft Bijli Yojana for the component of "CFA to residential consumers"-reg.

This refers to this Ministry's OM of even number dated 07.06.2024 regarding notification of Operational Guidelines and consequent amendment dated 07.07.2025 for the implementation of PM-Surya Ghar: Muft Bijli Yojana (PMSG: MBY) for the component "CFA to residential Consumers". The following amendment in the guidelines is issued:

Sl. No.	Existing Clause in the Guidelines	Amended Clause
i.	**Annexure 1:** All applications at redeemed/ inspected/installed stage under the Phase II of rooftop solar programme will be admissible for CFA, if claim is received till 31.12.2025. However, to clarify, all such applications will be admissible for CFA as per the respective RTS phase II programme guidelines. Applications submitted but not installed as on 01.04.2025 shall be ineligible for CFA, and shall be deleted from the database. Such consumers, whose applications are so deleted are at liberty to re-apply under the PMSG: MBY in the future.	All applications at redeemed/ inspected/installed stage under the Phase II of rooftop solar programme will be admissible for CFA, provided the claim is received by 30th November, 2026. However, to clarify, all such applications will be admissible for CFA as per the respective RTS phase II programme guidelines.

3. This issues with the approval of Competent Authority.

(Ashish Batham)
Under Secretary to Govt. of India

To,

1. ACS/Principal Secretaries/Secretaries (Renewable Energy/Energy/Power) of all States/UTs
2. CMDs/MDs of DISCOMs/State Nodal Agencies of all States/UTs
3. CMD, REC Ltd.

Internal Circulation:

i. O/o Hon'ble Minister of New & Renewable Energy
ii. O/o Hon'ble Minister of State of New & Renewable Energy
iii. O/o Secretary, MNRE
iv. O/o JS (JVNS)
v. O/o JS&FA, MNRE
vi. All vertical heads under PMSG
vii. MNRE Portal and National Portal for PM – Surya Ghar

F.no. 318/140/2024- Grid Connected Rooftop
Government of India
Ministry of New and Renewable Energy
Rooftop Solar Division

Atal Akshay Urja Bhawan
Lodhi Road, New Delhi 110003,
Dated: 07th July 2025

Office Memorandum

Subject: Amendment in Guidelines for Implementation of PM-Surya Ghar: Muft Bijli Yojana for the component of "CFA to residential consumers"-reg.

This refers to OM No. 318/17/2024- GCRT dated 07.06.2024 regarding notification of Operational Guidelines for Implementation of PM-Surya Ghar: Muft Bijli Yojana (PMSG: MBY) for the component "CFA to residential Consumers".

2. Considering the feedback from the implementing agencies on the operational issues being faced during the implementation of the said scheme across the states/UTs, amendments in the aforementioned Guidelines as per attached Annexure is issued.

3. This issues with the approval of Competent Authority.

(Divyanshu Jha)
Deputy Secretary to Govt. of India
d.jha@ias.nic.in

To,

1. CMD, REC Limited
2. Director PMSG (HCB) & Sci-D (VB) with a request to address claims under RTS phase II as per the issued amendments.
3. Director NIC (AS) & Director PMSG (HCB) with a request to upload on MNRE's Portal and National Portal for PM-Surya Ghar: Muft Bijli Yojana.

Annexure

Para wise amendment in the Guidelines of PM-Surya Ghar: Muft Bijli Yojana for the component of "CFA to residential consumers".

Sl. No.	Existing Clause in the Guidelines	Amended Clause
i.	**5 (i):** Additional State Subsidy: The State/UT governments may supplement the CFA provided by the central government for the residential sector with an additional subsidy for RTS; however, this shall be subject to adherence to all scheme guidelines by the State. The framework of such support by the State/UT governments shall be in alignment with the support provided under the scheme. *The process for disbursement of state subsidy component shall be integrated with the National Portal.*	Additional State Subsidy: The State/UT governments may supplement the CFA provided by the central government for the residential sector with an additional subsidy for RTS; however, this shall be subject to adherence to all scheme guidelines by the State. The framework of such support by the State/UT governments shall be in alignment with the support provided under the scheme. Additional State/UT subsidy should be updated on the National portal.
ii.	**Annexure 1:** All applications submitted under the Phase II of rooftop solar programme will be admissible for CFA if the claim is received till October 2024. The claims received after October 2024 will not be entertained.	All applications at redeemed/ inspected/installed stage under the Phase II of rooftop solar programme will be admissible for CFA, if claim is received till 31.12.2025. However, to clarify, all such applications will be admissible for CFA as per the respective RTS phase II programme guidelines. Applications submitted but not installed as on 01.04.2025 shall be ineligible for CFA, and shall be deleted from the database. Such consumers, whose applications are so deleted are at liberty to re-apply under the PMSG: MBY in the future.
iii.	**6(f):** The Ministry shall identify the minimum technical specifications to be adhered to by all vendors for RTS systems installed under the scheme. It will be the responsibility of the vendors to ensure that the system meets the minimum technical specifications as detailed in Annexure 3. This will also be checked by the DISCOMs at the time of inspection.	The Ministry shall identify the minimum technical specifications to be adhered to by all vendors for RTS systems installed under the scheme. The Ministry may amend the technical specifications as required prospectively, with the approval of the Secretary, MNRE. It will be the responsibility of the vendors to ensure that the system meets the minimum technical specifications as detailed in Annexure 3. This will also be checked by the DISCOMs at the time of inspection.

(Divyanshu Jha)
Deputy Secretary to Govt. of India
d.jha@ias.nic.in

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No.: 318/17/2024-Grid Connected Rooftop
Ministry of New and Renewable Energy
Government of India
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Atal Akshay Urja Bhawan
Lodhi Road, New Delhi-110003
Dated 07.06.2024

Office Memorandum

Subject: Operational Guidelines for Implementation of PM Surya Ghar: Muft Bijli Yojana for the component "CFA to Residential Consumers"

This refers Ministry's order No. 318/17/2024-GCRT Division dated 16th March 2024 vide which sanction was issued for the PM-Surya Ghar: Muft Bijli Yojana, aimed at installing rooftop solar plants in one crore households, with a total financial outlay of Rs. 75,021 crore.

2. The operational Guidelines for the implementation of PM Surya Ghar: Muft Bijli Yojana for the component "CFA to Residential Consumers" are enclosed.

3. This issues with the approval of competent authority.

(Divyanshu Jha)
Deputy Secretary
d.jha1989@ias.nic.in

To

1. ACS/Principal Secretaries/Secretaries (Renewable Energy/Energy/Power) of all States/ UTs
2. CMDs/MDs of Discoms/State Nodal Agencies of all States/UTs
3. Chairperson, All State/Joint Electricity Regulatory Commission

Copy for information to:

1. PS to Hon'ble Minister of New & Renewable Energy
2. PS to Hon'ble Minister of State of New and Renewable Energy
3. PPS to Secretary/AS/JS/JS&FA, MNRE
4. All Advisers & Group Heads
5. Director (NIC) for uploading on Ministry's website

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Guidelines for PM-Surya Ghar: Muft Bijli Yojana

Central Financial Assistance to Residential Consumers

1) Background

a) The Government of India has approved the PM Surya Ghar: Muft Bijli Yojana on 29th February, 2024 to increase the share of solar rooftop capacity and empower residential households to generate their own electricity. The scheme has an outlay of Rs 75,021 crore and is to be implemented till FY 2026-27. The administrative approval was granted to the scheme vide Order No. 318/17/2024-Grid Connected Rooftop dated 16th March, 2024.

b) The Financial Outlay for the scheme includes the following components:-

S. No.	Scheme Component	Outlay
1.	CFA to Residential Consumers	₹ 65,700 crore
2.	Incentives for Discoms	₹ 4,950 crore
3.	Model Solar Villages in each district	₹ 800 crore
4.	Incentives for Local Bodies	₹ 1000 crore
5.	Payment Security Mechanism	₹ 100 crore
6.	Innovative Projects	₹ 500 crore
7.	Capacity Building (1% of CFA)	₹ 657 crore
8.	Awareness & Outreach (1% of CFA)	₹ 657 crore
9.	Service Charge (1% of CFA)	₹ 657 crore
	Total	**₹ 75,021 crore**

2) Scope

a) These guidelines pertain to the implementation of Component 1 “Central Financial Assistance (CFA) to residential consumers” under the capex mode for eligible consumer categories only.

b) The guidelines pertaining to other components of the scheme shall be issued separately.

c) These guidelines shall be applicable for all applications received on the National Portal from the date of the launch of the scheme, i.e. 13th February, 2024.

d) The implementation period of the scheme shall be till 31st March, 2027.

3) Aim and Objectives of PM – Surya Ghar: Muft Bijli Yojana

The key objectives of the scheme are:

a) To achieve 1 crore rooftop solar system (RTS) installation in residential sector.

b) To help provide free/low-cost electricity to 1 crore households up to 300 units of electricity per month by installation of rooftop solar.

c) To produce renewable electricity of 1,000 billion units through the capacity installed under the scheme, which will result in reduction of 720 million ton of CO2eq emission during the 25 years of lifetime for rooftop solar projects.

d) To develop the required enabling ecosystem for rooftop solar projects, including regulatory support, manufacturing facilities, supply chain, vendor network, operation & maintenance facilities, etc., in the country.

e) To boost local economy and employment generation along with enhanced energy security

f) To aid in achievement of India's commitment for green climate through its NDCs (Nationally Determined Contributions) at UNFCCC by installation of 30 GW of solar capacity through rooftop solar by 2026-27

4) Transition From Existing Scheme

a) The Ministry of New and Renewable Energy has been implementing the Grid Connected Rooftop Solar Phase II Programme since 2019, which was proposed to be implemented till 2025-26 with a budgetary outlay of Rs 11,814 crores. This scheme stands subsumed within the PM Surya Ghar: Muft Bijli Yojana.

b) The CFA and other releases for the PM – Surya Ghar: Muft Bijli Yojana shall be made from the budgetary outlays of Rooftop Solar Phase II Programme till the dedicated budget allocation for the scheme is operational and disbursements can be made from it.

c) Once the new scheme budget is operational, the budget of Phase II programme will get subsumed into the new scheme, and the new scheme funds shall be utilized for meeting the ongoing liabilities of the Phase II programme also.

d) The CFA releases for ongoing projects against allocations made by MNRE to implementation agencies under Phase II shall be governed by the guidelines issued under the Phase II programme and shall not be covered under the PM – Surya Ghar Scheme CFA structure. However, the budgetary releases for phase II programme shall be met through the new scheme outlay.

e) The Phase II programme was implemented in Tender Mode as well as through National Portal. The applicability of CFA rates for claims submitted under Phase II programme has been defined in Annexure 1 for greater clarity.

