

**Guidelines  
for  
Generation Based Incentive**

**Grid Interactive Solar Thermal Power Generation Projects**

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**Government of India**  
**Ministry of New and Renewable Energy**

**Guidelines for Developing Project Proposals for Demonstration Programme on  
Grid Interactive Solar Thermal Power Generation**

With a view to develop and demonstrate technical performance of grid interactive solar power generation, achieve reduction in the cost of the grid connected solar systems and the cost of solar power generation in the country, the Ministry of New and Renewable Energy will support Grid Interactive Solar Power Generation projects as demonstration projects in the country. The Ministry will consider support for a maximum capacity up to 50 MW (including solar photovoltaic as well as solar thermal power generation) during the 11th plan period as per the guidelines and norms given below. The Indian Renewable Energy Development Agency (IREDA) will assist the Ministry in fund handling, monitoring and other associated activities in this regard.

The following are the broad guidelines for submission of proposals by the interested project developers, details of incentives and other related guidelines.

**1. Eligible Organizations**

- 1.1 All existing registered companies, central and state power generation companies and public/private sector solar thermal power project developers who have set up or propose to set up a registered company in India will be eligible for consideration of generation based incentive. Individuals, NGOs, financial institutions, societies and other unorganized investors are not eligible to participate directly.

**2. Eligible Projects & Eligibility Criterion**

- 2.1 Grid interactive solar thermal Power Generation plants of a minimum installed capacity of one MW per plant at a single location will be eligible for generation based incentive. However, one mega-watt capacity may be set-up through modular units to make one megawatt at a single location.
- 2.2 A maximum cumulative capacity of 10 MW of Grid interactive solar thermal power generation projects can be set up in a State.
- 2.3 Any project developer, who fulfills the procedural requirements and the guidelines specified by the Ministry, will be eligible for consideration of generation based incentive. Any project developer can set up grid interactive solar thermal power generation projects up to a maximum of 5 MW capacity in the country, either through a single project or multiple projects of a minimum capacity of one MW each.
- 2.4 The grid interactive solar thermal power generation projects will be undertaken on Build Own and Operate basis.
- 2.5 Setting up of captive grid interactive solar thermal power plant or captive utilization of solar thermal power is not covered under the generation-based incentive scheme of the Ministry.

- 2.6 In case any project developer is desirous of availing the accelerated depreciation benefit for the project under section 32 of the Income Tax Act 1961, they would not be eligible for generation-based incentive.

### **3. Procedures to be followed by Project developers for availing Generation based Incentive**

- 3.1 The grid interactive solar thermal power projects will be considered for generation based incentive on first come first served basis, in accordance with the guidelines of the Ministry and compliance of the procedural requirements for filing the applications/requests for incentive. Mere information to the Ministry and/or IREDA about the intention of the company/project developer to set up a grid interactive solar thermal power plant will not be sufficient basis for this purpose.
- 3.2 Before submission of application, the interested solar power project developers are required to ensure compliance of all legal and procedural requirements and obtain all necessary clearances from the concerned State Government/State Utility/State Nodal Agency/local bodies and other organizations, as specified by the concerned State Government and/or Central Government.
- 3.3 The state agencies and utilities will provide all assistance and support to the project developers for evacuation of power from the project site, as done in case of other renewable energy based projects, unless specific guidelines for solar power projects are approved by the respective regulatory commissions, which are different from the existing guidelines for other renewable energy projects.
- 3.4 The interested project developers are required to submit complete applications in duplicate to the Ministry with two copies to IREDA. The project developer will also submit copies of the DPR for the project.
- 3.5 For each project submitted to IREDA and the Ministry for generation based incentive in the prescribed formats, among other details information on technical and performance features, technical specifications, requirement and availability of land, title of the land, capital cost, estimated life of the solar thermal power plant, quantum of electricity expected to be generated and fed to the grid, proposed sale price of electricity from solar thermal power plant, duration of power purchase agreement and power purchase rate (s), arrangements for power evacuation and the time frame for installation/ commissioning of the grid solar thermal power plant etc. are required to be furnished.
- 3.6 On receipt of application, which is complete in all respect, the eligibility for generation-based incentive will be examined in accordance with the guidelines of the Ministry.
- 3.7 Applications which are incomplete or do not provide firm and clear information will not be considered on first come first served basis. The concerned project developer will be informed accordingly and the complete application will be treated as a fresh application.
- 3.8 On examination by the Ministry, if a proposal is found to be eligible, the prospective developer will be informed whether the proposal falls within the approved limit of installed capacity allowed for the concerned state. The applicant will also be informed of the timeframe for installation and commissioning of the plant, which will normally be as stated by the project developer, but not later than 31st December 2009. This communication will not

automatically entitle the project developer to claim the generation-based incentive for any project, unless commissioned within the specified timeframe.

