No. 30/11/2014-15/NSM

भारत सरकार/ Government of India

नवीन और नवीकरणीय ऊर्जा मंत्रालय / Ministry of New & Renewable Energy

(NSM Coord. Group)

Block NO. 14, CGO Complex,
Lodi Road, New Delhi-110 003
Dated the 16th January 2015

To,

The Pay & Accounts Officer
Ministry of New and Renewable Energy
New Delhi.

Subject: Implementation of Scheme for setting up of 1000 MW of Grid-Connected Solar PV Power Projects by Central Public Sector Undertakings (CPSUs) and Government of India Organizations under various Central/ State Schemes/ self-use/ 3rd party sale/ merchant sale with Viability Gap Funding under Batch-V of Phase-II of JNNSM

Sir,

I am directed to convey sanction of the President for implementation of Scheme for setting up of 1000 MW of Grid-Connected Solar PV Power Projects by Central Public Sector Undertakings (CPSUs) and Government of India Organizations under various Central/ State Schemes/ self-use/ 3rd party sale/ merchant sale with Viability Gap Funding under Batch-V of Phase-II of JNNSM in a span of 3 years from 2014-15 to 2016-17; with an estimated Central Financial Assistance (CFA) of Rs.1000.00 crore (Rs. one thousand crore only), as per provisions of the Scheme enclosed at **Annexure**.

2. **Implementation of the Scheme**

2.1 **Applicability:** The CPSUs and Government of India organizations would set-up Grid-connected solar PV power projects under various Central/ State Schemes/ self-use/ 3rd party sale/ merchant sale with Viability Gap Funding under Batch-V of Phase-II of JNNSM

2.2 **Power Purchase/Sale Arrangements**: The CPSUs and Government of India organizations like NTPC, NHPC, CIL, IREDA, Indian Railways, etc. may participate in various Central/ State Government Tenders, from time to time, during the period from 2014-15 to 2016-17, for sale of solar power to State Utilities/ Disoms or any other organization. The CPSUs may also sign Power Purchase Agreements (PPAs)/ Power Sale Agreements (PSAs) with State Utilities/ Discoms at tariff determined by Central Electricity Regulatory Commission (CERC) or State Electricity Regulatory Commissions (SERCs) or may develop projects for their own use or for sale of power to a third party at mutually negotiated rates.

2.3. **Domestic Content Requirement and impact on tariff:** The Solar Projects to be set up by CPSUs/ Government of India Organizations must mandatorily procure cells and modules from domestic manufacturers. VGF will be released as per para 4.

Benefit under this project will not be available where DCR clause is already there as tariff would then have taken care of the DCR clause.

3. **Role of Solar Energy Corporation of India (SECI)**:

The Solar Energy Corporation of India (SECI) will handle the scheme on behalf of MNRE, for which they will be given a fee of 1% of the VGF disbursed for handling the funds and managing the Scheme. The handling charge to SECI shall come within the overall provision of Rs. 1000 Cr. As soon as the projects of CPSUs are approved & PPAs are signed and the CPSUs decide to use domestically manufactured cells and modules as mentioned above, CPSUs will have an option to approach SECI for grant of VGF. SECI will process their application and give in-principle approval.

4. **Release of VGF**

VGF would be provided through SECI at a fixed rate of Rs. 1 Cr/MW for projects where domestically produced Cells and Modules are used, and Rs.50 lakh/MW would be provided in cases where domestically produced modules are used as per the details given in the Scheme.

Alternatively, VGF can also be released directly to Domestic Manufacturers through SECI instead of releasing the VGF to CPSUs/ Government of India Organizations, if so required. This will be released to the manufacturer who will be supplying cells and modules to the CPSUs/ Government of India Organizations for that particular power plant based on order placed by the CPSUs/ Government of India Organizations/ their EPC contractor. The release will be made after the project is commissioned and the CPSUs/ Government of India Organizations make a request for release of VGF to SECI.

5. In case of any operational difficulties and in order to ensure timely implementation of the scheme, MNRE will be authorized to make amendments in the Terms & Conditions of the Scheme with the approval of the Minister, NRE without increasing the financial requirements and VGF limits.

6. The funds for implementation of the above scheme would be met from Demand No.69-Ministry of New & Renewable Energy; Major Head:2810-New & Renewable Energy; 101-Grid Interactive & Distributed Renewable Power, 01-Grid Interactive Renewable Power, 04-Solar Power, 31-Grants-in-aid General during 2014-15 (Plan).

7. This sanction issues in exercise of powers delegated to this Ministry and with the approval of competent authority and concurrence of IFD *vide* their Dy. No. IFD/1811/2014-15 dated 23rd December 2014.