5) Central Financial Assistance

a) The scheme will support the installation of grid-connected rooftop solar projects in the residential sector through Central Financial Support (CFA) support from the Central Government.

b) **Eligibility:** For the purpose of CFA, residential RTS plant would be the grid connected solar power system tagged to a particular residential power connection of the local DISCOM and will only include installations on a roof/terrace/balcony or on top of elevated structures. Special RTS installations such as Building Integrated PV (BiPV) systems shall also be considered eligible for CFA support. To clarify, installations under metering mechanisms such as Group Net Metering and Virtual Net Metering shall be eligible for CFA if the installations are on any roof/terrace/balcony or on top of elevated structures or as BiPV and the metering arrangement is approved by the DISCOM.

c) **Capex Mode:** The Capex mode is considered to be one wherein the consumer herself, either through her own capital or through borrowings from financial institutions or otherwise, funds the initial investment into the rooftop solar system. To clarify, these guidelines do not cover RESCO models (where a third party entity other than the consumer makes the initial investment) or Utility Led/State Led Aggregation Models (where a state entity invests on behalf of consumers on an aggregate basis). These modes will be dealt separately in other guidelines.

d) No CFA will be provided to non-residential segments of consumers (including government segment, commercial and industrial segment etc.).

e) **CFA Structure:** The Central Financial Assistance for the residential sector shall be as per the following table:

S. No.	Type of Residential Segment	CFA
1.	Residential Sector (first 2 kWp of RTS capacity or part thereof)	60% of benchmark cost of 2 kWp
2.	Residential Sector (with additional RTS capacity of 1 kWp or part thereof)	40% of benchmark cost of additional kWp
3.	Residential Sector (additional RTS capacity beyond 3 kWp)	No additional CFA
4.	Group Housing Societies/ Residential Welfare Associations (GHS/RWA) etc, for common facilities including EV charging up to 500 kWp (@3 kWp per house)	As per CFA of S. No. (2) above

For GHS/RWAs, the upper limit of CFA supported RTS capacity is inclusive of individual rooftop plants installed by individual residents in the GHS/RWA.

f) The GHS/RWA connection eligible under the scheme shall be dedicated only for common facilities and should not be utilized for providing electricity supply to residential consumers within the GHS/RWA.

   i) The CFA support will generally be provided to entities created by residents for overall maintenance and that are responsible for upkeep of common facilities and these may be known by alternative terminologies such as Apartment Owner Associations (AOAs), Cooperative Housing Societies etc.

g) **Benchmark Cost:** The benchmark cost for 1 kW system is fixed at ₹ 50,000/kW for the first 2 kW of RTS capacity and ₹ 45,000 for the additional kW with effect from 13th February, 2024. The benchmark for special category States (States/UTs of Uttarakhand, Himachal Pradesh, J&K, Ladakh, States in the North East including Sikkim, UTs of A&N and Lakshadweep) will be Rs 55,000 for first 2 kW of RTS capacity and Rs 49,500 for the additional kW of RTS capacity.

h) **Effective CFA:** The CFA for the scheme with effect from date of initiation, i.e., 13th February, 2024 is as follows:-

S. No.	**Type of Residential Segment**	**CFA**	**CFA (Special Category States)**
1.	Residential Sector (first 2 kW_p of RTS capacity or part thereof)	Rs 30,000/kWp	Rs 33,000/kWp
2.	Residential Sector (with additional RTS capacity of 1 kW_p or part thereof)	Rs 18,000/kWp	Rs 19,800/kWp
3.	Residential Sector (additional RTS capacity beyond 3 kW_p)	No additional CFA	No additional CFA
4.	Group Housing Societies/ Residential Welfare Associations (GHS/RWA) etc, for common facilities including EV charging up to 500 kW_p (@3 kW_p per house)	Rs 18,000/kWp	Rs 19,800/kWp

To illustrate

i. *If a consumer installs a system of 1.5 kW, she is eligible for a CFA of ₹ 30,000x 1.5 = ₹ 45,000*

ii. *If a consumer installs a capacity of 2.5 kW, she is eligible for a CFA of ₹ 30,000x2 + ₹ 18,000x0.5 = ₹ 69,000*

iii. *If a consumer installs a capacity of 6 kW, she is eligible for a CFA of ₹ 30,000x2 + Rs18,000x1 = ₹ 78,000*

iv. *If an RWA installs a capacity of 100 kW, with 20 households, it will be eligible for a CFA of ₹ 18,000x60 kW (Lower of (20x3 kW), 100 kW) = ₹ 10,80,000*

v. *If an RWA installs a capacity of 100 kW, with 50 households, it will be eligible for a CFA of ₹ 18,000x100 kW (Lower of (50x3 kW), 100 kW)= ₹ 18,00,000*

i) **Additional State Subsidy:** The State/UT governments may supplement the CFA provided by the central government for the residential sector with an additional subsidy for RTS; however, this shall be subject to adherence to all scheme guidelines by the State. The framework of such support by the State/UT governments shall be in alignment with the support provided under the scheme. The process for disbursement of state subsidy component shall be integrated with the National Portal.

j) **Revision of Benchmark Cost:** The benchmark cost will be revised at the time of midterm review of the scheme to reflect changed market trends, if any, or earlier in case of substantial upward revision in module prices for unforeseen reasons. The benchmark will reflect changes in solar module supply prices, inverter costs and other systems costs as per the methodology defined by the Ministry of New and Renewable Energy. In case of upward revision of benchmark rates and consequent increase in requirement of budgetary support, necessary approvals in consultation with Department of Expenditure shall be taken separately by the Ministry to revise the scheme targets appropriately.

k) **Sizing of Inverter:** The CFA shall be irrespective of the size of the inverter installed. If a consumer installs a rooftop solar plant with a higher/lower rated inverter capacity than the number of modules, the CFA provided will be as per the rated DC capacity of the module system (according to the CFA structure) and not as per the inverter capacity. The inverter should, however, meet the technical specification defined in the scheme.

l) **Additional Components:** The rooftop solar installation may include additional technology components such as small wind hybrids, battery storage, solar tracker systems etc. However, the CFA calculation shall be based on the CFA structure under the scheme as per capacity of solar modules installed in the system.

m) **Domestic Content Requirement:** Solar modules used in the installation must satisfy the Domestic Content Requirement condition i.e., domestically manufactured modules manufactured from domestically manufactured cells. This is an essential condition for the installation to be eligible for the CFA. Use of non-DCR modules in any form in the installation shall render the installation ineligible for CFA.

n) **Pre-existing RTS:** A rooftop solar installation by residential consumers/RWAs that has availed CFA under a prior/current scheme for rooftop solar by Ministry of New and Renewable Energy and has subsequently increased the RTS installation size shall be eligible for additional CFA under the current scheme only for the balance capacity up to 3 kW of overall RTS plant size.

(1) For example, if a household had installed a RTS of 1 kW under Phase 2 Grid Connected Rooftop Solar Scheme and availed a subsidy of Rs 14,588, and if such a household enhances the total capacity to 4 kW overall, in such a case, the household shall be eligible to claim an additional subsidy under the current scheme only for the additional 2 kW capacity, i.e. Rs 48,000.

(2) Alternatively, if a household installs a RTS of 1 kW under PM – Surya Ghar scheme and avails a subsidy of Rs 30,000, and if such a household later enhances the total capacity to 4 kW overall, in such a case, the household shall be eligible to claim an additional subsidy under the current scheme only for the additional 2 kW capacity, i.e. Rs 48,000.

o) A rooftop solar installation shall be eligible for CFA only once after installation. If an already installed rooftop solar is shifted/relocated to a new location, such a system shall not be eligible for CFA under the scheme.

p) **Give It Up:** Consumers will have the option to forgo the CFA under the scheme so that the scheme benefits can reach a wider cross-section of consumers. This will be enabled by a "Give It Up" option on the National Portal. Consumers who opt for installing RTS without availing CFA under this scheme, including those who may wish to forgo the RTS CFA (under the "Give It Up" campaign or otherwise) shall be free to do so without using domestically manufactured cells/modules (Domestic Content Requirement or DCR).

6) Method of Implementation

a) **National Portal:** Any eligible consumer shall avail the benefits of the scheme only through the PM Surya Ghar National Portal (hereinafter referred to as “Portal” or “NP”).

b) **Eligible Consumer:** Any interested consumer with a valid Consumer Account Number (or its equivalent consumer ID) for a Distribution Utility (Distribution Companies, or in some cases Power/Energy Department of the state wherever applicable) shall apply on the National Portal. The Portal shall generate an application ID for the application. The consumer shall be assisted on the National Portal with informational aids, audio visual material and other decision-making tools to decide on rooftop solar installation and its possible configurations.

c) **Choice of Vendor:** The consumer shall then choose a vendor who is registered on the National Portal. The consumer shall be free to enter into arrangements with any such RTS vendor at mutually decided rates. There shall be no tendering or rate discovery by the state DISCOMs/agencies under the scheme to empanel RTS vendors as was being carried out in the Phase II program. The portal shall include a mechanism of vendor comparison so that consumer can make a better decision in finalizing the vendor of choice.

d) **Finalization of Terms:** The consumer shall mutually decide with the vendor on the system design, system components, system quality, additional functionalities, localized design requirements etc. Based on the mutually decided system design, the consumer shall also mutually agree with the vendor on the financial terms and conditions. The vendor and the consumer may sign an agreement covering these aspects. A suggested sample vendor-consumer agreement is attached at Annexure 2, however, the actual agreement may vary on a case-to-case basis.

e) In order to protect the interests of the consumers, the National Portal will provide comprehensive informational material, decision making tools, system and vendor comparison tools etc. so that the consumers can make an informed choice.

