

Jawaharlal Nehru National Solar Mission (JNNSM)
Guidelines for Selection of New Grid Connected Solar Projects under Phase 1
of JNNSM

1. Preamble

The objective of the Jawaharlal Nehru National Solar Mission (JNNSM) under the brand 'Solar India' is to establish India as a global leader in solar energy, by creating the policy conditions for its diffusion across the country as quickly as possible. The Mission has set a target of 20,000 MW and stipulates implementation and achievement of the target in 3 phases (first phase upto 2012-13, second phase from 2013 to 2017 and third phase from 2017 to 2022) for various components including Utility grid solar power.

In order to facilitate grid connected solar power generation under the first phase, a mechanism of "bundling" relatively expensive solar power with power from the cheaper unallocated quota of the Government of India (Ministry of Power) out of the NTPC coal based stations and selling this "bundled" power to Distribution Utilities, at CERC determined prices, has been proposed by the Mission. The Mission also provides for NTPC's Vidyut Vyapar Nigam Ltd or NVVN to be the designated Nodal Agency for procuring the solar power by entering into a Power Purchase Agreement or PPA with Solar Power Generation Project Developers who will be setting up Solar Projects during the next three years, i.e., before March 2013 and are connected to the grid at voltage level of 33 kV and above. For each MW installed capacity of solar power for which a PPA is signed by NVVN, the Ministry of Power (MoP) shall allocate to NVVN an equivalent amount of MW (upto a maximum of 1000 MW) capacity from the unallocated quota of NTPC coal based stations and NVVN will supply this

“bundled” power to the Distribution Utilities. This Scheme is referred to as the ‘Bundling Scheme’ in these guidelines.

Considering the fact that some of the grid connected solar power projects are at various stages of development, the guidelines for migration of Projects from their respective existing arrangements to the ones envisaged under JNNSM has already been issued.

The aims of these guidelines are :

- to facilitate quick start up of the JNNSM,
- to ensure serious participation for projects to be selected under JNNSM,
- to facilitate speedier implementation of the new projects to be selected to meet the Phase I target of JNNSM, and
- to enhance confidence in the Project Developers.

2. Scope of the Guidelines

The scope of these guidelines is to select new projects for development under the “bundling scheme” for Phase I of the JNNSM (excluding the capacity met by migration of projects under development). Further, since technology is rapidly evolving, especially, in the field of Solar PV, there is a need to provide opportunity for deployment of the latest technologies, selectively, through projects, wherein the developers could tie up with proven technology providers/module manufacturers that offer better efficiency and/or technology (and with successful operation for at least 2 years), than what is available and being deployed in India , after an evaluation of the technology being proposed.

3. Portfolio of Solar PV and Solar Thermal Technology Projects

For selecting the grid connected solar projects for bundling with unallocated quota of NTPC power, the projects will be selected under this scheme in such a manner so as to provide for deployment of both Solar PV Technology Projects and Solar Thermal Technology projects in a ratio of 50:50 , in MW terms. However, within these two broad technology groups, the selection of projects would be technology agnostic. For the purpose of calculation of the ratio as mentioned above, projects migrated from their existing arrangement to JNNSM would also be taken into account.

Any demonstration projects as may be approved by MNRE from time to time shall not be considered for bundling with unallocated quota of NTPC power, under this scheme.

The above provision will be reviewed after one year from the date of issue of these guidelines and if any modification to this provision is necessary, the same shall be made so as to achieve the objectives of these guidelines.

4. Minimum and Maximum Capacity of Each Project

Given the requirement to connect the project to the STU network at 33kV and above, the minimum Project capacity shall be 5 MW and 20 MW in case of Solar Photo Voltaic Projects and Solar Thermal Project respectively. The maximum capacity for each project of Solar Photo Voltaic technology would be 25 MW and 100 MW for Solar thermal technology. (The pros and cons could be specifically discussed)

5. Expression of Interest for Short-listing and Selection of Projects

NVVN shall invite project developers to participate in the Expression of Interest for solar power development under this scheme. NVVN would provide a format for filing the application . The Project Developer shall also submit a Resolution of its Board, clearly stating the intention of the Company to develop the project for which application is being made to NVVN.