- 3.9 The project developers will be required to install and commission the grid interactive solar thermal power projects, within the time frame communicated at the time of acknowledging the eligibility of the project. The first progress report must be submitted to the Ministry with a copy to IREDA not later than six months from this date. In case there is no progress on procurement and installation of the plant is noticed in the first six months after the eligibility has been communicated, the Ministry may consider cancellation of the project. In case of progress in the first six months and subsequent delays in completion of project work beyond the specified completion date communicated to the project developer, Ministry will impose penalty by reducing the incentive by 1% for each month of delay, subject to a maximum of 5%. In all cases even the delayed project should be completed by 31st December, 2009, failing which the Ministry will review the decision to provide incentive for that project.
- 3.10 Considering the possibility that the full capacity of maximum one MW be commissioned in phases by modular commissioning, incentive would be calculated on the commissioning of a minimum of 250 kW and above and sale to the grid, but the disbursement of the incentive would begin only when a minimum capacity of one MW is commissioned and power sold to the grid.
- 3.11 All eligible projects will be inspected by a team consisting of officials from the Ministry, concerned state nodal agency, utility and IREDA before the project starts feeding power into the grid and only after the satisfaction of the team regarding compliance to the requirements, the project will be approved for generation based incentive. The generation-based incentive will be approved only after demonstration of satisfactory commissioning of the plant at the project site and it's interfacing with the grid of the utility.
- 3.12 While the generation based incentive scheme is applicable to the entire country, preference/priority would be given to those projects, which are proposed in the States that have approved and/or notified tariff for solar power.
- 3.13 A dedicated electronic meter or any other meter (s) as specified and approved by the utility will be installed at the point of power evacuation and/or any other point as specified by the utility. This will be used to monitor the quantum of net electricity being fed to the grid from that project.
- 3.14 The solar thermal power project developers are not allowed to use any other source of power generation along with the solar thermal power project. No other power-generating source will be connected to the same meter, which is used to monitor quantum of solar thermal power fed to the grid from the grid interactive solar thermal power plant. At any time after the solar thermal power plant is connected to the grid, if it is found that any other source of power generation is in use or have been used to feed power to the grid through the same meter at that project site, that project will not be eligible to receive generation based incentive. In-house consumption of solar thermal power generated from the grid interactive solar thermal power project shall not be eligible for incentive. In other words only sale of power to the grid is eligible.
- 3.15 The grid interactive solar thermal power plants, which receive generation based incentive will not be transferable to a new management or sold to any other company without prior written approval from Ministry. In the event of transfer without prior approval from the Ministry, generation based incentive will not be

continued for that solar thermal power generation project. However, the Ministry may review the project afresh and decide about new quantum of incentive for that project, if any, for the remaining period.

- 3.16 Solar thermal power project developers shall not avail accelerated depreciation benefit under Section 32 of the Income Tax Act 1961. The solar thermal power project developers who submit their applications to the Ministry with a copy to IREDA and required to submit a declaration to this effect. On approval of the project, IREDA will enter into an agreement with the project developer, among other matters, in this regard. If any violation of this condition is found, IREDA will immediately stop release of generation-based incentive to that project and refer the matter to the Ministry.
- 3.17 Third party sale, banking and wheeling of power is not permitted while availing generation-based incentive.
- 3.18 The project developers will maintain a record of power generation, incident solar radiation on the solar thermal array surface and other technical features of the power plant for the entire period during which they will receive incentives. A copy of the data should also be available in electronic form. This record will also be made available readily for verification / audit purposes, if required.

#### **4. Generation based Incentives**

- 4.1 Wherever the state electricity regulatory commissions have fixed a separate tariff for solar power or they fix the tariff for solar power during the period for which the Ministry is providing incentive, the utilities will offer a minimum of that tariff to the solar thermal grid interactive power projects in their respective states. In absence of such tariff orders, the utilities will offer the highest tariff for purchase of power to the solar thermal power project developers, that is being offered by the utilities for purchasing power in their respective states on medium term or the highest tariff being provided for purchase of power from any other energy source for which orders/guidelines are already issued for that State. The PPA would draw reference to the orders of the State Electricity Regulatory Commission's order in this regard and enclose copies of the same. The Ministry will not consider proposals, which do not follow these guidelines on power purchase agreements.
- 4.2 The Ministry may provide, through IREDA, a generation-based incentive of a maximum of Rs. 10 per kWh to the eligible projects which are commissioned by 31st December, 2009, after taking in account the power purchase rate (per kWh) provided by the State Electricity Regulatory Commission or utility for that project.
- 4.3 The maximum amount of generation based incentive applicable for a project will be determined after deducting the power purchase rate for which PPA has been signed by the utility with a project developer, from a notional amount of Rs. 13 per kWh. In all cases the maximum amount of generation-based incentive shall not exceed Rs. 10 per kWh. In case the project developer has submitted an application to the State Electricity Regulatory Commission or the Utility or to the Ministry, where a lower power purchase price or sale price of power from the proposed grid interactive solar thermal power plant has been sought, in that case the generation based incentive will be determined with that amount as the base and a lower rate of incentive will be approved by the Ministry. The project developers will be required to submit documentary proof and give an undertaking about correctness of this information.

