No. 30/11/2012-13/NSM
Government of India
Ministry of New and Renewable Energy

Block 14, CGO Complex
Lodhi Road, New Delhi – 110003
Dated: 04/06/2014

To
The Pay and Accounts Officer,
Ministry of New and Renewable Energy
New Delhi

Subject: **Implementation of "Off-grid & Decentralized Solar Applications" Scheme in the 2nd Phase of the Jawaharlal Nehru National Solar Mission during 12th plan period including 2014-15: Guidelines for "Off-grid and Decentralized Solar Thermal Application Scheme"**

Sir,

In continuation to the Administrative Approval for continuation of "Off-grid & Decentralized Solar Applications" Scheme in the 2nd Phase of the Jawaharlal Nehru National Solar Mission during 12th plan period issued vide No. 30/11/2012-13/NSM, dated 23rd May, I am directed to convey the Guidelines for implementation the "Off-grid and Decentralized Solar Thermal Application Scheme". The Ministry would issue separately "Operational Guidelines" for the implementation of this 'sub-scheme' in due course.

2 This issues in excise of powers delegated to this Ministry and with the concurrence of IFD dated 29/05/2014 vide their Dy. No. IFD/364/2014-15, dated 20/05/2014.

Yours faithfully,

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Government of India
Ministry of New and Renewable Energy

Off-grid and Decentralized Solar Thermal Application Scheme

1. Background:

The Government had launched the Jawaharlal Nehru National Solar Mission, which is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge. It will also constitute a major contribution by India to the global effort to meet the challenges of climate change. Aim of the Mission is to focus on setting up an enabling environment for solar technology penetration in the country both at a centralized and decentralized level.

The first phase (up to March 2013) having achieved the required target and momentum, Solar Thermal component of JNNSM in balance period (UPTO MARCH 2022) will now, inter alia, would require focus on promoting off-grid systems including hybrid systems to meet / supplement heating and cooling energy requirements and power. These systems still require interventions to bring down costs. The key challenge is to provide an enabling framework and support for entrepreneurs to develop markets. This scheme /programme will address off grid and decentralized solar thermal application area/systems.

Solar thermal is second largest renewable energy source after wind energy. Around 60 million households worldwide use solar hot water collectors. Total Worldwide installed capacity- 235 GWth (335 million sqm.). India was ranked 4th in the world in terms of new capacity addition during the year 2011. Installed capacity for India stands at 7.281 million sq m^2 equivalent to 5082 MWth till 30th October 2013. Worldwide these achievements were achieved with interventions in the form of capital subsidy/incentive in Electricity bill/ mandatory provision through heat laws.

In India Fossil fuels are being used for process heating, drying, distillation/ desalination, water heating, space heating and refrigeration and power /electricity generation. Nearly 25 million households using electric geysers, consuming ~ 7500 GW-hr of electricity (assuming minimum annual consumption of ~ 600 kWh/ year/ geyser) and 15 million tons/year of petroleum fuels are used in industries in thermal form at temperatures below 300°C. It is assumed that 30% of energy consumed in industry is used for heating water, which shows that there is a huge potential.

1.1 Name of the scheme

The scheme will be known as 'Capital subsidy scheme for installation of solar thermal systems.

1.2 Solar thermal applications/systems areas to be covered in this scheme

The heat produced from solar energy can be used for various applications in different sectors like process heating, drying, distillation/desalination, water heating,

space heating and refrigeration and power/electricity generation. Following systems may be considered for grant of capital subsidy in this scheme

(i) Solar water heating

A solar water heater (SWH) is a combination of an array of collectors, an energy transfer system and a thermal storage system. In active solar water heating systems, a pump is used to circulate the heat-transferring fluid through the solar collectors, whereas in passive thermo-siphon systems, the natural circulation of working fluid is used. The amount of hot water produced from a solar water heater critically depends on design and climatic parameters such as solar radiation, ambient temperature and wind speed.

Solar water heaters are basically classified into two types:

- Flat-Plate Collectors (FPC)
- Evacuated Tube Collectors (ETC)

(ii) Solar air heating

Solar air heating (SAH) systems use air as the working fluid for absorbing and transferring solar energy. These systems are used for the production of hot air for drying/space-heating applications.