f) **Minimum Technical Specifications:** The Ministry shall identify the minimum technical specifications to be adhered to by all vendors for RTS systems installed under the scheme. It will be the responsibility of the vendors to ensure that the system meets the minimum technical specifications as detailed in Annexure 3. This will also be checked by the DISCOMs at the time of inspection.

g) **Indicative Costs of Components:** The Ministry will publish indicative costs of system components (modules, inverters and other important equipment) for the benefit of consumers in order to ensure that consumers are not overcharged.

h) **Feasibility Approval:** As per the provisions of the Electricity (Rights of Consumers) Rules, 2020 and subsequent amendments, applications for rooftop solar systems up to 10 kW capacity shall be deemed to have been accepted without requiring approval of technical feasibility by the DISCOMs. Till the operationalization of this provision by respective Regulatory Commissions/DISCOMs, the consumer shall upload the necessary documents for seeking feasibility approval, wherever required as per extant state regulations.

i) **Vendor Installation:** The vendor shall install the system, conduct necessary safety and other checks and also educate the consumer on various aspects of RTS maintenance and safety and provide informational material to the consumer as appropriate.

j) **Portal Updation:** After the vendor has completed the installations, the consumer shall update the system details on the portal and upload all the relevant documents including geo-tagged photographs as required on the portal. The vendor may assist the consumers in filling up the necessary details through the consumer login. Subsequently, the application will move to the DISCOM.

k) **DISCOM Inspection:** The concerned DISCOM shall conduct a physical inspection of the system, sign the appropriate agreements with the consumer (net meter agreement or otherwise), conduct a checklist-based inspection as per the National Portal and approve the application on the National Portal for release of CFA. Alternatively, the DISCOMs may send back the application for corrections or reject the claim with adequate justification. The CFA will be processed only after the DISCOM has physically verified the system and completed the process on the Portal.

l) **Meter Installation and Agreement:** The meter shall be installed by DISCOM after rooftop installation is complete and the DISCOM and the consumer will sign the appropriate metering agreement as per state regulations. The net meter will be provided by the DISCOM or the consumer may procure the net meters from enlisted meter vendors. A model net metering agreement is shown at Annexure 4. However, the actual agreement may vary. All metering arrangements (net metering, gross metering, net billing, virtual net metering, group net metering etc.) approved by the respective Electricity Regulatory Commissions of States/UTs shall be covered under the scheme.

m) **Metering in AMISP Areas:** For the purpose of net metering, in the areas where the Smart Metering works have already been awarded under Revamped Distribution Sector Scheme (RDSS), DISCOMs/PDs (Power Departments) should mandatorily get the Smart Meters installed through the AMISP (Advance Metering Infrastructure Service Provider).

n) **Metering in Non-AMISP Areas:** In case the Smart Metering works are yet to be awarded under RDSS, the net meters should be installed (preferably Smart Meters with 4G Cellular NIC card) as per manufacturers empaneled list and technical specifications published by Central Electricity Authority in its website.

o) **Non Metered Grid Connected Systems:** Systems that are not feeding into the grid but are connected to the grid (behind-the-meter systems, battery hybrid systems etc.) shall be eligible for CFA under the scheme subject to approval by the respective Electricity Regulatory Commissions. In such cases, the DISCOM will inspect the installation, ensure the functioning of the reverse power relay protection and incorporate suitable remarks in the report. However, Off-grid connected installations will not be eligible for CFA under the scheme.

p) **E-Token:** The release of the CFA shall be operationalized through an e-token. The e-token will be generated after submission of application on the National Portal and will be visible on the consumer profile in the Portal. After the necessary documents have been uploaded and inspection by the DISCOM has been completed, the e-token shall be activated with the amount of eligible CFA as per the actual installed capacity. The e-token shall then be redeemed by the consumer by logging into her profile on the Portal and the CFA shall subsequently be released to the consumer account.

q) **Financing:** The consumer may also opt for financing through the National Portal. The loan products of various banks and financial institutions will be available on the NP and the consumer may opt for any of them through integration provided by Jan Samarth Portal or through other Financial Institutions directly.

r) **Loan Products:** It is envisaged that standardized low interest loan products in the range of benchmark rates (Repo + 50 bps) for installation of residential RTS systems that are up to 3 kW in size will be made available to the consumers by Banks.

   i) These financing options shall be supplemented by standardized products of similar nature for non-subsidized segments also, including residential sector RTS of sizes more than 3 kW. The standard loan products from Banks/FIs will be published on the portal.

s) **Consumer Account Details:** All consumer details including bank account information and a cancelled cheque image/bank e-statement file/passbook scan or any other electronic document certifying that the bank account number is held by the concerned consumer must be submitted on the National Portal by the consumer.

   i) In case the consumer has opted for a loan product to finance the rooftop solar installation, the consumer profile shall also include the loan account details (entered by the Consumer or through integration with banking portals). On redemption of the e-token in such cases, the CFA will be transferred to the loan account of the consumer. If the CFA exceeds the outstanding loan amount of the consumer, the CFA will be disbursed to the consumer's loan account in the bank up to the amount of loan outstanding, with the remainder disbursed into the consumer's bank account.

t) **Processing of Claims:** The CFA will be processed within 15 days of approval by the concerned DISCOM.

7) Vendor Registration and Performance

a) **Registration of Vendors:** The scheme shall be implemented only through the vendors registered on the National Portal i.e. a consumer has to choose a registered vendor for availing CFA under the scheme.

b) **Registration Levels:** The vendors shall have the option to register with the state DISCOMs/state agencies for state level registration and with the National Programme Implementation Agency (NPIA) for national/multi-state/state level registration as per procedure prescribed by MNRE. In case of multiple DISCOMs within a state, the state government shall identify a nodal DISCOM/agency which shall undertake vendor registrations on behalf of all DISCOMs of that state.

c) **Vendor Profiles:** The registered vendors will be able to create their profiles on National Portal, including RTS system specifications offered, prices offered and key contacts for consumers to reach out to. The consumers will be able to raise requests for enquiries through the portal and it is also expected that the vendors will respond to interest expressed by consumers in a timely and reasonable manner. The vendor profile will also include vendor rating, details about consumer feedback and other data relating to the performance of the vendor on completed/ongoing projects for which they are the designated vendors.

d) **Services:** Registered vendors shall provide the services to the consumers for repairs/maintenance of the RTS plant free of cost for 5 years of the Comprehensive Maintenance Contract (CMC) period from the date of commissioning of the plan. Non-performing/ under-performing system component will be replaced/repaired free of cost in the CMC period. The consumer shall be provided with the warranties given by the respective OEMs on the system components for any future replacement of malfunctioning components. Any deficiency of the RTS system leading to non-disbursal of CFA/non-commissioning of the RTS by the DISCOM on account of system quality/component issues shall be rectified by the vendor. In all cases, the vendors shall adhere to the minimum technical specifications provided in the scheme in their installations.

e) **Penalties:** The Implementing agency (State DISCOM or agency) or MNRE officials or any other designated agency may inspect the ongoing installation or installed plants. In case the systems are not as per standards, nonfunctional on account of poor quality of installation, or in non-compliance of scheme guidelines, the respective registering authority will reserve the right to de-register the vendor and/or levy such penalties as may be prescribed, after giving due notice to the vendor.

8) Functionalities in the National Portal

a) The National Portal is currently live and functional, however over the period of the implementation of the scheme, various value additions and feature enhancements will be undertaken for up gradation of the portal. These enhancements inter alia may include the following:-

i) **Integration with State Portals:** The National Portal will provide a seamless and fully integrated experience to prosumers in the residential sector. The portal will be fully integrated with State DISCOM portals for a harmonized experience for consumers in all stages of rooftop installations, including requests for net metering, load sanctions, inspections etc.

ii) **Platform Services:** The portal will create a public platform on which other applications, websites, financing intermediaries and e-commerce sites can plug into, through Application Programming Interfaces (APIs) and provide additional services for citizens.

iii) **GIS based Services:** The portal will be augmented with GIS based services to enable better decision making and visualization of RTS systems for vendors and consumers. The GIS based system planning will also be integrated with PM-Gati Shakti Portal to leverage additional functionalities and optimize power systems planning.

iv) **Marketplace for Vendors:** The National Portal will create a transparent and open marketplace for vendors by adding vendor feedback and vendor performance on the portal.

v) **Multimode Messaging:** The National Portal will be accessible through apps, chatbots and WhatsApp also, enabling wider outreach to all segments. The Portal will also generate multi-level triggers for delays in DISCOM inspection and net meter installations and the DISCOMs shall be encouraged to ensure timely commissioning of RTS plants, once the vendors have installed the systems.

vi) **Other Value Added Services:** There shall be other value-added activities such as providing basic financial modelling of the proposed system and consumer's return period, entry of technical parameters of the system.

vii) **Integration with Banks:** The portal will provide integration with banking products offered by various financial institutions and will promote digital-only products for ease of use by the consumers. Integration with Jan Samarth portal shall be done to ensure bidirectional flow of information to and from the National Portal to the respective financial institutions and to ensure tagging of loan account of consumer to the application on National Portal.

viii) **Give It Up:** The facility for forgoing CFA under the scheme as a part of the "Give It Up" campaign shall be created on the National Portal. Such consumers would still be able to access all facilities of the National Portal as well as linkages with banks for necessary financial products as per availability. This segment will benefit from non-financial easement of processes and standardized financing products created by banks through the National Portal.

ix) **Generation and Benefits Tracking**: The National Portal will receive generation data from connected inverters/smart meters for providing better analytical services to the consumer as well as to assist DISCOMs in collecting data. In case the RTS generation data (intermittent or real-time or near real-time) of an RTS is being received by the vendor through SIM/dongle/Wi-Fi etc., access to that data shall be provided by the vendor to the National Portal. This will enable tracking of the RTS generation data on the National Portal.

b) **Active Applications:** MNRE may specify a time period for which an application shall be kept active on the National Portal from the date of application, after which the application shall be deemed to be dormant. In case such period is specified, the applicant would be able to reactivate the dormant application at any time through the consumer profile on the National Portal subject to the overall limit of 1 crore active applications.

c) **Limit on Active Applications:** As the scheme is fund limited, the receiving of applications on the National Portal shall be limited to 1 crore active applications and only these applications shall be considered for release of CFA. Once this limit is reached, MNRE may specify a time period for completion of installations so as to ensure achievement of scheme target of 1 crore installations.

d) **Applicant Login:** Applicant login will be provided on the national portal to undertake relevant activities pertaining to each installation including updating of status of installation, technical specifications of the system installed, grievance redressal, uploading of relevant pictures (pre and post installation) and other items. The consumer has the user rights to undertake all activities on the National Portal without relying on the vendor.