- 4.4 Any project that is commissioned after 31st December, 2009 would be eligible for a maximum incentive with a 5% reduction and ceiling of Rs. 9.50 per kWh.
- 4.5 The generation-based incentive will continue to decrease, as and when the utility sign a PPA for power purchase at a higher rate. The proposed annual escalations agreed with the utility, as in force, should be reflected in the PPA.
- 4.6 The generation based incentive approved for a grid interactive solar thermal power generation project may be available for a maximum period of ten years from the date of approval and regular power generation from that project, provided the utility continues to purchase power from that grid interactive solar thermal power plant.
- 4.7 The Ministry may, at any given time, even before 31st March, 2010, announce a new generation based incentive and guidelines, which will be applicable to all such proposals / projects that have not been approved by that time.
- 4.8 The incentive will be released by IREDA to the eligible solar thermal power project developer on quarterly basis, on receipt of certified information about the net electricity fed to the grid from the solar thermal power project during the period of claim. The concerned utility will provide such information to the project developer on periodic basis. The solar thermal power project developers will be required to produce a certificate from the concerned utility about the solar thermal power purchase rate granted by the utility for eligible projects, each time they seek funds from IREDA towards generation-based incentive.

## **5.0 Technical Performance Optimization**

- 5.1 With a view to encourage technology development and reduction in the cost of the solar thermal power plant projects, the solar thermal power project developers are expected to utilize the state of the art technology to set up the plants. They are expected to use higher power output solar thermal collectors, which are available for the specific technology used in setting up the power plant.
- 5.2 Qualification of solar thermal collectors and other components, to be used in grid interactive power plants, is recommended as per BIS or International standards, wherever available. The interested project developer will provide copies of such certificates to Ministry and IREDA either at the time of application or latest at the time of the first progress report. The project developer will also give an undertaking in the application to use such collectors/ components for which copies of the certification have been submitted.
- 5.3 The electronics, cables, controls, structures etc. must qualify to latest BIS or international standards which are acceptable to utilities and which fulfill all safety norms for grid power projects. The solar thermal power project developers will provide a copy of the test certificate(s)/ report(s), if required.
- 5.4 The solar thermal power project developers are required to optimize generation in electricity in terms of kWh generated per MW of solar thermal capacity installed vis-à-vis available solar radiation at the site (may be obtained through optimized parameters for the power cycle, sizing of thermal storage, and cleaning of the mirrors and receivers at an appropriate periodicity, etc.)

- 5.5 The grid interactive solar thermal plant may be connected to preferably 33 KV grid line to minimize power transfer losses. However, the choice of grid voltage may be determined in consultation with the concerned state utility.
- 5.6 Solar thermal power project developers will be required to maintain collection of technical information on daily solar radiation availability, hours of sunshine, duration of plant operation and the quantum of power fed to the grid. The project developer will install suitable instruments, meters and data loggers for this purpose. This information will be provided at the time of seeking reimbursement from IREDA. This will help in estimation of power generation in kWh per MW capacity installed at the site.

## **6.0 Monitoring**

- 6.1 The solar thermal power project developers will install suitable instruments and make adequate arrangements to monitor the performance and ensure satisfactory operation of the grid interactive solar thermal power plants.
- 6.2 IREDA will make suitable arrangements to monitor the progress and performance of the grid interactive solar thermal power generation projects.
- 6.3 The concerned state nodal agency may also visit the project site and provide their feedback and recommendation to IREDA.
- 6.4 All solar thermal power plant projects will be open to inspection by the officials from Ministry, IREDA, concerned state nodal agency and any independent organization appointed by the Ministry/IREDA for performance monitoring.
- 6.5 The Ministry may also undertake field evaluation studies for any of the grid interactive solar thermal plants through professional and independent organizations.

## **7.0 Progress Report**

- 7.1 The project developers of all approved projects will be required to submit annual progress report about the project and the annual report of the company, which has set up and own the grid interactive solar thermal power plant.

- 8.0** Further continuance of the scheme, restructuring of the incentive scheme would depend up on the success of the scheme during the stipulated period. The application format is available on the website of the Ministry (<http://mnre.gov.in>)

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