6. Qualification Criteria for Short-Listing of New Projects

A. Financial Criteria

Net Worth

The “Net Worth” of the company should be equal to or greater than the value calculated at the rate of Rs 2 Crore or equivalent US\$ per MW of the project capacity. The computation of Net Worth shall be based on unconsolidated audited annual accounts of the company. For the purpose of the computation of net worth, the best year in the last three years shall be considered. The Company, would thus be required, to submit annual audited accounts for the financial years 2007-08, 2008-09 and 2009-10, while indicating the year, which should be considered for evaluation.

For companies which are newly incorporated, the Net Worth criteria should be met seven days prior to the date of submission of EoI by the Project Developer. To demonstrate fulfillment of the criteria, the Project Developer shall submit a certificate from a Chartered Accountant certifying the Net Worth on the date seven days prior to submission of EoI. Further, the Project Developer shall submit the un-audited financial statements of the company for the date on which the Certificate of Chartered Accountant has been obtained.

{Note: For the Qualification Requirements, if data is provided by the Project Developer in foreign currency, equivalent rupees of Net Worth will be calculated using bills selling exchange rates (card rate) USD / INR of State Bank of India prevailing on the date of closing of the accounts for the respective financial year as certified by the Project Developer’s banker.

For currency other than USD, Project Developers shall convert such currency into USD as per the exchange rates certified by their banker prevailing on the relevant date and used for such conversion.}

Net Worth

=	Paid up share capital
Add:	Reserves
Subtract:	Revaluation Reserves
Subtract:	Intangible Assets
Subtract:	Miscellaneous Expenditures to the extent not written off and carry forward losses

For the purposes of meeting financial requirements, only unconsolidated audited annual accounts shall be used. However, audited consolidated annual accounts of the Project Developer may be used for the purpose of financial requirements provided the Project Developer has at least twenty six percent (26%) equity in each company whose accounts are merged in the audited consolidated account and provided further that the financial capability of such companies (of which accounts are being merged in the consolidated accounts) shall not be considered again for the purpose of evaluation of the Bid.

If the EoI is submitted by a Consortium the financial requirement shall be met collectively by all the Members in the Bidding Consortium. The financial requirement to be met by each Member of the Consortium shall be computed in proportion to the equity commitment made by each of them in the Project Company. Any Consortium, if selected, shall, for the purpose of supply of power to NNVN, incorporate a Project Company with equity participation by the Members before signing the PPA with NNVN.

The Project Developer may seek qualification on the basis of financial capability of its Parent Company and / or its Affiliate(s) for the purpose of meeting the Qualification Requirements. In case of the Project Developer being a Bidding Consortium, any Member may seek qualification on the basis of financial capability of its Parent Company and / or its Affiliate(s).

B. Technical Criteria

Under the Phase I of the JNNSM, it is proposed to promote only commercially established and operational technologies to minimize the technology risk and to achieve the commissioning of the Projects. The Project Developer shall propose deployment for commercially established technology wherein there is at least one Project operational of the proposed technology, for last two years, anywhere in the world. Detailed technical parameters are at Annex 1A and B .