9) System Components and Minimum Technical Specifications

System Components: A Roof Top Solar (RTS) Photo Voltaic (PV) system shall generally consist of equipment/components like Solar Photo Voltaic (SPV) modules, Inverter/micro inverters, Module Mounting structures, Energy Meter, Array Junction Boxes, DC Distribution Box, AC Distribution Box, Protections – Earthing, Lightning, Surge, Cables, Drawing & Manuals and any other necessary component based upon the site requirement. The installations under the scheme that shall be commissioned shall adhere to the minimum technical specifications and quality standards as published by MNRE (Detailed in Annexure 3, as may be amended from time to time). Consumers may install specifications that are higher than these standards and will still be considered eligible under the scheme.

10) Ensuring Quality of Installations

a) **Inspections and Evaluations:** The Scheme Implementation Agencies (National Programme Implementation Agency (NPIA) nationally and State Implementation Agencies (SIA) at State level) as well as other designated agencies by State/UT governments shall conduct regular inspections/evaluation of RTS systems installed under the scheme, both at the time of commissioning and post commissioning.

b) **Third Party Assessment:** The NPIA shall establish adequate mechanism to ensure independent third party assessment of RTS installations of at least 1% of installed systems on a pan-India basis.

c) **SIA Monitoring:** The SIA may establish adequate mechanism to ensure post-commissioning inspection of installed systems on a sampling basis. The SIA may conduct additional independent third party assessments of systems.

d) **Vendor Rating:** All the vendors registered on the National Portal will be given a vendor rating depending on the size and scale of installations done, quality of equipment, quality of workmanship, quality of service and other criteria. This vendor rating will be visible to the consumers on the National Portal. Detailed methodology regarding vendor rating will be as prescribed by MNRE.

11) Grievance Redressal

a) The consumers and vendors can raise grievances through the National Portal that will be channeled for resolution to the SIA/ NPIA. The grievances will be resolved within a period of 30 days.
b) The consumers and vendors will get regular updates regarding status of grievances through SMS, emails and other channels of communication.
c) The grievances may be raised through the National Call Centre, National Portal or the Portal app. In each case, a unique tracking ID will be created by the NPIA for the consumer to track the status of resolution of the grievance through an online system.

12) Memorandum of Understanding

a) A Memorandum of Understanding (MoU) will be signed under the scheme between Ministry of New and Renewable Energy and the State/UT Energy Department within 3 months of notification of these guidelines. The Draft MoU between MNRE and the State/UTs is as per Annexure 5.
b) Release of funds under other scheme components (Incentives to DISCOMs, Model Solar Village, Incentives to PRIs/ULBs, Payment Security Mechanism etc.) to State/UTs or entities under the State/UTs will be conditional to signing of the MoU with the concerned State/UT.
c) The MoU will also be mandatory for allowing the release of additional state/UT subsidy for RTS to consumers under the scheme.

13) Implementation Agency

a) REC Limited shall initially be the Implementation Agency at the national level (National Programme Implementation Agency (NPIA)) and will undertake activities relating to operation of the National Portal and registration of vendors at the national level as well as all other scheme related activities. However, MNRE will have the discretion to designate any other agency as the NPIA as per any exigency.

b) The Distribution Utility (DISCOMs or Power/Energy Departments, as the case may be) shall be the State Implementation Agencies (SIA) at the State/UT level and shall ensure adherence to timelines specified for provisioning of services for prosumers and shall coordinate with NPIA on matters pertaining to performance of vendors registered on the National Portal, grievance redressal, programme monitoring at State/UT level and other responsibilities ascribed to it by MNRE from time to time.

14) Fund Release Mechanism

a) The NPIA will assess the expected liabilities for each quarter for release of CFA to consumers under the scheme (consumers under PM Surya Ghar: Muft Bijli Yojana and consumers under Phase II Simplified Procedure) and status of expenditure against previously sanctioned releases and make necessary requisitions for release of funds to MNRE.

b) MNRE will process such requisitions and release funds from time to time in accordance with norms of Government of India in order to ensure that the CFA is disbursed to consumers without delay.

c) For liabilities under the RTS Phase II programme (Tender mode), MNRE will process the claims in accordance with Phase II scheme guidelines and issue necessary sanctions for release of funds.

d) The Implementing agencies will remit the accrued interested and other charges to Consolidated Fund of India as per Rule 230 (8) of General Financial Rules, 2017 and its amendments.

15) Scheme Monitoring

a) A Group of Ministers will be constituted for overall guidance and coordination with states.

b) A Steering Committee under the chairmanship of Cabinet Secretary and including Secretaries of Ministry of New and Renewable Energy, Department of Financial Services, Ministry of Power, Ministry of Housing and Urban Affairs and Ministry of Rural Development will monitor the implementation of the scheme.

c) The Mission Directorate in the Ministry of New and Renewable Energy will be responsible for the implementation of the scheme. The Directorate will be headed by a Mission Director not below the rank of Joint Secretary to Government of India. The NPIA will function under the directions of the Mission Directorate.

d) There will be a State Level Coordination Committee headed by the Chief Secretary/Advisor to Lieutenant Governor/Administrator and comprising of Secretaries of key departments to coordinate and monitor the implementation of the scheme in the State/UT.

e) There will be a District Level Committee headed by the District Magistrate/District Collector and comprising of other members for monitoring the implementation of the scheme at the district level.

16) Amendment of Scheme Guidelines

a) MNRE may make necessary amendments in the scheme guidelines within the overall spirit of the Cabinet approval or issue any clarification to remove difficulties in the implementation of the scheme, as and when required, with the approval of Hon'ble Minister, New and Renewable Energy.

Annexure 1

Coverage of applications under PM Surya Ghar: Muft Bijli Yojana

Application received under Phase II rooftop solar programme (before 13th Feb 2024)		
Sr. No	**Parameter**	**Applicable Subsidy**
1	First instance of claims submission before 5th Jan	Rs. 14,588/kW for upto 3 kW capacity and thereafter Rs. 7,294/kW till 10kW capacity (Subsidy prevailing before revision on 05.01.2024)
2	First instance of claims submission on and after 5th Jan	Rs. 18,000/kw for upto 3kW capacity and thereafter Rs. 9,000/kw till 10kW capacity (revised subsidy as per notification dated 05.01.2024)
Note: *all applications received prior to launch of PM - Surya Ghar : Muft Bijli Yojana (before 13th Feb 2024 will be covered under the Phase II rooftop solar programme) and will be eligible for the CFA as indicate above. All applications submitted under the Phase II of rooftop solar programme will be admissible for CFA if the claim is received till October 2024. The claims received after October 2024 will not be entertained.*		
Application received under PM - Surya Ghar : Muft Bijli Yojana (on and after 13th Feb 2024)		
1	All applications made on and after 13th Feb	60% of benchmark cost upto 2 kW capacity and 40% for 1 kW additional capacity. No subsidy beyond 3 kW. (as approved under PM-Surya Ghar: Muft Bijli Yojana)

The CFA claims from installations undertaken in tender mode by respective DISCOMs/implementation agencies under previous programmes for Rooftop Solar will be considered under the guidelines of the respective programmes and not PM Suryaghar. The CFA calculation will also be as per the respective programme guidelines. No new/additional capacity allocation by issuing any sanction under tender mode of GCRT phase II will be allowed on or after 12.2.2024 to the DISCOMs.

Annexure 2

Model Draft Agreement between Consumer & Vendor for installation of grid connected rooftop solar (RTS) project under PM – Surya Ghar: Muft Bijli Yojana

This agreement is executed on -------(Day)------(Month)-------(Year) for design, supply, installation, commissioning and 5-year comprehensive maintenance of RTS project/system along with warranty under PM Surya Ghar: Muft Bijli Yojana

Between

……. (Name of Consumer) having address at ……. (hereinafter referred to as first Party i.e. /consumer/consumer/purchaser /owner of system).

And

…….(Name of Vendor) having registered office at …….(hereinafter referred to as second Party i.e. Vendor/ contractor/ System Integrator).

Whereas

First Party wishes to install a Grid Connected Rooftop Solar Plant on the rooftop of the residential building of the Consumer under PM Surya Ghar: Muft Bijli Yojana.

And whereas

Second Party has verified availability of appropriate roof and found it feasible to install a Grid Connected Roof Top Solar plant and that the second party is willing to design, supply, install, test, commission and carry out Operation & Maintenance of the Rooftop Solar plant for 5 year period

On this day, the First Party and Second Party agree to the following:

The First Party hereby undertakes to perform the following activities:

1. Submission of online application at National Portal for installation of RTS project/system, Submission of application for net-metering and system inspection and upload of the relevant documents on the National Portal of the scheme
2. Provide secure storage of the material of the RTS plant delivered at the premises till handover of the system.
3. Provide access to the Roof Top during installation of the plant, operation & maintenance, testing of the plant and equipment and for meter reading from solar meter, inverter etc.
4. Provide electricity during plant installation and water for cleaning of the panels.
5. Report any malfunctioning of the plant to the Vendor during the warranty period.
6. Pay the amount as per the payment schedule as mutually agreed with the vendor, including any additional amount to the second party for any additional work /customization required depending upon the building condition

The Second Party hereby undertakes to perform the following activities:

1. The Vendor must follow all the standards and safety guidelines prescribed under state regulations and technical standards prescribed by MNRE for RTS projects, failing which the vendor is liable for blacklisting from participation in the govt. project/ scheme and other penal actions in accordance with the law. The responsibility of supply, installation and commissioning of the rooftop solar project/system in complete compliance with MNRE scheme guidelines lies with the Vendor.
2. **Site Survey:** Site visit, survey and development of detailed project report for installation of RTS system. This also includes, feasibility study of roof, strength of roof and shadow free area. If any additional work or customization is involved for the plant installation as per site condition and requirement of the consumer building, the Vendor shall prepare an estimate and can raise separate invoice including GST in addition to the amount towards standard plant cost. The consumer shall pay the amount for such additional work directly to the Vendor.
3. **Design & Engineering:** Design of plant along with drawings and selection of components as per standard provided by the DISCOM/SERC/MNRE for best performance and safety of the plant.