(iii) Solar steam generation/ pressurized hot water/air systems

Solar energy can be used to generate heat for medium and high temperature applications using different types of Concentrating Solar Systems. The heat generated could be used for process heat allocations in industries in the form of steam/pressurized hot water /air, cooking in community kitchens, laundry in hospitals / hotels etc.

(iv) Solar thermal refrigeration/cooling

Solar cooling can be considered for two related processes: to provide refrigeration for food and medicine preservation, as well as to provide comfort cooling. It appears to be an attractive proposition due to the fact that the demand for cooling is highest when the sunshine is strongest and this technology harnesses sunshine to provide comfort cooling. Solar thermal cooling system based on Vapour Absorption Technology are viable in areas where power cuts are high and fuel oil is being used for such purpose.

(vi) Solar Thermal Power Pack (including hybrid with Solar PV)

Concentrating Solar Power (CSP) technologies use solar energy to produce high temperature by focusing solar radiation from a larger area on to a smaller area and then generating electricity by employing a prime mover, most commonly actuated by high pressure steam, but also using a external combustion engine (like Sterling engine) directly. CSP has capacity to store heat energy by building in

thermal storage, for continuing operation during periods of low sunshine as well as after sunset.

In order to improve the economics of CSPs, the concept of tri-generation has been found very useful where attempt is made to simultaneous generation of electricity, useful heating and cooling from the same heat source of solar energy. Typically, a solar electricity generating system will have substantial amount of rejected heat, and under the concept of tri-generation a part of this heat is utilized for cooling and heating of space and / or water and water purification etc. separately.

These systems could have great relevance in the context of buildings or complexes of buildings housing shopping malls, manufacturing facilities, universities, hospitals, rural centres, etc. In principle, these systems will have ability to sell electrical power back to the Discoms, whenever it is in excess of the demand.

(vii) Solar stills

Simplest form of water desalination plant which can be hybridized using solar water heater based on FPC/ETC/CST could be useful for rural areas to provide drinking water to people.

1.3 Validity of the scheme

The scheme will be valid till 31.3.17 or such extended period as may be allowed by the government of India.

2. Objectives:

2.1 To promote off-grid applications of solar Thermal systems(solar water/air heating system, solar cooker, solar concentrating system, solar thermal power pack as covered in para 1 above) for meeting the targets set in the Jawaharlal Nehru National Solar Mission .

2.2 To create awareness and demonstrate effective and innovative use of solar thermal systems for individual/ community/ institutional/ industrial applications.

2.3 To encourage innovation in addressing market needs and promoting sustainable business models.

2.4 To provide support to channel partners and potential beneficiaries, within the framework of boundary conditions and in a flexible demand driven mode.

2.5 To create a paradigm shift needed for commoditization of off-grid decentralized solar thermal applications.

2.6 To support consultancy services, seminars, symposia, capacity building, awareness campaigns, human resource development, etc.

2.7 To encourage replacement of kerosene, diesel& wood wherever possible.

3. Scope of the Scheme:

3.1 The programme would be applicable in all parts of India and will,*inter-alia*, focus on promoting off grid and decentralized systems as defined in para 1 above, including hybrid systems to meet/ supplement heating and cooling energy requirements, generate electricity/power through solar thermal system. The Project

Appraisal Committee could also examine other feasible hybrid technologies for inclusion in the Programme.

3.2 The off grid and decentralized system of any size would be eligible under the scheme. The scheme may be implemented in Urban and Rural Area as well.

3.3 The scheme will also encourage R&D work related to new material for solar collector, storage tank, online monitoring, software development, establishment of testing facilities, state specific studies on potential assessment, system package development, policy development, engagement of consultants, seminars/workshops, capacity building & trainings, awareness campaigns preparation of literature/ guidelines, innovative projects, IT enabled monitoring mechanisms, evaluation and other studies etc.

3.4 Soft loans for projects, including a component for working capital, will be available to SME manufacturers of solar thermal systems, in order to promote technology up-gradation, improvement in technology, expansion in production facilities, etc. through refinance facility implemented through IREDA.

4. Mode of Implementation:

The programme would be implemented through multiple agencies for rapid up-scaling in an inclusive mode. These agencies would be State Nodal Agencies/Deptts. implementing the renewable energy programmes, Solar Energy Corporation of India, Channel Partners and other Govt. organizations i.e., PSUs/Institutions/State Departments/Local Governments/Municipal Corporations/NHB/NABARD/IREDA etc.

