

No. 30/26/2014-15/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: 12th December 2014

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

Subject: Implementation of a Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects in the country commencing from 2014-15 and onwards (i.e. from the year 2014 – 15 to 2018 – 19).

Sir,

I am directed to convey sanction of the President for implementation of a Scheme for setting up at least 25 solar parks each with a capacity of 500 MW and above with a target of over 20,000 MW of solar power installed capacity in a span of 5 years from 2014-15 to 2018-19; with an estimated Central Financial Assistance (CFA) of Rs.4050.00 crore (Rs. four thousand and fifty crore only), as per provisions of the Scheme enclosed at Annexure.

2. Objective

The scheme aims to provide a huge impetus to solar energy generation by acting as a flagship demonstration facility to encourage project developers and investors, prompting additional projects of similar nature, triggering economies of scale for cost-reductions, technical improvements and achieving large scale reductions in GHG emissions. It would enable States to bring in significant investment from project developers, meet its Solar Renewable Purchase Obligation (RPO) mandate and provide employment opportunities to local population. The State will also reduce its carbon footprint by avoiding emissions equivalent to the solar park's installed capacity and generation. Further, the State will also avoid procuring expensive fossil fuels to power conventional power plants.

3. Implementation arrangements

3.1 Applicability: All the States and Union Territories are eligible for benefitting under the scheme.

3.2 Implementation Agency: The solar parks will be developed in collaboration with the State Governments and their agencies. Solar Energy Corporation of India (SECI) would be MNRE's Agency for handling this Scheme. The choice of implementing agency for developing and maintaining the park is left to the State Government. The States, applying under the scheme, will have to designate an agency for the development of solar park. Solar parks are envisaged to be developed in the 4 modes as mentioned in the Scheme. The agency identified out of the above stated 4 modes shall be the Implementing Agency. The choice of implementing agency for developing and maintaining the park is left to the State Government.

3.3 Financial Model: Implementing agency may raise funds as per Financial model given in the Scheme.

4. Projects of any solar technology may come up in the Solar Park. The flexibility in choosing technology by the Project Developer will ensure adoption of cost effective and state-of-the-art technology which is commensurate with the dynamic requirements of the project.

P.t.o.

5. **Power Purchase Agreement:**

The solar power developer(s) for project(s) within the solar park shall enter into Power Purchase Agreement(s) (PPAs) with Central Utilities/State Utilities/Discoms/Third Parties/Captive Users who are willing to buy power from the developer(s). The tariff for the sale of power through PPAs could be either Central Electricity Regulatory Commission (CERC)/State Electricity Regulatory Commission (SERC) regulated price or that determined through bidding process. The projects can come up under any Central/State/UT Government Schemes/Programmes or can be for third party sale, captive use or merchant sale.

6. **Fund for power evacuation**

The power evacuation arrangement will consist of two parts i.e. pooling stations and network within Park to collect power from each project and transmitting it to the transmission sub-station at the park boundary as the first part and the transmission sub-station along the transmission line upto Central Transmission Utility (CTU)/State Transmission Utility (STU) existing grid as the second part. The implementing agency would be responsible for the first part and the CTU/STU would be the responsible for the second part. For both these parts i.e. entire evacuation arrangement, MNRE grant may be used. Loan from multilateral/bilateral agencies may also be used as a component to fund the power evacuation infrastructure by the implementing agency and CTU/STU. If the capital expenditure for the evacuation network is high then a separate proposal may also be considered for funding from National Clean Energy Fund (NCEF), Green Corridor Programme or any other source.

7. **Central Financial Assistance (CFA):**

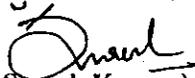
- CFA @ Rs.25.00 lakh (Rs. twenty five lakh) per park would be released by MNRE to SECI for DPR preparation of the Solar Park, conducting surveys, etc.
- Besides, CFA of up to Rs.20.00 lakh (Rs. twenty lakh) per MW or 30% of the project cost, including Grid-connectivity cost, whichever is lower, would be released to SECI on achieving the milestones given under para 7 of the Scheme. For release of requisite funds, the State Government will send a formal proposal to MNRE.
- The grant will be managed and released by SECI, on behalf of MNRE, for which SECI will be given a fund handling fee of 1% of the grant released.