4. **Module and Inverter:** The solar modules, including the solar cells, should be manufactured in India. Both the solar modules and inverters shall conform to the relevant standards and specifications prescribed by MNRE. Any other requirement, viz. star labelling (solar modules), quality control orders and standards & labelling (inverters) etc., shall also be complied.
5. **Procurement & Supply:** Procurement of complete system as per BIS/IS/IEC standard (whatever applicable) & safety guidelines for installation of rooftop solar plants. The supplied materials should comply with all MNRE standards for release of subsidy.
6. **Installation & Civil work:** Complete civil work, structure work and electrical work (including drawings) following all the safety and relevant BIS standards.
7. **Documentation (Technical Catalogues/Warranty Certificates/BIS certificates/other test reports etc):** All such documents shall be provided to the consumer for online uploading and submission of technical specifications, IEC/BIS report, Sr. Nos, Warranty card of Solar Panel & Inverter, Layout & Electrical SLD, Structure Design and Drawing, Cable and other detailed documents.
8. **Project completion report (PCR):** Assisting the consumer in filling and uploading of signed documents (Consumer & Vendor) on the national portal.
9. **Warranty:** System warranty certificates should be provided to the consumer. The complete system should be warranted for 5 years from the date of commissioning by DISCOM. Individual component warranty documents provided by the manufacturer shall be provided to the consumer and all possible assistance should be extended to the consumer for claiming the warranty from the manufacturer.
10. **NET meter & Grid Connectivity:** Net meter supply/procurement, testing and approvals shall be in the scope of vendor. Grid connection of the plant shall be in the scope of the vendor.
11. **Testing and Commissioning:** The vendor shall be present at the time of testing and commissioning by the DISCOM.
12. **Operation & Maintenance:** Five (5) years Comprehensive Operation and Maintenance including overhauling, wear and tear and regular checking of healthiness of system at proper interval shall be in the scope of vendor. The vendor shall also educate the consumer on best practices for cleaning of the modules and system maintenance.

13. **Insurance:** Any insurance cost pertaining to material transfer/storage before commissioning of the system shall be in the scope of the vendor.
14. **Applicable Standard:** The system must meet the technical standards and specifications notified by MNRE. The vendor is solely responsible to supply component and service which meets the technical standards and specification prescribed by MNRE and State DISCOMs.
15. **Project/system cost & payment terms:** The cost of the plant and payment schedule should be mutually discussed and decided between the vendor and consumer. The consumer may opt for milestone-based payment to the vendor and the same shall be included in the agreement.
16. **Dispute:** In-case of any dispute between consumer and vendor (in supply/installation/maintenance of system or payment terms), both parties must settle the same mutually or as per law. MNRE/DISCOM shall not be liable for, and would not be a party to any dispute arising between vendor and consumer.
17. **Subsidy / Project Related Documents:** Vendor must provide all the documents to consumer and help in uploading the same to National Portal for smooth release of subsidy.
18. **Performance of Plant:** The Performance Ratio (PR) of Plant must be 75% at the time of commissioning of the project by DISCOM or its authorised agency. Vendor must provide (returnable basis) radiation sensor with valid calibration certificate of any NABL / International laboratory at the time of commissioning / testing of the plant. Vendor must maintain the PR of the plant till warranty of project i.e. 5 years from the date of commissioning.
19. **Mutually Agreed Terms of Payment …**

First Party	**Second Party**
Name	Name
Address	Address
Sign	Sign
Date	Date

Disclaimer: This agreement is between vendor and consumer and any dispute related to the same shall not involve any third party including MNRE and Distribution Utilities.

Annexure 3

TECHNICAL SPECIFICATIONS FOR ROOFTOP SOLAR PLANTS INSTALLED UNDER THE COMPONENT OF "CFA TO RESIDENTIAL CONSUMERS" OF PM-SURYA GHAR: MUFT BIJLI YOJANA

The projects under PM-Surya Ghar: Muft Bijli Yojana shall be commissioned as per the technical specifications given below. The vendor will be solely responsible for any shortcomings or negligence/malpractice, which may lead to the delisting/blacklisting of the firm/vendor from participation in any programme of the Ministry.

A Roof Top Solar (RTS) Photo Voltaic (PV) system shall be installed on rooftops/terraces/balcony/Building Integrated Photovoltaic (BIPV) or on elevated structures. In case of installation on an elevated structure, the structure must have a minimum ground clearance of 8 feet at the lowest point, in order to be considered eligible for the CFA under the scheme. The RTS system shall consist of the following:

1. Solar Photo Voltaic (SPV) modules consisting of required number of SPV modules
2. Inverter/PCU
3. Module Mounting structures
4. Net Meter/Smart Meter
5. Array Junction Boxes
6. DC Distribution Box
7. AC Distribution Box
8. Protections – Earthing, Lightning, Surge
9. Cables
10. Drawing & Manuals
11. Miscellaneous

Components/Package of Grid Connected Rooftop Solar PV System: The components of a Grid Connected Rooftop Solar PV System shall essentially comprise but not be limited to solar PV Panels/modules of required number, Inverters/PCU, module mounting structures of minimum 600mm ground clearance at the lowest point from the roof surface, total Cable/wiring of suitable length, cable conduits, required array junction boxes, DC distribution box, AC distribution box, various connectors, nut- bolts, civil and mechanical works, Protection-Earthing, lightning, surges, drawling & manual, 05 years of comprehensive operation & maintenance of grid-connected rooftop solar PV plant and other miscellaneous works.

1. Solar PV modules

1.1. Domestic Manufactured Solar PV modules using domestically manufactured Solar cells shall be used in the Scheme.

1.2. The PV modules used must qualify to the latest edition of IEC standards or equivalent BIS standards, i.e. IEC 61215/IS 14286, IEC 61853-Part I or IS 16170-Part I, IS/IEC 61730 Part-1 & Part 2 and IS 17210(part 1) or IEC 62804-1 (PID). For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701. Thin - Film terrestrial photovoltaic (PV) modules must qualify to IS 16077: 2013 / IEC 61646: 2008

1.3. The rated power of solar PV module shall have maximum tolerance up to +3%.

1.4. The peak-power point current of any supplied module string (series connected modules) shall not vary by +1% from the respective arithmetic means for all modules and/or for all module strings (connected to the same MPPT), as the case may be.

1.5. The peak-power point voltage of any supplied module string (series connected modules) shall not vary by + 2% from the respective arithmetic means for all modules and/or for all module strings (connected to the same MPPT), as the case may be.

1.6. The temperature co-efficient power of the PV module shall be equal to or better than -0.4%/°C for crystalline modules and -0.3 %/°C for thin films modules.

1.7. Solar PV modules capacity to be used should adhere to the Approved List of Models and Manufacturers (ALMM) of Solar Photovoltaic Modules (Requirement for Compulsory Registration) Order 2019 - Implementation issued vide OM NO. 283/54/2018-GRID SOLAR -Part (I) Dated 10th March 2021 and subsequent amendments.

1.8. Solar PV modules of minimum fill factor 75%, to be used.

1.9. All PV modules should have a nominal power output of >90% at STC during the first 10 years, and >80% during the next 15 years. Further, module shall have nominal power output of >97% during the first year of installation—degradation of the module below 0.5 % per annum

1.10. 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.

i. Defects and/or failures due to manufacturing.

ii. Defects and/or failures due to quality of materials.

iii. Nonconformity 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. The PV modules shall be replaced by manufacturers, without charging any cost to the end consumer during the specified period of warranty.

1.11. Modules deployed must use a RF identification tag laminated inside the glass. The following information must be mentioned in the RFID used on each module:

i. Name of the manufacturer of the PV module

ii. Name of the manufacturer of Solar Cells.

iii. Month & year of the manufacture (separate for solar cells and modules)

iv. Country of origin (separately for solar cells and module)

v. I-V curve for the module Wattage, Im, Vm and FF for the module

vi. Unique Serial No and Model No of the module

vii. Date and year of obtaining IEC PV module qualification certificate.

viii. Name of the test lab issuing IEC certificate.

ix. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.

x. Nominal wattage +3%.

xi. Name, if applicable.

1.12. Other details as per IS/IEC 61730-1 clause 11 should be provided at appropriate place. In addition to the above, the following information should also be provided:

i. The actual Power Output Pmax shall be mentioned on the label pasted on the back side of PV Module.

ii. The Maximum system voltage for which the module is suitable to be provided on the back sheet of the module.

iii. Polarity of terminals or leads (colour coding is permissible) on junction Box housing near cable entry or cable and connector.

1.13. Unique Serial No, Model No, Name of Manufacturer, Manufacturing year, Make in India logo and module wattage details should be displayed inside the laminated glass.

2. Inverter/PCU

2.1 The Solar Photovoltaic Inverters must comply with the Quality Control Order dated 30.08.2017 for Solar Photovoltaic Inverters and its amendments thereof.

2.2 Inverters/PCU should comply with applicable IEC/equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683, IS 16221 (Part 2), IS 16169 and IEC 60068-2(1,2,14,30)

2.3 /Equivalent BIS Std.

2.4 Maximum Power Point Tracker (MPPT) shall be integrated in the inverter/PCU to maximize energy drawn from the array. Charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS standard. The junction boxes/enclosures should be IP 65 or better (for outdoor)/ IP 54or better (indoor) and as per IEC 529 Specifications.

2.5 All inverters/PCUs shall be IEC 61000 compliant for electromagnetic compatibility, harmonics, Surge, etc.

2.6 The PCU/ inverter shall have overloading capacity of minimum 20%.

2.7 Typical technical features of the inverter shall be as follows-

i. Nominal AC output voltage and frequency: as per CEA/State regulations

ii. Output frequency: 50 Hz

iii. Grid Frequency Synchronization range: as per CEA/State Regulations

iv. Ambient temperature considered: -20°C to 60°C

v. Protection of Enclosure: IP-54 (Minimum) for indoor and IP-65(Minimum) for outdoor.

vi. Grid Frequency Tolerance range: as per CEA/State regulations

vii. Grid Voltage tolerance: as per CEA/State Regulations

viii. No-load losses: Less than 1% of rated power

ix. Inverter efficiency (Min.): >90% (In case of 10 kW or below with in-built galvanic isolation)

x. The Minimum Overall Efficiency (ηt) as per IS 17980 for Solar Inverters should adhere to the following:

xi. THD: < 3%

xii. PF: > 0.9 (lag or lead)

xiii. Should not inject DC power more than 0.5% of full rated output at the interconnection point and comply to IEEE 519.

xiv. The inverter should have the inbuilt facility to communicate system related data through SIM/dongle. The inverter may also be enabled for Wi-Fi based communication.