4.1 Mode of implementation can be on following basis:

Renewable Energy Service Providing Companies (RESCOs): These are companies which would install, own & operate RE systems and provide energy services to consumers. These entities may tie up with FIs for accessing the financial support under the scheme.

Engineering Procurement and Contracting (EPC): End users may tie up with DCPs/SNAs/SECI/FIS for installations/operation and maintenance of RE system.

The implementation will be carried out in both programme/project modes. The projects to be implemented in programme mode and in project mode have been addressed separately in Para 5.

4.2 The agencies for implementation will be as follows:

(i) State Nodal Agencies (SNAs)

State Nodal Agencies /Deptts. for implementing various renewable energy programmes have been established under the control of respective State Governments. The yearly target will be allocated to the States/SNAs depending upon their interest, demand and the capability in the beginning of the Financial Year (FY). About 10 % of eligible CFA can be released in advance at the time of target

allocation. The SNAs will keep/maintain all applications and records with them and will submit the requisite brief about the beneficiaries/projects duly certified by them. These records will be made available for the audit purpose or to the inspecting team/MNRE officials etc. Upto 30% of CFA can be released as advance after finalizing the tender.

(ii) Solar Energy Corporation of India (SECI)

The SECI will submit annual plan for implementation, depending upon the feasibility and availability of funds. The projects will be setup on open tender basis by SECI.

(iii) System integrators/ Channel Partners

These channel partners would help the individuals and small groups of clients to access the provisions of the programme. They would enable significant reduction in transaction cost and time.

Channel Partners will be empanelled by MNRE based on certificate from a rating agency in the country for technical and financial strength. The rating agencies would check the net worth/ turnover of the participating entity, its technical capability of supplying, installing and providing after sales service, track record and tie-ups with the equipment suppliers. Reputed Govt. technical Institutions could be exempted from the accreditation by rating agency on submission of their application with MNRE based on criteria defined for this purpose.

Detailed Guidelines for accrediting/empanelling channel partners will be separately put in place by MNRE.

(iv) Financial Institutions/ Intermediaries:

These are entities which would integrate different sources of finance including carbon finance, government assistance loans and other sources of funds to design financial products/ instruments and make these available to their clients at an affordable cost. These entities would tie up with manufacturers and service providers for supply of products. This category will include NABARD, NHB, SEC/IREDA other financial institutions. MNRE may draw up a scheme and place subsidy funds with the institution which can then be disbursed along with loan to the beneficiaries. The advance to be given may depend on the expected volume of business.

(v) Large PSUs/Government dept.

Depending upon their interest and on case to case basis projects will be sanctioned. About 10 % of eligible CFA can be released in advance at the time of sanction of their project. They will keep/maintain all applications and records with them and will submit the requisite brief about the beneficiaries/projects duly certified by them. These records will be made available for the audit purpose or to the inspecting team/MNRE officials on need basis etc.

5. Funding Pattern

5.1.1 Solar Water Heating System

Funding under the scheme would be in Project mode for single systems larger than 10,000 lpd or equivalent in sq.m. area, i.e. there must be a project report which would, inter alia, include client details, technical & financial details, O&M and monitoring arrangements other document as necessitated from time to time. For lower capacity systems, i.e., below 10,000 lpd this would be operated in programme mode. Project proposals for subsidy disbursement shall be submitted to the MNRE in the prescribed formats.

5.1.2 Solar Air Heating System

The solar air heating system will be classified into the following categories and implementation would be in program mode:

- **Category 1** Solar air heater for industrial/agro processing/ rural application (solar panel, support frame, controls, blower and ducts) with/without SS drier.
- **Category 2** Solar space heating (solar panels with support, blower, Inlet and outlet insulated ducts, controls).

5.1.3 Concentrating Solar Thermal (CST) System

Since CSTs are new as compared to solar water heating systems and there is vast potential for their proliferation, scheme would be operated in project mode. The proposal along with pre-feasibility/ detail project report as the case will be submitted to MNRE.

5.2 Subsidy Level

Capital subsidy would be computed based on the subsidy level applicable for type of solar thermal application multiplied by the collector area involved in a given solar thermal application/project If a system based on energy output is devised then this will change accordingly. . Maximum CFA level would be 30% / 60% of the benchmark cost of respective solar thermal system. The present subsidy level for 2013-14 and application areas supported and Technical Standards for Solar Thermal systems are given in Annexure- 1 (part- B).