8. If there is need for making any amendment to this Scheme for better implementation or any relaxation is required in the norms for Solar Parks, MNRE will be competent to make such amendments with the approval of Minister-in-charge, without increasing the financial requirements.

9. 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).

10. 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/1763/2014-15 dated 12th December 2014.

Yours faithfully,


(K.G. Suresh Kumar)

Under Secretary to the Govt. of India
Phone: 011-24360707, Extn. 1912

Encl: As above

Contd.....

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
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(K.G. Suresh Kumar)
Under Secretary to Govt. of India

Scheme for development of Solar Parks and Ultra Mega Solar Power Projects

1. Background

India, with its large population and rapidly growing economy, needs access to clean, cheap and reliable sources of energy. India lies in the high solar insolation region, endowed with huge solar energy potential with most of the country having about 300 days of sunshine per year with annual mean daily global solar radiation in the range of 4 - 6 kWh/m²/day. Solar power projects can be set up anywhere in the country, however the scattering of solar power projects leads to higher project cost per MW and higher transmission losses. Individual projects of smaller capacity incur significant expenses in site development, drawing separate transmission lines to nearest substation, procuring water and in creation of other necessary infrastructure. Also it takes a long time for project developers to acquire land, get change of land use and various permissions, etc. which delays the project.

The solar park is a concentrated zone of development of solar power generation projects and provides developers an area that is well characterized, with proper infrastructure and access to amenities and where the risk of the projects can be minimized. Solar Park will also facilitate developers by reducing the number of required approvals.

Starting with the 'Charanka Solar Park' in Gujarat, and closely followed by the 'Bhadla Solar Park' in Rajasthan, solar parks have quickly emerged as a powerful mechanism for the rapid development of solar power projects in the country. These parks have obtained their initial impetus from the Jawaharlal Nehru National Solar Mission (JNNSM), which provided the policy framework and roadmap for solar power development in the country.

Charanka Solar Park in Gujarat is the first-of-its-kind large scale solar park in India with contiguous developed land, transmission connectivity and provision of other amenities and infrastructure. A solar power developer can get fully developed land along with transmission and other facilities and can, therefore, set up a power project immediately. The Charanka Solar Park has a capacity of 590 MW, out of which 224 MW has already been commissioned by 20 developers.

The solar parks in Gujarat and Rajasthan not only enable the states to meet their policy targets for solar power and solar renewable purchase obligations, they also contribute towards the ambitious targets put in place by the JNNSM. In addition, the clean power generated by these solar projects play a role in reducing India's carbon footprint, promote high end technology investments, provide employment and empower local communities. MNRE, through this scheme will target development of similar solar park across India.

Large size projects have a potential to bring down the cost of Solar Power. Therefore, Ultra Mega Solar Power Projects having capacity of 500 MW or above have been planned in India. Large chunks of land are available in some States for solar park development. There are some developers who are keen to individually take up very large projects. Land has so far been identified in Gujarat, Madhya Pradesh, Telangana, Andhra Pradesh, Karnataka, Uttar Pradesh, Meghalaya, J&K (Leh and Kargil), Punjab and Rajasthan.

2. Proposal

MNRE through this scheme plans to set up 25 solar parks, each with a capacity of 500 MW and above; thereby targeting around 20000 MW of solar power installed capacity. These solar parks will be set up within in a span of 5 years commencing from 2014-15 and the solar projects may then come up as per demand and interest shown by developers.

At the State level, the solar parks will enable the States to bring in significant investment from project developers, meet its Solar Renewable Purchase Obligation (RPO) mandate and provide employment opportunities to local population. The State will also reduce its carbon footprint by avoiding emissions equivalent to the solar park's installed capacity and generation. Further, the State will also avoid procuring expensive fossil fuels to power conventional power plants.