2.8 All the Inverters should contain the following clear and indelible Marking Label & Warning Label as per IS16221 Part II, clause 5. The equipment shall, as a minimum, be permanently marked with:

i. The name or trademark of the manufacturer or supplier;

ii. A model number, name or other means to identify the equipment,

iii. A serial number, code or other marking allowing identification of manufacturing location and the manufacturing batch or date within a twelve-month time period.

iv. Input voltage, type of voltage (a.c. or d.c.), frequency, and maximum continuous current for each input.

v. The Ingress Protection (IP) rating

2.9 In case the consumer is having a 3-ϕ connection, 1-ϕ/3-ϕ inverter shall be provided by the vendor as per the consumer's requirement and regulations of the State.

2.10 Inverter/PCU shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

2.11 Integration of PV Power with Grid & Grid Islanding:

i. 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, if not available in inverter.

3. Module Mounting Structure (MMS):

3.1 Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the work.

3.2 Module mounting structures can be made from three types of materials. They are Hot Dip Galvanized Iron, Aluminium and Hot Dip Galvanized Mild Steel (MS). However, MS will be preferred for raised structure.

3.3 MMS Steel shall be as per latest IS 2062:2011 and galvanization of the mounting structure shall be in compliance of latest IS 4759. MMS Aluminium shall be as per AA6063 T6. For Aluminium structures, necessary protection towards rusting need to be provided either by coating or anodization.

3.4 All bolts, nuts, fasteners shall be of stainless steel of grade SS 304 or hot dip galvanized, panel mounting clamps shall be of aluminium and must sustain the adverse climatic conditions. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.

3.5 The module mounting structures should have angle of inclination as per the site conditions to take maximum insolation and complete shadow-free operation during generation hours. However, to accommodate more capacity the angle of inclination may be reduced until the plant meets the specified performance ratio requirements.

3.6 The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed. The PV array structure design shall be appropriate with a factor of safety of minimum 1.5.

3.7 The upper edge of the module must be covered with wind shield so as to avoid build air ingress below the module. Slight clearance must be provided on both edges (upper & lower) to allow air for cooling.

3.8 Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed. The Empanelled Agency shall be fully responsible for any damages to SPV System caused due to high wind velocity within guarantee period as per technical specification.

3.9 The structures shall be designed to allow easy replacement, repairing and cleaning of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels. Necessary testing provision for MMS to be made available at site.

3.10 Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.

3.11 The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

3.12 The Rooftop Structures maybe classified in three broad categories as follows:

i. Ballast structure

a. The mounting structure must be Non-invasive ballast type and any sort of penetration of roof to be avoided.

b. The minimum clearance of the structure from the roof level should be in between 70-150 mm to allow ventilation for cooling, also ease of cleaning and maintenance of panels as well as cleaning of terrace.

c. The structures should be suitably loaded with reinforced concrete blocks of appropriate weight made out of M25 concrete mixture.

ii. Tin shed

a. The structure design should be as per the slope of the tin shed.

b. The inclination angle of structure can be done in two ways-

c. Parallel to the tin shed (flat keeping zero-degree tiling angle), if the slope of shed in Proper south direction

d. With same tilt angle based on the slope of tin shed to get the maximum output.

e. The minimum clearance of the lowest point from the tin shade should be more then 100mm.

f. The base of structure should be connected on the Purlin of tin shed with the proper riveting.

g. All structure member should be of minimum 2 mm thickness.

iii. RCC Elevated structure: It can be divided into further three categories:

A Minimum clearance from roof (upto 1000 MM) (for reference only)

a. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement. The gap between module should be minimum 30MM.

b. Base Plate – Base plate thickness of the Structure should be 5MM for this segment.

c. Column – Structure Column should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 70MM in Web side and 40 MM in flange side in Lip section.

d. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 70MM in Web side (y- axis) and 40 MM in flange side (x-axis).

e. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 60MM in Web side and 40MM in flange side in Lip section.

f. Front/back bracing – The section for bracing part should be minimum 2MM thickness.

g. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

h. For single portrait structure the minimum ground clearance should be 500MM.

B Medium clearance from roof (1000MM – 2000 MM) (for reference only)

a. Base Plate – Base plate thickness of the Structure should be Minimum 6MM for this segment.

b. Column – Structure Column should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 80MM in Web side and 50MM in flange side in Lip section.

c. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.

d. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.

e. Front/back bracing – The section for bracing part should be minimum 2MM thickness.

f. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

C Maximum clearance from roof (2000MM – 3000 MM) (for reference only)

a. Base Plate – Base plate thickness of the Structure should be minimum 8 MM for this segment.

b. Column – Structure Column thickness should be minimum 2.6MM in square hollow section (minimum 50x50) or rectangular hollow section (minimum 60x40) or 3MM in C-Channel section.

c. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in Channel section. The minimum section should be 80MM in Web side and 50MM in flange side in Lip section.

d. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 80MM in Web side and 50MM in flange side in Lip section.

e. Front/back bracing – The section for bracing part should be minimum 3MM thickness.

f. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

D Super elevated structure (More than 3000 MM clearance from roof) (for reference only)

A. Base structure

a. Base Plate – Base plate thickness of the Structure should be 10MM for this segment.

b. Column – Structure Column minimum thickness should be minimum 2.9MM in square hollow section (minimum 60x60) or rectangular hollow section (minimum 80x40).

c. Rafter - Structure Rafter minimum thickness should be minimum 2.9MM in square hollow section (minimum 60x60) or rectangular hollow section (minimum 80x40).

d. Cross bracing – Bracing for the connection of rafter and column should be of minimum thickness of 4mm L-angle with the help of minimum bolt diameter of 10mm.

B. Upper structure of super elevated structure –

a. Base Plate – Base plate thickness of the Structure should be minimum 5MM for this segment.

b. Column – Structure Column should be minimum 2MM in Lip section / 3MM in Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.

c. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.

d. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 60MM in Web side and 40MM in flange side in Lip section.

e. Front/back bracing – The section for bracing part should be minimum 2MM thickness.

f. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and

g. purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

C. If distance between two legs in X-Direction is more than 3M than sag angle/Bar should be provide for purlin to avoid deflection failure. The sag angle should be minimum 2MM thick, and bar should be minimum 12Dia.

D. Degree - The Module alignment and tilt angle shell be calculated to provide the maximum annual energy output. This shall be decided on the location of array installation.

E. Foundation – Foundation should be as per the roof condition; two types of the foundation can be done- either penetrating the roof or without penetrating the roof.

a. If penetration on the roof is allowed (based on the client requirement) then minimum 12MM diameter anchor fasteners with minimum length 100MM can be used with proper chipping. The minimum RCC size should be 400x400x300 cubic mm. Material grade of foundation should be minimum M20.

b. If penetration on roof is not allowed, then foundation can be done with the help of 'J Bolt' (refer IS 5624 for foundation hardware). Proper Neto bond solution should be used to adhere the Foundation block with the RCC roof. Foundation J - bolt length should be minimum 12MM diameter and length should be minimum 300MM.

F. Material standards:

a. Design of foundation for mounting the structure should be as per defined standards which clearly states the Load Bearing Capacity & other relevant parameters for foundation design (As per IS 6403 / 456 / 4091 / 875).

b. Grade of raw material to be used for mounting the structures so that it complies the defined wind loading conditions (As per IS 875 - III) should be referred as follows (IS 2062 – for angles and channels, IS 1079 – for sheet, IS 1161 & 1239 for round pipes, IS 4923 for rectangular and square hollow section)

c. Test reports for the raw material should be as per IS 1852 / 808 / 2062 / 1079 / 811.

d. In process inspection report as per approved drawing & tolerance should be as per IS 7215.

e. For ascertaining proper welding of structure part following should be referred:

f. D.P. Test (Pin Hole / Crack) (IS 822)

g. Weld wire grade should be of grade (ER 70 S - 6)

h. For ascertaining hot dip galvanizing of fabricated structure following should be referred:-

i. Min coating required should be as per IS 4759 & EN 1461.

j. Testing of galvanized material

a) Pierce Test (IS 2633)

b) Mass of Zinc (IS 6745)

c) Adhesion Test (IS 2629)

d) CuSO4 Test (IS 2633)

e) Superior High-Grade Zinc Ingot should be of 99.999% purity (IS 209) (Preferably Hindustan Zinc Limited or Equivalent).

k. Foundation Hardware – If using foundation bolt in foundation then it should be as per IS 5624.

4. Metering

4.1 The specifications net meter/smart meter shall be as per the latest technical specifications issued by the Central Electricity Authority (CEA) and its amendment thereof.

4.2 A Roof Top Solar (RTS) Photo Voltaic (PV) system shall consist of following energy meters:

a) Net meter/ smart meter: To record import and export units.

b) Generation meter (if required as per the state regulations: To keep record for total generation of the plant.

4.3 The installation of meters including CTs & PTs, wherever applicable, shall be carried out by the respective DisComs as per the terms, conditions and procedures laid down by the concerned SERCs/DISCOMs.

5. Array Junction Boxes

5.1 The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction Boxes (JBs) shall be made of GRP/FRP/Powder Coated aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.

5.2 Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP 65 or better standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry, Single /double compression cable glands should be provided.

5.3 Polyamide glands and MC4 Connectors may also be provided. The rating of the junction box shall be suitable with adequate safety factor to interconnect the Solar PV array.