5.2.1 Normally, the CFA of 30% would be given for the projects/systems set up on open tender basis by SNA/SECI/PSUs/FI/Government organizations or 30% of benchmark cost, whichever is lower.

5.2.2 In case of project(s) setup through system integrator/channel partner; a correction factor will be applied so that subsidy outgo will not be more than absolute fixed value arrived at by the committee for fixing the benchmark cost and subsidy level/amount.

5.2.3 Further MNRE may time to time fix correction factor on different category/projects/systems/technology based on the market need and the availability of funds. These applicable corrections factor will be brought out in guidelines issued from MNRE from time to time for bringing clarity. The sectors will be so designed that the subsidy is progressively reduced for such products e.g. solar water heating systems where market is established.

5.2.4 Steps will be taken by MNRE to progressively phase out the subsidy for solar water heaters over next five years after considering market dynamics and fund availability for various categories like residential, industrial, different product (based on different technologies). Subsidy for special projects may however continue. A success fee of 10% to be given after successful operation for 1 year may continue after subsidy is phased out for which MNRE will develop guidelines.

5.3 Capital subsidy of upto 60% of the benchmark cost would be available for special category states, viz.NE, Sikkim, J&K, Himachal Pradesh and Uttarakhand. In addition, it would be extended for setting up only standalone rural solar thermal power plants / packs or hybrid in remote and difficult areas such as Lakshadweep, Andaman & Nicobar Islands, and districts on India's international borders.

5.4 MNRE would also fund for meeting the expenditure towards development of software and hardware, based on an estimate provided, for implementing and monitoring the scheme effectively. It would present an audited annual statement of accounts.

5.5 Upto 3.0 % of CFA would be admissible as service charges to State Nodal Agencies, SECI/NHB/IREDA or other govt. agencies etc. This would be provided by MNRE, in addition to the CFA. The amount of CFA to be given to the State Nodal Agencies/ SECI etc. as service charges would be determined as follows:-

(a) Efforts made in preparing innovative cases by deploying staff in the field preparing DPRs etc.
(b) Providing technical assistance / help in implementation of the schemes
(c) Having an IT based monitoring mechanism in place to reflect not only the progress during implementation but also performance after installation
(d) MNRE may retain appropriate amount out of this 3% and provide to some other organization to give technical support to such Nodal Agencies which may be weak or not having enough technical staff. Experts or qualified professionals may also be placed with SNAs from this money.

5.6 CFA for organizing seminars/workshops, prize distribution ceremony, trainings, awareness campaigns, preparation of literature/guidelines, innovative projects or other miscellaneous work etc. depending on merit. A total fund of upto 2% would be earmarked and about 100 such activities are proposed during the balance period of 12th Plan across the country.

5.7 In order to manage and monitor all activities listed above, a project management cell in MNRE, engagement of consultancy organization will be done. A total fund of upto 1.0 % is proposed to be utilized.

5.8 Some R&D work could also be supported under this programme on merit. The state specific studies on potential assessment, system package development, policy development engagement of consultants etc. will be supported under the programme. Upto 1% of the total budget would be earmarked for this purpose.

5.9 The CFA from MNRE would not preclude the various implementing agencies from availing other fiscal and financial benefits being provided by State, Central Governments and any other agency so long as the same is clearly disclosed in the project report/proposal. This is to avoid multiple financing.

5.10 Special projects: In order to demonstrate/establish new and innovative technologies and new applications, MNRE may sanction special projects. These projects may be implemented by any agencies given in 4.1. They will submit a proposal in this regard with plan of vision, time lines, results expected etc. The CFA for such project can be upto 30% for solar water heaters and 40% for concentrated solar thermal technologies.

6.0 Release of Funds:

6.1 For setting up of the projects the release of funds for various Implementing Agencies would be as follows:

Sl. No.	Implementing Agency	Pattern for Release of Funds
1.	State Nodal Agencies and State Nodal Departments	Upto30% of the eligible CFA and services charges at the time of sanction of the proposal in the project/programme mode. However, 10% advance may be given at the time of allocation of targets on programme mode. 70% after successful commissioning of the projects after sample verification on submission of requisite claims.
2.	Solar Energy Corporation of India (SECI)	10% advance on allocation of targets/sanction of the preliminary proposal on programme mode. 20% after submission of detailed proposal on the costs firmed up on tender basis. 70% on completion/commissioning, performance report for about one month and due verification/third party inspection thereof on submission of requisite claims.
3.	Channel Partners	On reimbursement basis on completion/ commissioning, performance report for about one month and due verification/third party inspection thereof on submission of requisite claims. 50% of the eligible CFA to be released at the stage of claims submitted after completion/commissioning and balance 50% after verification/3rd party inspection. In case of CST based systems, 100% of eligible CFA may be released after 3rd party inspection on commissioning
4.	Other Government Agencies for the Govt. Projects	Upto 30% of the eligible CFA and service charges at the time of sanction of proposal in the project/programme mode. 70 % after successful commissioning of the projects after sample verification on submission of requisite claims.