The solar park will provide a huge impetus to solar energy generation by acting as a flagship demonstration facility to encourage project developers and investors, prompting additional projects of similar nature, triggering economies of scale for cost-reductions, technical improvements and achieving large scale reductions in GHG emissions. Some Ultra Mega Solar Power Projects may be set up in these Parks or the entire park may individually be an Ultra Mega Solar Power Project.

2.1 Applicability: All the States and Union Territories are eligible for benefits under the scheme.

2.2 Capacity: Park to be taken up for development should be of capacity of 500 MW and above. Smaller parks in Himalayan & other hilly States where contiguous land may be difficult to acquire in view of the difficult terrain will also be considered. Smaller parks may also be considered in States where there is acute shortage of non-agricultural lands.

3. Implementing agency

The solar parks will be developed in collaboration with the State Governments & their agencies. The MNRE Nodal Agency would be Solar Energy Corporation of India (SECI) on behalf of Government of India (GOI). SECI will handle funds to be made available under the scheme on behalf of GOI. SECI will administer the scheme under the direction from MNRE.

The States applying under the scheme will have to designate an agency for the development of solar park. Solar parks are envisaged to be developed in the following four modes:-

(i) **Mode 1:** The State designated nodal agency undertakes the development & management of the solar park. This agency could be a State Government Public Sector Undertaking (PSU) or a Special Purpose Vehicle (SPV) of the State Government.

(ii) **Mode 2:** A Joint Venture Company is set up between State designated nodal agency and SECI for the development & management of solar park with 50% equity from SECI and 50% equity from the State Government Agency (State Government may also allow more than one agency provided total equity from State Government remains 50%).

(iii) **Mode 3:** The State designates SECI as the nodal agency and SECI undertakes the development and management of solar park on behalf of State Government on mutually agreed terms.

(iv) **Mode 4:** Private entrepreneurs promote solar parks without any equity participation from SECI, but may have equity participation from the State Government or its agencies.

The Implementing Agency or Special Purpose Vehicle (SPV), as identified under the provisions at (i) to (iv) above, shall undertake following activities to achieve the objective of speedy establishment and implementation of Solar Power Parks in the States:-

- i. Plan, finance, develop, execute, operate and maintain the Solar Power Park
- ii. Identify potential site and acquire/leasehold/possess land for Solar Power Park
- iii. Carry out site related studies/investigations
- iv. Obtain statutory & non statutory clearances and to make area development plan within Solar Power Park.
- v. Design a plan for sharing development cost between the developers.
- vi. Create necessary infrastructure like water, transmission lines, roads, drainage etc. to facilitate Solar Power Project developer for faster implementation of Solar Power Projects
- vii. Frame out transparent plot allotment policy and specify procedures pursuant to the relevant State policies and their amendments thereof.
- viii. Provide directives for technology-specific land requirements
- ix. Engage the services of national agencies/global experts/consultants to promote Solar Power Park and related activities.
- x. Facilitate the State Government to establish educational institutions/training facilities within Solar Power Park for development of manpower skill related to Solar Power

- xi. Include any other activity related to Solar Power Park, such as manufacturing as per the directives from MNRE and the State Government.
- xii. Conduct necessary evaluation of environmental and social impacts of utility scale solar deployment as per law and before allocating the land to prospective developers.

All infrastructural requirements outside the park such as connecting road, provision of water supply, construction electricity, etc. to make the park functional, will be the sole responsibility of the concerned State Government.

4. Land acquisition / site selection

Land for the setting up of the solar park will be identified by the State Government unless the implementing agency has its own land. It will be the responsibility of the State Government to make the land available. States are encouraged to identify sites receiving good solar radiation and sites which are closer to CTU (i.e. Power Grid Corporation of India Limited), preferably locations with spare transmission capacities and water availability. The park must have at least 5 Acres per MW towards installation of solar projects and will give opportunity for all technologies in a technologically agnostic fashion.