5.4 Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

5.5 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

6. DC Distribution Box (DCDB)

6.1 May not be required for small plants, if suitable arrangement is available in the inverter.

6.2 DC Distribution Box are to be provided to receive the DC output from the PV array field.

6.3 DCDBs shall be dust & vermin proof conform having IP 65 or better protection, as per site conditions.

6.4 The bus bars are made of EC grade copper of required size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors. MCB shall be used for currents up to 63 Amperes, and MCCB shall be used for currents greater than 63 Amperes.

7. AC Distribution Box (ACDB)

7.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter, and should have necessary surge arrestors, if required. There is interconnection from ACDB to mains at LT Bus bar while in grid tied mode.

7.2 All switches and the circuit breakers, connectors should conform to IEC 60947:2019, part I, II and III/ IS 60947 part I, II and III.

7.3 The isolators, cabling work should be undertaken as part of the project.

7.4 All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air -insulated, cubical type suitable for operation on 1-ϕ/3-ϕ, 415 or 230 volts, 50 Hz (or voltage levels as per CEA/State regulations).

7.5 The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.

7.6 All indoor panels will have protection of IP 54 or better, as per site conditions. All outdoor panels will have protection of IP 65 or better, as per site conditions.

7.7 Should conform to Indian Electricity Act and CEA safety regulations (till last amendment).

7.8 All the 415 or 230 volts (or voltage levels as per CEA/State regulations) AC devices / equipment like bus support insulators, circuit breakers, SPDs, Voltage Transformers (VTs) etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.

a. Variation in supply voltage: as per CEA/State regulations
b. Variation in supply frequency: as per CEA/State regulations

7.9 The inverter output shall have the necessary rated AC surge arrestors, if required and MCB/ MCCB. RCCB shall be used for successful operation of the PV system, if inverter does not have required earth fault/residual current protection.

8. Protections

The system should be provided with all necessary protections like earthing, Lightning, and Surge Protection, as described below:

8.1 Earthing Protection

8.1.1 The earthing shall be done in accordance with latest Standards.

8.1.2 Each array structure of the PV yard, Low Tension (LT) power system, earthing grid for switchyard, all electrical equipment, inverter, all junction boxes, etc. shall be grounded properly as per IS 3043-2018.

8.1.3 All metal casing/ shielding of the plant shall be thoroughly grounded in accordance with CEA Safety Regulation 2010. In addition, the lightning arrester/masts should also be earthed inside the array field.

8.1.4 Earth resistance should be as low as possible and shall never be higher than 5 ohms.

8.1.5 For 10 KW and above systems, separate three earth pits shall be provided for individual three earthing viz.: DC side earthing, AC side earthing and lightning arrestor earthing.

8.2 Lightning Protection

8.2.1 The SPV power plants shall be provided with lightning & over voltage protection, if required. The main aim in this protection shall be to reduce the overvoltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. Lightning arrestor shall not be installed on the mounting structure.

8.2.2 The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors (LAs). Lightning protection should be provided as per NFC17-102:2011/IEC 62305 standard.

8.2.3 The protection against induced high-voltages shall be provided by the use of Metal Oxide Varistors (MOVs)/Franklin Rod type LA/Early streamer type LA.

8.2.4 The current carrying cable from lightning arrestor to the earth pit should have sufficient current carrying capacity according to IEC 62305. According to standard, the minimum requirement for a lightning protection system designed for class of LPS III is a 6 mm2 copper/ 16 mm2 aluminum or GI strip bearing size 25*3 mm thick). Separate pipe for running earth wires of Lightning Arrestor shall be used.

8.3 Surge Protection

8.3.1 Internal surge protection, wherever required, shall be provided. It will consist of three SPD type-II/MOV type surge arrestors connected from +ve and –ve terminals to earth.

9. Cables

9.1 All cables should conform to latest edition of IEC/equivalent BIS Standards along with IEC 60227/IS 694, IEC 60502/IS 1554 standards.

9.2 Cables should be flexible and should have good resistance to heat, cold, water, oil, abrasion etc.

9.3 Armored cable should be used and overall PVC type ‘A’ pressure extruded insulation or XLPE insulation should be there for UV protection.

9.4 Cables should have Multi Strand, annealed high conductivity copper conductor on DC side and copper/FRLS type Aluminum conductor on AC side. For DC cabling, multi- core cables shall not be used.

9.5 Cables should have operating temperature range of -10°C to +80°C and voltage rating of 660/1000 V.

9.6 Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop less than 2% (DC Cable losses).

9.7 The size of each type of AC cable selected shall be based on minimum voltage drop. However; the maximum drop shall be limited to 2%.

9.8 The electric cables for DC systems for rated voltage of 1500 V shall conform to IS 17293:2020.

9.9 All cable/wires are to be routed in a RPVC pipe/ GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable is easily identified.

9.10 All cable trays including covers to be provided.

9.11 Thermo-plastic clamps to be used to clamp the cables and conduits, at intervals not exceeding 50 cm.

9.12 Size of neutral wire shall be equal to the size of phase wires, in a three phase system.

9.13 The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.

10. Drawings & Manuals:

10.1 Operation & Maintenance manual/user manual, Engineering and Electrical Drawings shall be supplied along with the power plant.

10.2 The manual shall include complete system details such as array lay out, schematic of the system, inverter details, working principle etc.

10.3 The Manual should also include all the Dos & Don’ts of Power Plant along with Graphical Representation with indication of proper methodology for cleaning, Operation and Maintenance etc.

10.4 Step by step maintenance and troubleshooting procedures shall also be given in the manuals.

10.5 Vendors should also educate the consumers during their AMC period.

11. Miscellaneous:

11.1 Connectivity: The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the SERC regulation for Grid connectivity and norms of DISCOM and amended from time to time.

11.2 Safety measures: Electrical safety of the installation(s) including connectivity with the grid must be taken into account and all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA Safety Regulation 2010 etc. must be followed.

11.3 Shadow analysis: The shadow analysis report with the instrument such as Solar Pathfinder or professional shadow analysis software of each site should be provided and the consumer should be educated to install the system only in shadow free space. Lower performance of the system due to shadow effect shall be liable for penalty for lower performance.

Quality Certification, Standards and Testing for Grid-Connected Rooftop Solar PV Systems/Power Plants	
Solar PV Modules/Panels	
IEC 61215/ IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
IS/IEC 61701	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- 1 / IS 16170-1	Photovoltaic (PV) module performance testing and energy rating –:Irradiance and temperature performance measurements, and power Rating.
IEC 62716/ IS 16664	Photovoltaic (PV) Modules – Ammonia (NH3) Corrosion Testing (as per the site condition like dairies, toilets etc)
IS 16077 : 2013 / IEC 61646 : 2008	Thin - Film terrestrial photovoltaic (PV) modules - Design qualification and type approval
IS/IEC 61730-1,2	Photovoltaic (PV) Module Safety Qualification – Part 1: Requirements for Construction, Part 2: Requirements for Testing
IS 17210 (part 1) or IEC TS 62804-1	Photovoltaic (PV) modules – Test method for detection of potential-induced degradation. IEC 62804-1: Part 1: Crystalline Silicon
Solar PV Inverters	
IEC 62109 or IS : 16221	Safety of power converters for use in photovoltaic power systems – Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 or better for outdoor mounting, IP 54 or better for indoor mounting)
IS/IEC 61683 latest (as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
IEC 60068-2 /IEC 62093 (as applicable)	Environmental Testing of PV System – Power Conditioners and Inverters

IEC 62116:2014/ IS16169	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
Fuses	
IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): 1)Low-voltage Switchgear and Control-gear, Part 1: General rules 2)Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers 3) Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors switch-disconnectors and fuse-combination units 4) EN 50521: Connectors for photovoltaic system-Safety requirements and tests
IS/IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-Links for the protection of solar photovoltaic energy systems
Solar PV Roof Mounting Structure	
IS 2062/IS 4759/ AA6063 T6	Material for the structure mounting
Surge Arrestors	
BFC 17-102:2011/ NFC 102:2011/ IEC 62305	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD) IEC 61643- 11:2011	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods

Cables	
IEC 60227/IS 694, IEC 60502/IS 1554 (Part 1& 2)/ IEC69947 (as applicable)	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and resistant for outdoor installation)
IS 17293:2020	Electric Cables for Photovoltaic Systems for Rated Voltage 1500 V DC
Earthing /Lightning	
IEC 62561/IEC 60634 Series (Chemical earthing) (as applicable)	IEC 62561-1: Lightning protection system components (LPSC) - Part: Requirements for connection components IEC 62561-2: Lightning protection system components (LPSC) – Part 2:Requirements for conductors and earth electrodes IEC 62561-7: Lightning protection system components (LPSC) - Part 7:Requirements for earthing enhancing compounds
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 or better protection for outdoor use, and IP 54 or better protection for indoor use

Annexure 4

Model Net Metering Agreement

This Agreement is made and entered into at (location) …….. on this (date) …….. day of (month) ……. (year) …… between the Eligible Consumer (Name) …… having premises at (address) …… and Consumer No. …… as the first Party,

AND

The Distribution Licensee ……. (hereinafter referred to as 'the Licensee') and having its Registered Office at (address) ……. as second Party of this Agreement.

Whereas, the Eligible Consumer has applied to the Licensee for approval of a Net Metering Arrangement under the provisions of the (State Guidelines reference name) …….. and subsequent amendments and sought its connectivity to the Licensee's Distribution Network.

And whereas, the Licensee has agreed to provide Network connectivity to the Eligible Consumer for injection of electricity generated from its Roof-top Renewable Energy

Generating System of …….. kilowatt (kW)

Both Parties hereby agree as follows:-

1. **Eligibility**:

The Roof-top Renewable Energy Generating System meets the applicable norms for being integrated into the Distribution Network, and that the Eligible Consumer shall maintain the System accordingly for the duration of this Agreement.

2. Technical and Inter-connection Requirements:

2.1. The metering arrangement and the inter-connection of the Roof-top Renewable Energy Generating System with the Network of the Licensee shall be as per the provisions of the Net Metering Regulations and the technical standards and norms specified by the Central Electricity Authority for connectivity of distributed generation resources and for the installation and operation of meters.

2.2. The Eligible Consumer agrees that he shall install, prior to connection of the Roof-top Renewable Energy Generating System to the Network of the Licensee, an isolation device (both automatic and in built within inverter and external manual relays); and the Licensee shall have access to it if required for the repair and maintenance of the Distribution Network.