6.2 The subsidy will be disbursed directly by MNRE to the implementing agencies. MNRE may specify an accounting system, monitoring mechanism and transparent computer based web enabled data bank with beneficiaries and system details. MNRE may also use SECI/IREDA/other suitable agencies for subsidy disbursement to channel partners after working out mechanism for that.

7.0 Approval Mechanism

7.1 At the beginning of each half-year MNRE shall release an indicative target for that period. All the Channel Partners shall submit, within a 15 day period to be prescribed by MNRE, proposals/ targets in the prescribed formats along with a commitment for meeting the balance cost of the project other than the CFA to MNRE. Targets will be approved and communicated and the channel partners can start implementation at his own risk and investment. They will be responsible for following the scheme guidelines and MNRE specifications. In case capacity applied for by the channel partners exceeds the available capacity in that period, MNRE will device a transparent mechanism to decide on the allocation of capacity to the various channel partners. However, in no case shall the total capacity allocated through Channel partners exceed 50% of the total capacity allocation in any particular year.

7.2 Proposals of State Nodal Agencies, SECI and other Govt. Agencies, NHB, PSUs and IREDA will be directly processed by the division.

7.3 The entire process of receiving proposals, processing them and giving approvals would be preferably IT enabled. The PAC/Division would also frame rules and prescribe formats etc. for project approval, within the overall framework of this scheme, so as to make the process transparent.

7.4 The in-principle approval of the targets/ proposals may be granted by the programme division in- advance to the States Departments/SNAs/Channel Partners and other implementing agencies to enable them for planning their strategies identify the beneficiaries, formulate the specific proposals etc.

8. Project Management Consultant (PMC)

The government may engage a reputed agency as a Project Management Consultant (PMC) to handle all the processes such as assistance for formulation, appraisal and screening of proposals preceding the formal approval which would be a sovereign function of MNRE. It could also assist the Ministry in formulating the detailed implementation guidelines/ formats, if any.

9. Monitoring and Evaluation:

9.1 It is proposed to have three tier monitoring and evaluation system involving implementing agency as first tier, third party inspecting agency as second tier (Inspection proposed on stratified sampling basis) , and random checking by ministry itself. Further at the end of plan period evaluation of scheme by independent evaluator will be carried out for continuation in next plan period.

In case of Govt. organization/Large PSUs/ SNAs second tier monitoring may be waived off on production of self-certification by them. IT enabled monitoring and verification protocols will be putted in place for monitoring on pan India basis.

9.2 It is envisaged that certified energy auditors, scheme monitors and others would be empanelledfor certifying whether the outputs of the system correspond to the parameters laid down in certificates for different products.

10. Technical Requirements

The scheme would require the project proponents to strictly adhere to thenational/international standards specified by the Ministry from time to time. The existing National Standards/ MNRE Specifications in respect of Solar Thermal Components/Systems are given in Annexure-1 (part-B).

11. Supporting Innovation

In very special and rare cases, the Ministry could consider higher CFA for undertaking pilot and demonstration projects either for demonstrating new and innovative applications or for demonstrating new technologies. Ministry may also consider sanctioning to SECI or other government institutions demonstrative projects with higher CFA with a proviso for recovery of the CFA on savings in fuel usage. Detailed guidelines for such schemes would be separately drawn up if required.

13 Natural Calamities and Disasters

Ministry could consider providing 100% funding in case of declared natural calamity for installation of small solar systemson humanitarian grounds.

14. Interpretation of the Guidelines

In case of any ambiguity in interpretation of any of the provisions of these guidelines, the decision of the Ministry shall be final.