In order to provide for such a large tract of contiguous land with appropriate insolation levels, the state government may prioritize the use of government waste/non-agricultural land in order to speed up the acquisition process. It will be preferred if most of the required land is Government owned and very little private land is to be acquired. The price of the land is to be kept as low as possible in order to attract the developers and, therefore, the site should be selected in such a manner so that inexpensive land can be made available. If land cannot be made available in one location, then land in few locations in close vicinity may be taken. Possibility of using cold and hot deserts, sides of highways can also be actively explored.

5. Facilities to be provided

The solar park will provide specialized services to incentivize private developers to invest in solar energy in the park. These services while not being unique to the park, are provided in a central, one-stop-shop, single window format, making it easier for investors to implement their projects within the park in a significantly shorter period of time, as compared to projects outside the park which would have to obtain these services individually.

On the Charanka pattern, the implementing agency is tasked with acquiring the land for the Park, cleaning it, levelling it and allocating the plots for individual projects. Apart from this, the agency will also be entrusted with providing the following facilities to the solar project developers for the development of the solar park:-

- i. Land approved for installation of solar power plants and necessary permissions including change of land use etc.
- ii. Road connectivity to each plot of land
- iii. Water availability for construction as well as running of power plants and demineralization plant

- iv. Flood mitigation measures like flood discharge, internal drainage etc.
- v. Construction power
- vi. Telecommunication facilities
- vii. Transmission facility consisting pooling station (with 400/220, 220/66 KV switchyard and respective transformers) to allow connection of individual projects with pooling station through a network of underground cables or overhead lines.
- viii. Housing facility for basic manpower wherever possible
- ix. Parking, Warehouse etc.

The solar park will be a large contiguous stretch of land with high insolation levels, saving the private developer from making the effort of identifying the ideal site for the plant. In addition, the site within the park is already levelled and developed reducing these costs for the project developer.

In addition, the Park will provide road access (both approach roads and smaller access roads to individual plots), water (via a dedicated reservoir located within the premises), boundary fence and security, each of which would have entailed additional costs for the developer outside the park.

Each of these specialized services offer significant benefits to the developers but come at a premium. Land plots within the solar park are more expensive than outside. But this premium is easily justifiable by these services, which are bundled into the land cost. However, the most important benefit from the park for the private developer is the significant time saved. The centralized, single window nature of the services within the park reduces the time between project conceptualization and operations, translating into economic and real monetary gains for the private developers and the State.

Centralized Weather Monitoring Station would be set-up by the implementing agency so as to provide weather data to the projects in the solar parks.

6. Financial model

The implementing agency, entrusted with implementing the programme will get the land developed and provide necessary infrastructure like road connectivity, transmission infrastructure etc. Significant investments will also be made in the operation & maintenance of the solar park, employing staff and other activities like marketing etc. The entire cost of development including cost involved in acquisition of land will form the total cost for the project for which an estimate will be prepared beforehand by the nodal agency. Based on this estimate the implementing agency will formulate a recovery model to ensure the sustainability of the park. The implementing agency may raise the funds as follows:-

- The implementing agency may give wide publicity and have a process of registration for prospective developers to register so that the demand for the solar park can be assessed.
- The implementation agency may sell/lease out the plots to prospective project developers. Lease period shall be of 30 years or as per State land

policy. The Allotment Price per metre square (inclusive of all applicable taxes, duties, cess etc.) payable by the plot applicant for the applications must be specified in a transparent manner. The allotment price may be reviewed annually and an annual increment may also be specified. The maximum stretch of plot to be allotted will be decided as per the benchmarks finalized by the implementing agency.