Yours faithfully,

(A.N. Srivastava)
Director (NSM)
Phone: 011-24363489

Encl: As above

Copy for information and necessary action to:-

1. All Central Government Ministries/Departments;
2. Principal Director of Audit, Scientific Audit-II, DGACR Building. I.P. Estate, Delhi-02
3. All State/UT Energy Secretaries
4. All Heads of State/UT Nodal Agencies
5. All State/UT Utilities
6. All Municipal Commissioners
7. CMD, IREDA, August Kranti Bhawan, Bhikaiji Cama Place, New Delhi
8. Managing Director, SECI, New Delhi-110017

Internal Distribution:

1. PS to Hon'ble Minister, NRE & PSO to Secretary, MNRE
2. All Advisers & Group Heads/ JS (TK)/JS(VJ)/ JS&FA, MNRE
3. DG, NISE, Gwalpahari, Gurgaon
4. All Directors/Scientists/ Dy. Secy.(Fin.)/ Under Secretaries in MNRE
5. Dir. (NIC) to upload this on the Ministry's website.
6. CA, MNRE / Consultant(NSM) / Cash Section
7. Hindi Section for Hindi version
8. Sanction folder

(A.N. Srivastava)
Director (NSM)

Annexure

Scheme for setting up 1000 MW of Grid-Connected Solar PV Power Projects by Central Public Sector Undertakings (CPSUs) and Government of India organisations under various Central / State Schemes / self-use / 3rd party sale / merchant sale with Viability Gap Funding (VGF) under Batch-V of Phase-II of JNNSM

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Ministry of New and Renewable Energy
Government of India
New Delhi
January 2015

1. Background

The Jawaharlal Nehru National Solar Mission (JNNSM) is a major initiative of the Government of India with active participation from States 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. The objective of the Mission is to establish India as a global leader in solar energy, by creating the policy conditions for its large scale diffusion across the country as quickly as possible. The Mission has set a target, amongst others, for deployment of grid connected solar power capacity of 20,000 MW by 2022 to be achieved in 3 phases (first phase upto 2012-13, second phase from 2013 to 2017 and the third phase from 2017 to 2022). The first phase (up to 2013) focused on promoting scale-up in grid-connected solar power capacity addition of 1000 MW through scheme of bundling with thermal power implemented through the NTPC Vidyut Vyapar Nigam Limited (NVVN) for minimizing the financial burden on Government, and a small component of 100MW with GBI support through IREDA. In the second phase, further capacity addition of 3000 MW under Central Scheme is envisaged through various schemes.

2. Status and achievement against 1000 MW Capacity Grid-Connected Solar Power:

Projects under Phase-I implemented through NVVN:

In the Phase 1 of the Mission, 950 MW solar power projects (excluding 84 MW selected under migration scheme) were selected in two batches (batch-I during 2010-11 and batch- II during 2011-12) through a process of reverse bidding. The resulting tariffs in Batch-I for SPV projects ranged between Rs.10.95 and Rs.12.76 per unit, with average of Rs.12.12 per unit and for solar thermal projects the tariff ranged between Rs.10.49 and Rs.12.24 per unit, with average tariff being Rs.11.48 per unit. In Batch-II, for solar PV projects, the tariff ranged between Rs.7.49 and Rs.9.44 per unit, with average tariff being Rs.8.77 per unit. The power from the plants is being purchased by the NVVN and being sold to distribution utilities/ Discoms after bundling with power from the unallocated quota of power from coal based stations of NTPC on equal capacity basis, thus effectively reducing the average per unit cost of solar power. A total capacity of 530 MW has been commissioned under these Batches till date. In addition, a capacity of 50.5MW under migration scheme, 90.8 MW under IREDA-GBI scheme and 21.5 MW under old Demonstration scheme has been commissioned, taking the total capacity commissioned during Phase-I to 692.8 MW.

3. Approach of Viability Gap Funding in Phase-II Batch-I of JNNSM

To incentivize setting up of a large number of Solar Power Projects and minimizing the impact of tariff on the distribution companies, various alternatives have been considered viz. (i) Bundling Scheme (ii) Viability Gap Funding (VGF) Scheme and (iii) Generation

Based Incentive Scheme (GBI). Phase-I was largely based on the option of Bundling Scheme and on GBI option to some extent. In Phase-II Batch-I of JNNSM, the option of "Viability Gap Funding" Scheme has been selected. The same will be implemented by the Solar Energy Corporation of India (SECI) in close association with the NVVN.

4. Proposal

The Scheme provides Viability Gap Funding for setting up grid-connected solar PV power projects of 1000 MW capacity in various parts of the country under Central/ State Schemes. The salient features are as under:

i) 1000 MW of solar PV power projects would be set-up by the CPSUs and Government of India organisations like NTPC, NHPC, CIL, IREDA, Indian Railways, etc. The CPSUs and Government of India organisations may participate in various Central/State Government Tenders, from time to time, during the period from 2014-15 to 2016-17, for sale of solar power to State Utilities/ Discoms or any other organisation. The CPSUs may also sign Power Purchase Agreements (PPAs)/ Power Sale Agreements (PSAs) with State Utilities/ Discoms at tariff determined by Central Electricity Regulatory Commission (CERC) or State Regulators or may develop projects for their own use or for sale of power to a third party at mutually negotiated rates.