15 Miscellaneous

MNRE may frame specific guidelines for various products and various categories, target fixation and subsidy disbursement methods, benchmark cost fixation, seeking fund availability through different resources including other ministry, utilization of funds available through NCEF/External assistance based on this scheme to bring in more clarity and easy applicability. In these guidelines MNRE may exclude certain provisions if they are not required for that product category or if it is felt that lesser support is required.

16. Review

The scheme would be reviewed by an Internal Review Committee at 6 month/yearly interval and modifications therein would be incorporated by the Ministry. In addition, a platform for experts to discuss best practices, debate over issues to overcome bottle necks and provide effective policy suggestions for ensuring wide spread off grid solar thermal solutions deployment would also be established at the national level.

17 **Fixing of CFA and Benchmark cost**

For fixing CFA and bench mark cost, MNRE will set up a committee which will take various tenders rates inputs from SECI and other agencies including Nodal agencies, component market rates, global rate trends etc. The CFA may be fixed annually or biannually. CFA will be on benchmark cost and fixed in absolute value i.e. in Rs./sq. ft. collector area or in thermal energy output basis. There could also be other parameters like efficiency of system.

In case of channel partners a correction factor will apply on the bench mark price to determine the CFA. Following procedure is used to determine the benchmark cost under Solar off Grid Scheme:-

(i) Benchmark cost will be determined separately for the following categories of products:-
   a) Solar Water heaters
   b) Solar air heater
   c) Concentrated solar thermal (high temperature application)

(ii) The benchmark cost for solar Thermal system may include following components:

   a) Solar water heater – solar collectors, storage tanks, connection between collector and tank, heat exchangers, as per the site requirements.
   b) Solar air heater– solar collector, frame, blower, duct, ss dryer, axial fan, other accessory as per requirement.
   c) Solar concentrating system – concentrator, frame mounting, pressure reduction station, receiver with inter connection between receiver and header/storage tank. Accessories, gauges, / valves / control panel, backup boiler, piping, as per the site requirement.

(iii) Separate committees would be constituted in MNRE for these categories.

(iv) The benchmark cost would be fixed based on the following two main criteria:

   a. Price determined through tenders done by SECI, State Nodal Agencies and other Government Departments/ organizations in 12 months preceding the date when the committee starts working for determining the benchmark cost for next year.
   b. Component wise cost breakup to arrive at an estimated price of each of the products for which benchmark cost is determined. The committee will collect data about all the tenders floated with MNRE subsidy. These would then be clubbed into different categories depending on the product, technology etc. Thereafter the committee may develop criteria for arriving at a rate out the price or by calculating median. The benchmark so determined through tendered price will then be compared with values arrived at through costing by clubbing the price of various components. In case of wide difference, the committee may go into the reasons and if need be, apply correction factor.

(v) The committee may take into account all relevant factors and also co-opt experts if necessary to adopt a benchmark price as close to the actual price as possible. The committee may also relook the benchmark cost after 6 months in case it is felt that there is a major change in the market.

(vi) It is hoped that price of the system will come closer and closer to benchmark cost as time progresses and after few years the price coming through tenders would not be very different from benchmark cost. Benchmark cost will also get rationalized as technologies improve.

18. Tatkal Scheme

There would be provision for reserving quantities of various solar systems at lower subsidy levels along with the facility of disbursal on priority basis in a definite time period. This would, however, be done within the upper subsidy cap as laid down in the scheme for the particular component. A committee will be set up to decide the scheme separately.

19. Hybrid systems

There would be a provision to promote hybrids like Wind-solar etc. within the defined CFA and subsidy limits for that particular component in this scheme.

20. Monitoring of System life

Online monitoring will be compulsory for all systems more than 10 kWp capacity for PV and equivalent of 10 kW capacity for thermal systems. Real time monitoring may be specified by MNRE for large systems and online monitoring would be eventually extended to 1 kWp systems as well.

Life of systems and products will be specified from time to time and efforts will be made to ensure that no systems or products are discarded before fill life usage.

21. Guidelines for Channel Partners

The Channel Partners are an important implementing agency. It is essential to ensure that guidelines for selection, rating and appraisal of channel partners are transparent and simple. It shall also be ensured that there are no restrictions on the number of channel partners and all otherwise eligible agencies are empanelled subject to their rating and appraisal. In case of overcapacity of applications, the projects shall be allocated among channel partners in a transparent manner. MNRE shall issue detailed guidelines for channel partners covering all these aspects.