- A one-time registration fee (per project or per MW) may be collected by inviting applications from the prospective buyers when the scheme is finalized, land identified and marked. An advance may be collected from the prospective buyers when 50% of the land is acquired. This advance will be 10% of the sale price or lease amount. Another instalment of 25% of the price of land or lease amount may be taken when full land is acquired. Further instalments of 10% each time may be collected while plot are being developed. Final 15% of the price of land or lease amount may be collected at the time of allotment of the plot to the buyer.
- The implementing agency may put in some of its own equity and can raise loans, depending on the availability of funds and requirement. The subsidy of MNRE under the scheme would bring down the cost of the project to that extent. The SPV will also create a small corpus for working capital to ensure upkeep and maintenance in the future, which may be supplemented with some annual charges. The implementing agency may change the above plan if it is in the interest of the solar park.

7. MNRE support

The State Government will first nominate the implementing agency for the solar park and also identify the land for the proposed solar park. It will then send a proposal to MNRE for approval along with (or later) the name of the implementing agency. The implementing agency may be sanctioned a grant of upto Rs.25 Lakhs for preparing Detailed Project Report (DPR) of the Solar Park, conducting surveys etc. The DPR must be prepared in 60 days.

Thereafter, application may be made by the implementing agency to SECI for the grant of up to Rs.20 lakhs/MW or 30% of the project cost including Grid-connectivity cost, whichever is lower. The approved grant will be released by SECI as per the following milestones:-

Sl. No.	Milestone	% of subsidy disbursed
1	Date of issue of administrative approval	5%
2	Land acquisition (not less than 50% land acquired)	20%
3	Financial Closure	20%
4	Construction of Pooling Substation, Land Development and other Common facilities as per DPR	25%
5	Construction of transmission line and Grid Connectivity	20%
6	Final instalment on completion	10%
	Total	100%

The grant will be managed and released by SECI on behalf of MNRE for which SECI will be given a fund handling fee of 1%. If the park is developed in phases, grant will also be phased out in proportion to expenditure in each phase.

Based on above, the estimated cost has been worked as under:-

	(Rs. in Crores)
(i) Cost of 20,000 MW @ Rs.20 Lakh/MW	4000.00
(ii) 1% fund handling fee for SECI on above amount	40.00
(iii) Cost of DPR preparation etc. for 25 Solar Parks @ Rs. 25 Lakh each park	6.25
(iv) Training, consultancy & other related Expenditure (to be incurred by MNRE, SECI, implementing agency)	3.75
Total	4050.00

8. Transmission and evacuation of power from solar park

Interconnection of each plot with pooling stations through 66 KV /other suitable voltage underground or overhead cable will be the responsibility of the solar project developer.

The designated nodal agency will set up the pooling stations (with 400/220, 220/66 KV or as may be suitable switchyard and respective transformers) inside the solar park and will also draw transmission to transmit power to 220 KV/400 KV sub-station.

The responsibility of setting up a sub-station nearby the solar park to take power from one or more pooling stations will lie with the Central Transmission Utility (CTU) or the State Transmission Utility (STU), after following necessary technical and commercial procedures as stipulated in the various regulations notified by the Central/State Commission.

If the State Government is willing to buy over 50% of the power generated in the solar park, preference will be given to STU, which will ensure setting up of sub-station and development of necessary infrastructure for transmission of power from substation to load centres.

The designated implementing agency will intimate POWERGRID and CEA at least 6 months before so that the planning and execution can be carried out in time.

If the state is not willing to buy at least 50% of the power generated in the solar park, then CTU may be entrusted with the responsibility of setting up 400 KV or bigger sub-station right next to the solar park and its connectivity with the CTU. For setting up of this transmission & evacuation infrastructure, Power Grid may prepare a separate project to be funded from NCEF / external funds / Green Corridor project, if the cost is very high. The system would be planned in such a manner so that there is no wheeling charge applicable on solar power in accordance with the CERC Regulation or reduce the wheeling charges to affordable level.

To build this infrastructure using the highest possible standards, the whole solar power evacuation network scheme may be designed using latest technologies like SCADA, GIS, Bay controller, online monitoring equipment for dissolved gas analysis, OPGW, PLCC etc.