C. Land Arrangement for the Project

The Project Developer should have made arrangements for at least 50% of the area of the land required for the project at the time of submitting EoI to NNVN. For this purpose,

the land requirement shall be considered as 2 Hectares/MW. Any one of following specified below shall meet this criteria:

- a. In case of Government Land, an allotment letter issued by State Government
- b. In case of Private Land, the Solar Project Developer should have entered into 'Agreement for Sale of land' with the owner of the land
- c. In case of land being taken on lease, the long term lease arrangement towards lease hold rights (for at least 30 years)

D. Connectivity with the Grid

The plant should be designed for interconnection with the grid at the voltage level of 33 kV or above. Further, the interconnections should be at the grid substation (the substation should be 33kv/132kv or higher voltage levels) and not the distribution substation. In this regard, the Project Developer shall submit a letter from the State Transmission Utility (STU) confirming technical feasibility of the connectivity of the plant to the grid substation. The transmission arrangement from the plant to the substation shall be the responsibility of the developer.

E. Water Arrangement

In case of Solar Thermal Projects, the Project Developer should have made adequate arrangements for water required for the Project. The project Developer shall submit the documentary evidence in the form of approval from the competent State/local authority for the quantity of water required for the power station.

7. Domestic Content

The Mission recognizes that indigenous manufacturing capacity for solar power equipment is vital if the goal of 20,000 MW of solar power is to be met by 2020. Therefore it becomes mandatory to introduce a criteria for ensuring domestic content for Phase I Projects. The same shall be as under:

- a. *In case of Solar PV Technology- It is proposed that all deployment under the scheme should use a module manufactured in India and it is also proposed to mandate the use of the cell manufactured in India (The pros and cons of this could be debated)*
- b. In case of Solar Thermal Technology - 30% of the total project cost should be utilized for domestic equipment.

8. Short-listing of Projects

NVVN shall evaluate only those EOIs, which are received by the appointed date and time at the head office of NVVN. The EOIs shall be evaluated by NVVN on the basis of criteria specified at Sr. No. 6 of these Guidelines. NVVN will announce the list of all the projects meeting the criteria irrespective of the share of technologies of the projects satisfying the criteria. To provide abundant clarity in the matter, NVVN will announce the list of the projects even if all projects put together have proposed capacity of more than 50% of the capacity proposed under the Bundling Scheme.

9. Role of State Level Agencies

It is envisaged that the State Level Agencies will provide necessary support to facilitate the development of the Projects. This may include facilitation in the following areas:-

- Access to Sites
- Water Allocation for Solar Thermal Projects
- Land acquisition for the project
- Connectivity to the grid substation from the State Transmission Utility (STU)

10. Selection of Projects

a) Phasing allocation of capacities: In order to prevent bunching of large capacities at one time and to avoid the difficulty that may arise in achieving financial closure by the large number of project capacities that may get selected together and given that this is a new area of financing for FIs in India, it is proposed that selection of projects be done for PV projects in a phased manner by allocating overall capacities over two financial years of Phase 1 ie 2010-2011 and 2011-2012.

b) In the eventuality, that the total aggregate capacity being sought by developers in the Projects short listed by NVVN, under any technology i.e. PV or thermal, is higher than the capacity to be selected for bundling with NTPC unallocated quota, the final selection of the Projects from the list of short-listed projects could be arrived at by either of the two following options:

- (i) The developers could be asked by NVVN to indicate the percentage of CERC determined tariff which they are prepared to share with NVVN as a mechanism for bearing the administrative costs and risk sharing. The project developer offering the maximum such percentage would be selected first and so on.*

- (ii) *All the short listed projects up to a capacity say 5 MW for Solar PV and 20 MW for solar thermal are selected. Thereafter all the remaining short listed projects are allotted remaining capacity equally (such equal capacity depending on the total available allocation after allotment of capacity to smaller plants as referred above).*

NVVN would then proceed to select projects in such a manner that the total capacity of the projects is not more than 105% of the capacity to be selected for that technology. This would allow NVVN to provide an adequate buffer for any failures on the implementation side. NVVN shall make use of this provision only if the last project being selected is proposed for a capacity, which requires the total capacity for the technology to be increased beyond what was originally decided. For e.g. The capacity to be selected under solar thermal technology is 500MW and 19 projects selected on the basis of rebate account for 490 MW. NVVN will select the 20th project in the ranking only if the capacity of that project is around 35 MW , so that total allocation under that technology category does not exceed beyond the mandate of this scheme.