22. Redundancy and interpretation

In case of a particular application being eligible for CFA under more than one of the sub-schemes outlined above, the same shall be considered for sanction under that sub-scheme which involves lesser minimum CFA. In case of any ambiguity regarding interpretation of the guidelines, the decision of MNRE shall be final.

Annexure 1

Solar Thermal Application Area to be supported under this scheme

Sr. No.	**Solar Collector type**
Low Temperature Solar Thermal Systems	
1	Evacuated Tube Collectors (ETCs)
2	Flat Plate Collectors (FPC) with liquid as the working fluid
3	Flat Plate Collectors with air as the working fluid
Medium Temperature Solar Thermal Systems	
4.	Fixed focus automatically tracked elliptical dishes, Parabolic troughs, Linear Fresnel reflectors, Non-Imaging Concentrators & Heat Pipes
i)	Retrofitted
ii)	New system for cooking / process heat
iii)	New system for space cooling
High Temperature Solar Thermal Systems	
5.	Dual axis tracked Fresnel reflector/ paraboloid based dishes and central tower receiver
i)	Retrofitted
ii)	New system for cooking / process heat
iii)	New system for space cooling

Nomenclature

ETC/ FPC System with water as working fluid will comprise of solar collector, with/withoutstorage tank and piping between them, heat exchanger and other accessories optional.

ETC/ FPC System with air as working fluid will comprise of solar collector, frame, blower, duct , with/without SS dryer .

Retro-fitted will comprise of solar system only including storage etc and piping connected to existing conventional system

New system for cooking / process heat will comprise of complete solar system, boiler and cooking vessels

New system for space cooling will comprise of solar system, boiler and cooling system including Vapour absorption machine, Cooling tower & other components

Annexure 2

National Standards/ MNRE Specifications on Solar Thermal Components/ Systems

A) Indian Standards

National Standards are brought out by Bureau of Indian Standards. The details of these Standards whichcontain minimum performance requirements along with test methods are as follows:

1. Solar Flat Plate Collectors

a) IS 12933 (Part 1):2003, Solar flat plate collector -Specification, Part 1- Requirements.
b) IS 12933 (Part 2):2003, Solar flat plate collector -Specification, Part 2 - Components.
c) IS 12933 (Part 3):2003, Solar flat plate collector -Specification, Part 3 - Measuring instruments.
d) IS 12933 (Part 5):2003, Solar flat plate collector -Specification, Part 5 - Test methods.

These Standards does not apply to concentrating & unglazed collectors and built-in-storage water heating systems.

2. Box-Type Solar Cookers

a) IS 13429 (Part 1):2000, Solar cooker-Box type - Specification, Part 1 - Requirements.
b) IS 13429 (Part 2):2000, Solar cooker- Box type - Specification, Part 2 - Components.
c) IS 13429 (Part 3):2000, Solar cooker- Box type - Specification, Part 3 - Test methods.

B) Test Procedures & MNRE Specifications

MNRE Specifications

1. Evacuated tube collectors and system
2. Dish Solar Cookers
3. Indoor community solar cookers
4. Solar steam generation/pressurized hot water/ air systems

MNRE has laid down the standards for evacuated tube collector system and minimum technical specifications for Dish solar cookers, Indoor community solar cookers and Solar steam generation/pressurized hot water/ air systems which are available at its website www.mnre.gov.in. These are required to be followed for claiming subsidy from MNRE.

Test Procedures

1. Solar dish cookers
2. Thermo-siphon-type domestic solar Hot Water Systems

C) Testing Laboratories/ Centers

1. In order to make available quality product in the market, the Ministry works with Bureau ofIndian Standards (BIS) and Quality Council of India. Presently, Indian Standards are available for solar flat plate collectors and box-type solar cookers and BIS implements a testing and certification programme which forms the basis of certification of these products by BIS. List of test laboratories and centres are available on MNRE website.

2. For domestic size solar water heating systems based on thermo-siphon mode of operation, the Ministry has supported development of a test protocol with certain minimum performancerequirements. For solar dish cookers, the Ministry has defined minimum specifications and has broughtout a test procedure. In addition, the Ministry empanels manufacturers of solar water heating systems based on evacuated tube collectors.

3. There is a network of test centres in the country which is recognized by BIS for carrying outcertification testing as per Indian Standards. The details of these test Centres are available on MNRE website and is updated from time to time.

4. The solar thermal devices/ systems must be tested at one of these test centers.