2.3. The Licensee shall specify the interface/inter-connection point and metering point.

2.4. The Eligible Consumer shall furnish all relevant data, such as voltage, frequency, circuit breaker, isolator position in his System, as and when required by the Licensee.

2.5. All the equipment connected to Network of the Licensee at the time of installation shall be compliant with the Technical Specifications for rooftop system as Published by MNRE.

3. Safety:

3.1. The consumer shall comply with the Central Electricity Authority (Measures Relating to Safety and Electricity Supply) Regulations 2010

3.2. The equipment connected to the Licensee's Distribution System shall be compliant with relevant International (IEEE/IEC) or Indian Standards (BIS), as the case may be, and the installation of electrical equipment shall comply with the requirements specified by the Central Electricity Authority regarding safety and electricity supply.

3.3. The design, installation, maintenance and operation of the Roof-top Renewable Energy Generating System shall be undertaken in a manner conducive to the safety of the Roof-top Renewable Energy Generating System as well as the Licensee's Network.

3.4. If, at any time, the Licensee determines that the Eligible Consumer's Roof-top Renewable Energy Generating System is causing or may cause damage to and/or results in the Licensee's other consumers or its assets, the Eligible Consumer shall disconnect the Roof-top Renewable Energy Generating System from the distribution Network upon direction from the Licensee and shall undertake corrective measures at his own expense prior to re-connection.

3.5. The Licensee shall not be responsible for any accident resulting in injury to human beings or animals or damage to property that may occur due to back- feeding from the Roof-top Renewable Energy Generating System when the grid supply is off. The Licensee may disconnect the installation at any time in the event of such exigencies to prevent such accident.

4. Other Clearances and Approvals:

The Eligible Consumer shall obtain any statutory approvals and clearances that may be required, such as from the Electrical Inspector or the municipal or other authorities, before connecting the Roof-top Renewable Energy Generating System to the distribution Network.

5. Period of Agreement, and Termination:

This Agreement shall be for a period for 25 years, but may be terminated prematurely.

(a) By mutual consent; or

(b) By the Eligible Consumer, by giving 30 days' notice to the Licensee.

(c) By the Licensee, by giving 30 days' notice, if the Eligible Consumer breaches any terms of this Agreement or the provisions of the Net Metering Regulations and does not remedy such breach within 30 days, or such other reasonable period as may be provided, of receiving notice of such breach, or for any other valid reason communicated by the Licensee in writing.

6. Access and Disconnection:

6.1. The Eligible Consumer shall provide access to the Licensee to the metering equipment and disconnecting devices of Roof-top Renewable Energy Generating System, both automatic and manual, by the Eligible Consumer.

6.2. If, in an emergent or outage situation, the Licensee cannot access the disconnecting devices of the Roof-top Renewable Energy Generating System, both automatic and manual, it may disconnect power supply to the premises.

6.3. Upon termination of this Agreement under Clause 5, the Eligible Consumer shall disconnect the Roof-top Renewable Energy Generating System forthwith from the Network of the Licensee.

7. Liabilities:

7.1. The Parties shall indemnify each other for damages or adverse effects of either Party's negligence or misconduct during the installation of the Roof-top Renewable Energy Generating System, connectivity with the distribution Network and operation of the System.

7.2. The Parties shall not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or goodwill, or for indirect, consequential, incidental or special damages including, but not limited to, punitive or exemplary damages, whether any of these liabilities, losses or damages arise in contract, or otherwise.

8. Commercial Settlement:

8.1. The commercial settlements under this Agreement shall be in accordance with the Net Metering Regulations.

8.2. The Licensee shall not be liable to compensate the Eligible Consumer if his Rooftop Renewable Energy Generating System is unable to inject surplus power generated into the Licensee's Network on account of failure of power supply in the grid/Network.

8.3. The existing metering System, if not in accordance with the Net Metering Regulations, shall be replaced by a bi-directional meter (whole current/CT operated) or a pair of meters (as per the definition of 'Net Meter' in the Regulations), and a separate generation meter may be provided to measure Solar power generation. The bi-directional meter (whole current/CT operated) or pair of meters shall be installed at the inter-connection point to the Licensee's Network for recording export and import of energy.

8.4. The uni-directional and bi-directional or pair of meters shall be fixed in separate meter boxes in the same proximity.

9. Connection Costs:

The Eligible Consumer shall bear all costs related to the setting up of the Roof-top Renewable Energy Generating System and the cost of Net Meters.

10. Dispute Resolution:

10.1. Any dispute arising under this Agreement shall be resolved promptly, in good faith and in an equitable manner by both the Parties.

10.2. The Eligible Consumer shall have recourse to the concerned Consumer Grievance Redressal Forum constituted under the relevant Regulations in respect of any grievance regarding billing which has not been redressed by the Licensee.

In the witness where of …… (name) for and on behalf of Eligible Consumer and Shri. …….. (name) for and on behalf of Licensee agree to this agreement.

Signed by

…… ……..……

(First Party) (Second Party)

Witnesses:

1) Signature with Name and Address: 2) Signature with Name and Address

…… ……

…… ……

Annexure 5

Draft Memorandum of Understanding (MoU) Between: The Ministry of New and Renewable Energy (MNRE), Government of India and _____(Name of the State/UT)

Preamble:

This Memorandum of Understanding (MoU) is entered into on this [DD/MM/YYYY], between the Ministry of New and Renewable Energy (MNRE), Government of India, and the State/UT Government of _____

Recitals:

WHEREAS, MNRE is entrusted with the responsibility of promoting and developing renewable energy sources, including solar energy, in India.

AND WHEREAS, MNRE is implementing PM - Surya Ghar: Muft Bijli Yojana (hereinafter referred to as "The Scheme").

AND WHEREAS, REC Limited has been designated as the overall National Programme Implementing Agency (NPIA) for the PM - Surya Ghar: Muft Bijli Yojana.

AND WHEREAS, the Government of (State/UT name) and their agencies/departments, especially electricity distribution companies (Discoms) & State Nodal Agency (SNA) for renewable energy, have a crucial role in the successful implementation of the PM -Surya Ghar: Muft Bijli Yojana at ground level.

AND WHEREAS, both MNRE and the Government of (State/UT name) recognize the need to collaborate to accelerate the deployment of grid-connected rooftop solar under this scheme.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, both parties agree as follows:

Objectives:

To promote the installation of grid-connected rooftop solar systems in the residential sector within the geographical jurisdiction of State, and to that conduct public awareness, outreach activities, and capacity-building initiatives to promote their adoption;

To set ambitious rooftop solar targets for the Government, commercial, and industrial (C&I), as well as residential sectors and establish robust high-level monitoring mechanisms for overseeing the progress of the implementation of this scheme.

To strengthen Discoms for rooftop solar implementation by identifying dedicated manpower for this programme, undertake efforts to enhance the rooftop solar vendor base in respective states/UTs and create a positive regulatory environment for grid-connected rooftop solar power into the electricity grid, ensuring the efficient and sustainable use of solar energy

Responsibilities of MNRE:

Policy & Regulations Support: MNRE will provide guidance/inputs/recommendations to update existing policy and regulations to DISCOM/SNA/Designated State Department/Agency

Technical Assistance: MNRE will collaborate with DISCOM/SNA/designated state department for technical standards and guidelines assistance for grid-connected rooftop solar installations.

Financial Support: MNRE shall provide financial support in line with the guidelines of the PM-Surya Ghar: Muft Bijli Yojana.

National Portal: MNRE shall be responsible for the Development and management of the National Portal.

Responsibilities of State / UT Government

The State Government agrees to implement the Scheme and to that end shall ensure

1) **Adherence to Scheme Guidelines**: The State/UT Government shall ensure adherence to the scheme guidelines in their entirety including the use of the scheme name

2) **Regulations**: The State/UT Government shall ensure that the processes, State/UT level Standard Operating Procedures and regulatory provisions are at least in alignment with the provisions of Electricity (Right of Consumers) Rule 2020 and its amendments thereof and in alignment with the guidelines of the Scheme.

3) **Service Time Lines**: The State/UT government shall ensure that time-bound services are provided to consumers for RTS for critical services such as technical feasibility, inspection, commissioning, net meter supply and signing of Net Metering agreements.

4) **IEC Activities**: The State/UT Government shall undertake public awareness campaigns as per the IEC plan of the Scheme and shall ensure adherence to Scheme IEC guidelines.

5) **Additional Subsidy**: The State/UT Government may provide additional subsidy on top of the Central financial assistance, however this will be subject to adherence to all scheme guidelines and routing of additional subsidy through the National Portal. Any alteration to the Scheme framework must be duly approved by the MNRE.

6) **Coordination**: The State/UT shall coordinate with National Programme Implementations Agency for the successful implementation of the PM Surya Ghar: Muft Bijli Yojana.

7) **Monitoring of the Scheme**: The State Level Steering Committee headed by the Chief Secretary of the State/UT and District Level Committees shall regularly review the progress of implementation of the scheme.

8) **IT Integration**: The State/UT Government shall coordinate in the integration of the State Portal API with the National Portal for sharing of relevant data relating to rooftop solar installations.

9) **Vendor Registration**: The State/UT DISCOM shall may register the vendors operating within their respective State. The vendor is here by permitted to get registered to any DISCOM of the State/UT, in case of multiple DISCOMs operating in that State/UT and that no DISCOM shall refuse to cater their request for registration.

10) **Declaration of Target**: The State/UT Governments may declare short medium and long term targets for rooftop solar systems across all sectors.

11) **Formation of RTS cell**: The State/UT Government shall create a dedicated RTS cell for the purpose of monitoring and coordination with the NPIA and Ministry.

Cooperation:

MNRE and States will collaborate on projects, research, and initiatives aimed at improving the distribution sector and accelerating the deployment of grid-connected rooftop solar systems.

Both parties will engage in regular meetings, discussions, and information sharing to ensure the effective implementation of this MoU.

Funding:

Funding for grid-connected rooftop solar projects and initiatives under this MoU will be determined through separate agreements or funding mechanisms as mutually agreed upon by MNRE and State.

Duration:

This MoU shall come into effect on the date of signing and shall remain in force for a period of [Specify Term], unless terminated by mutual consent.

Amendment:

Any amendment or modification to this MoU shall be made in writing and will require the consent of both parties.