9. Power Sale Arrangement:

Acceptance for development of solar park under the Scheme does not guarantee power purchase agreement (PPA) or tariff for the power to be produced. The project developers need to have their own arrangement for a PPA or get selected in any Government of India or State Government Scheme. The developer will be free to set up projects under any scheme or for third party sale.

10. Loan

MNRE will also put in efforts to tie up with multilateral/ bilateral funding agencies to finance the entire or a part of the cost of the solar parks. The MNRE grant will be treated as the implementing agencies' contribution to get this loan. The loan tenure and the moratorium period will be set in accordance with the banks' terms and conditions while the annual interest will be set in accordance with banks' LIBOR-based lending facility.

11. Fund for power evacuation

The connectivity with grid i.e. 220/400 kv substation and transmission line to connect with CTU / STU's existing network is a very important component. For power evacuation network, MNRE grant may be used. Loan from multilateral/bilateral agencies may also be used to the power evacuation network. If the expenditure is high then a separate proposal may also be considered for funding from National Clean Energy Fund (NCEF), Green Corridor Programme or any other source.

12. Equity Contribution

The implementing agency whether single company or JV may not require a high equity infusion as most of the cost will be covered through as MNRE grant and loan. Most of the land is expected to be Government land. The total expenses on development of park will be worked out by the implementing agency in a transparent manner.

The expenses after taking into account MNRE subsidy, may be recovered through sale or lease charges of land from the developers.

The implementing agency can generate a reasonable amount of surplus which can be profit for the agency or its promoters which may preferably be converted in to equity of the JV partners or the implementing agency so that the implementing agency gets financial strength for long term sustenance.

13. Ultra Mega Solar Power Projects

Ultra Mega Solar Power project is a single power project with capacity of over 500 MW. These projects may be set up in some of these Solar Parks. The projects may be bid out after developing the park or simultaneously with park developments. In some cases, the full park may be one Ultra Mega Project.

In such cases the JV set up to develop the Ultra Mega Solar Power Project may become the implementing agency also.

14. Hybrid Projects

Some other forms of RE like wind, biomass etc. may also be allowed to come up in the park wherever feasible. Projects with CSP technology may in these parks have upto 15% of auxiliary fuel of gas or biomass.

15. Timelines

Scheduled timelines for setting up of Solar Power Park is as under:-

Sl. No.	Milestone	Timelines
1	Date of issue of administrative approval	Zero Date
2	Land acquisition and Financial Closure	6 months from zero date
3	Construction of Pooling Substation, Land Development and other Common facilities as per DPR	15 months from zero date
4	Transmission line and Grid Connectivity	18 months from zero date
5	Final instalment on completion	18 months from zero date

16. Manufacturing

Manufacturing of solar products and components may also be allowed in the parks.

17. Interpretation

In case of any ambiguity in interpretation of any of the provisions of the Scheme, the decision of the Minister-in-Charge, MNRE shall be final.

18. Arbitration

Any dispute that arises out of any provision of the scheme shall be settled by an Arbitrator appointed by this Ministry for the purpose and his decision shall be final and binding.

19. Power to remove difficulties

Given that the scheme is new, if there is need for any amendment to this Scheme for better implementation or any relaxation is required in the norms for Solar Parks due to operational problems, MNRE will be competent to make such amendments with the approval of Minister-in-charge.

20. State Government's obligation to purchase power:

The State Government in which the solar park is developed must agree to buy at least 20% of the power produced in the park through its Discom. The States which agree to buy higher percentage of power will be given preference. In such cases, where the State refuses to buy at least 50% power, the park should preferably be connected with CTU system. If STU system has to be used to evacuate power to other states, the STU/State Government concerned will agree to waive off the wheeling charges or reduce the wheeling charges to affordable level.

21. Monitoring progress of Scheme:

MNRE will appoint a Nodal Officer in the Ministry to help, guide, handhold and closely monitor progress of the scheme to ensure that timeliness as envisaged for completion of various activities are adhered to for development of solar parks. MNRE will extend all possible help to ensure that the investors complete their task on time.