At the end of selection process, a letter of intent will be issued by NVVN to the selected Solar Project Developers.

11. MoU between Project Developer and NVVN

For the projects selected, a Memorandum of Understanding (MoU) identifying the broad roles and responsibilities of the Parties will be signed between NVVN, the Distribution Utility/Utility and the Project Developer within 15 days from the date of issue of Letter of Intent by NVVN. Draft MoU would be available at NVVN website

12. Power Purchase Agreement and Power Sale Agreement

Within three months of the date of signing of MoU, the Power Purchase Agreement between NVVN and the Project Developer for purchase of power from the project and the Power Sale Agreement between NVVN and Utility for supply of power from the project to the Distribution Utility will be executed on a back-to-back basis. Before signing of the PPA, the SPD shall demonstrate that the entire land required for execution of the project is in possession. Draft PPA would be available shortly on NVVN website

13. Performance Guarantee

The Project Developer shall provide the Performance Guarantee to NVVN in the form of Bank Guarantee calculated on the basis of Rs 50 Lakh/MW of the total Project Capacity. 50% of the total Performance Guarantee shall be provided by the Project Developer at the time of signing the MoU and balance 50% of the total Performance Guarantee shall be provided by the Project Developer at the time of signing of PPA.

In case, NVVN offers to execute the PPA with the Project Developer and if the Project Developer refuses to execute the PPA within the stipulated time period, the Performance Guarantee submitted at the time of signing MoU shall be encashed by NVVN. In case of failure of NVVN to offer execution of PPA, the Project Developer shall have the right to withdraw Bank Guarantee provided to NVVN and NVVN shall release the Bank Guarantee within seven days of the receipt of such request from the Project Developer.

The Bank Guarantees shall be valid for a period of 15 and 31 months from the date of signing of PPA for SPV Projects and Solar Thermal Projects respectively. NVVN shall encash the Bank Guarantees, if the Project is not commissioned within the time period stipulated in the PPA.

14. Minimum Equity to be held by the Promoter

The Company developing the project shall provide the information about the Promoters and their shareholding in the company to NVVN indicating the controlling shareholding before signing of the MOU with NVVN.

No change in the controlling shareholding in the Company developing the Project shall be permitted from the date of signing of MoU till the execution of the PPA. However, in case the Project is being developed by a listed company, this condition will not be applicable.

After execution of PPA, the controlling shareholding in the Company developing the project shall be maintained up to a period of (3) three years after commencement of supply of power. Thereafter, any change can be undertaken under intimation to NVVN.

15. Financial Closure of the Project

The Project shall achieve financial closure within 3 months of the date of signing Power Purchase Agreement. No extension shall be granted for achieving this milestone. NVVN shall encash the Performance Guarantee, if this milestone is not achieved within the stipulated period.

16. Commissioning

In case of Solar PV, the Project shall be commissioned within 12 months of the date of signing of PPA while in case of Solar Thermal, the Project shall be commissioned within 28 months of the date of signing of PPA. In case of failure to achieve this milestone, NVVN shall encash the Performance Guarantee furnished by the Project Developer.

17. Power to remove difficulties

If any difficulty arises in giving effect to any provision of these guidelines or interpretation of the guidelines or modification to the guidelines, the Secretaries of the Ministry of Power and the Ministry of New and Renewable Energy shall jointly meet and take decide the matter, which will be binding on all parties concerned.