ii) This is to motivate CPSUs to procure equipment from domestic manufacturers of cells and modules irrespective of how they sell power, to whom they sell power and under which scheme or programme of Government of India or State Government they sell power or sign PPA. They have to have a valid 25 years PPA to avail benefit under the scheme or if it is for their own use then an order/letter to that effect will be necessary.

iii) Benefit under this project will not be available where DCR clause is already there as tariff would then have taken care of the DCR clause.

iv) Viability Gap Funding (VGF) would be provided through SECI at a fixed rate of Rs. 1 Cr/MW for projects where domestically produced Cells and Modules are used, and Rs.50 lakh/MW would be provided in cases where domestically produced modules are used. The VGF amount arrived at is based on the proportionate share of costs of Cells & Modules with respect to the total Project Cost.

v) VGF will be released in two tranches as follows:

a. 50% on successful commissioning of the full capacity of the project(COD);
b. Balance 50% after one year of successful operation of the project.

vi) If the project fails to generate any power continuously for any 1 year within 25 years or its major assets (components) are sold or the project is dismantled during this tenure, SECI will have a right to refund of VGF on pro-rata basis, and if not paid by the developer then a claim on assets equal to the value of VGF released, on pro-rata basis.

vii) SECI will handle the scheme on behalf of MNRE. SECI will be given a fee of 1% of the VGF disbursed for handling the funds and managing the Scheme. The handling charge to SECI shall come within the overall provision of Rs. 1000 Cr.

viii) As soon as the projects of CPSUs are approved & PPAs are signed, where required, and the CPSUs decide to use domestically manufactured cells and modules as mentioned above, CPSUs will have an option to approach SECI for grant of VGF.

ix) SECI will process their application and give in-principle approval.

5. **Domestic Content Requirement (DCR)**: The Solar Projects to be set up by CPSUs/ Government of India Organizations must mandatorily procure cells and modules from domestic manufacturers. VGF will be released as per para 4.

Under DCR, the solar cells and modules used in the solar PV power plants must be made in India as per specifications and testing requirement fixed by MNRE as per Appendix-I.

x) The criteria of indigenously manufactured solar cells and modules used in the solar PV power plants are as explained below:

In case of crystalline Silicon technology, all process steps and quality control measures involved in the manufacture of the Solar Cells and Modules starting from P-type (or N-type) wafers till final assembly of the Solar Cells into Modules shall be performed at the works of PV manufacturers in India. The requisite P-type (N-type) wafers and other raw materials can be imported.

In case of Thin-film Technologies, the entire Modules assembly comprising of Thin-film shall be manufactured in India. The starting substrate (without any semiconductor junction) and other requisite raw material can be imported.

Benefit under this project will not be available where DCR clause is already there as tariff would then have taken care of the DCR clause.

xi) As an option MNRE will release VGF directly to Domestic Manufacturers through SECI instead of releasing the VGF to CPSUs/Government of India Organizations if the manufacturer supplies cells and modules to the CPSU/Government of India Organizations for that particular power plant based

on order placed by the CPSU/Government of India Organization/their EPC contractor. The release will be made after the project is commissioned and the CPSU/Government of India Organizations makes a request for release of VGF to SECI.

6. Funds Requirement

The estimated project cost would be Rs.6910 crore @Rs.6.91 crore per MW, for setting up of 1000 MW capacity. The scheme has a provision of VGF support of Rs.1000 crore for setting up of Grid-connected solar PV power projects of 1000 MW aggregate capacity to be developed by CPSUs under various Central/ State Schemes by using cells and modules made in India.

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Technical Requirements for Grid Solar PV Power Plants:

1.0 The following are some of the technical measures required to ensure quality of equipment used in grid-connected solar photovoltaic power projects:

1. **SPV Modules**

1.1 The SPV modules used in the grid solar power projects must qualify 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 62108

1.2 In addition, SPV modules must qualify to IEC 61730 for safety qualification testing at 1000V DC or higher. The modules to be used in a highly corrosive atmosphere throughout their lifetime must qualify to IEC 61701.

2. **Power Conditioners/ Inverters**

The Power Conditioners/Inverters of the SPV power plants conform to the latest edition of IEC/ equivalent BIS Standards as specified below:

Efficiency Measurements	IEC 61683
Environmental Testing	IEC 60068 –2
Electromagnetic Compatibility (EMC)	IEC 61000 series –relevant parts
Electrical Safety	IEC 62109-1&2
Protection against Islanding of Grid	IEEE1547/UL 1741/ equivalent
Other Sub-systems/ Components:	BIS Standard

3. Other subsystems/components used in the SPV power plants (Cables, Connectors, Junction Boxes, Surge Protection Devices, etc.) must also conform to the relevant international/ national Standards for Electrical Safety besides that for Quality required for ensuring Expected Service Life and Weather Resistance.

4. **Authorized Test Centres**

The PV modules / Power Conditioners deployed in the power plants must have valid test certificates for their qualification as per above specified IEC/ BIS Standards by one of the NABL Accredited Test Centres in India. In case of module types/equipment for which such Test facilities may not exist in India, test certificates from reputed International Laboratory Accreditation Cooperation (ILAC) Member Labs abroad will be acceptable.

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