18. Time Schedule for the Process

Selection of New Projects to JNNSM shall be carried out according to the timeline given below:

Sl.	Event	Date
1	Notice for Invitation of Expression of Interest	March 31, 2010
2	Submission of Applications with documents for Registration	June 30, 2010
3	Selection of Projects by Central Empowered Committee	September 15, 2010
4	Signing of MOU	September 30, 2010
5	Signing of PPA and PSA	October 31, 2010
5	Financial Closure of the Project	3 months from date of

		signing of PPA
6	Commissioning of the Project PV Thermal	From the date of signing of PPA 12 months 28 months

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Annex 1A
30/8/2009-10/NSM
Ministry of New and Renewable Energy

Technical Requirements of PV Module for use in Grid Solar Power Plants

The following are some of the technical measures required to ensure quality of the PV modules used in grid solar power projects.

1. PV Module Qualification

1.1 The PV modules used in the grid solar power projects must quality to the latest edition of any of the following IEC PV module qualification test or equivalent BIS standards.

Crystalline Silicon	Solar Cell Modules	IEC 61215
	Thin Film Modules	IEC 61646
	Concentrator PV modules	IEC 62104

1.2 In addition, PV modules must qualify to IEC 61730 for safety qualification testing. For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.

2. Authorized Test Centers

The PV modules must be tested and approved by one of the IEC authorized test centers. In addition a PV module qualification test certificate as per IEC standard, issued by ETDC, Bangalore or Solar Energy Centre will also be valid. Ministry will review the list of authorized testing laboratories/centers from time to time.

3. Warranty

- The mechanical structures, electrical works and overall workmanship of the grid solar power plants must be warranted for a minimum of 5 years.
- PV modules used in grid solar power plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

4. Identification and Traceability

Each PV module used in any solar power project must use a RF identification tag.

The following information must be mentioned in the RFID used on each module (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.)

- (i) Name of the manufacturer of PV Module
- (ii) Name of the Manufacturer of Solar cells
- (iii) Month and year of the manufacture (separately for solar cells and module)
- (iv) Country of origin (separately for solar cells and module)
- (v) I-V curve for the module
- (vi) Wattage, I_m , V_m and FF for the module
- (vii) Unique Serial No and Model No of the module
- (viii) Date and year of obtaining IEC PV module qualification certificate
- (ix) Name of the test lab issuing IEC certificate
- (x) Other relevant information on traceability of solar cells and module as per ISO 9000

The above mentioned measures were finalized in consultation meeting held with PV industry and some of the technical experts.

We may make this mandatory for all PV based grid solar power projects whether implemented through NRVN or IREDA.

(B. Bhargava)
24.2.2010

Adv (SPV)

ANNEX 1B

Technical Qualification Requirements for Eligibility of a Solar Thermal Power Producer to Establish Solar Power Plant under JNNSM

- a) Only new plant & machinery to be used.
- b) Any of the Concentrated Solar Power (CSP) technology, such as, Parabolic Trough Collectors, Solar Dish Stirling (or any other prime mover), Linear Fresnel Reflector, Central Tower with heliostats, or their any other combination could be used.
- b) Solar Power Producer must fulfill either of following three requirements:
 - 1(i) Solar Power Producer must be manufacturer of the Concentrated Solar power technology intended to be used under proposed solar thermal power project and having facilities and capacity and procedures including quality control and must have designed, manufactured and type tested and supplied requisite modules of at least 1 (one) MW capacity which must be in satisfactory operation for a period of at least 1 (one) year as on the specified cutoff date.

And

- 1(ii) Should have tie up with System Integrator cum EPC contractor who have designed, engineered, installed, tested and commissioned at least one Solar Thermal Power plant using the proposed CSP technology of MW capacity range in last five years at a single location complete in all respect to generate and export power to the grid; this plant should be in successful operation for minimum period of one year as on the specified cut of date.

Or

- 2 Solar Power Producer must be System Integrator cum EPC contractor as per 1(ii) above

And

Tie-up with manufacturer of offered technology as per details given at 1(i) above.

Or

- 3 Solar Power Producer must have

- (a) Tie-up with manufacturer of offered technology as per details given at 1(i) above.

And

- (b) Tie-up with System Integrator cum EPC as per details given at 1(ii) above.