

Production and Distribution of Renewable Sources of Energy in Rajasthan

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ABSTRACT: Globally, energy consumption is increasing drastically due to the economic growth, rapid industrialization and increasing domestic comforts. Also energy is now considered to be important criteria for sustainable development of any country. Melting of ice caps, overabundance of greenhouse gases, global warming and other drastic climatic changes worldwide, has turned attention towards environmental issues. Exploiting the enormous potential of renewable energy sources could be one of the alternatives of total dependency on the conventional energy resources. In India, the population is sparsely scattered in vast geographic location, because of which the government often cannot provide electric power to the entire citizen through the centralized national grid. In that case, renewable energy is a good option to as it can be used as a stand-alone distributed generation system. In this paper, the availability and current status of renewable energy in Rajasthan is summarized. This summary of available resources helps researchers, investors and developers to find probability of improvement in technologies to harness renewable energy and to map out further expansion of renewable energy generation.

KEYWORDS: renewable, sources, production, distribution, Rajasthan, global warming, exploiting, generation

I. INTRODUCTION

The power transmission and renewable energy corporations in Rajasthan are working on energy conservation and efficiency through the practices such as periodic regional auditing after conducting baseline surveys and creative financing in the sector. These measures, coupled with the collaboration with energy service bodies, have been taken for the first time to enhance efficiency. The State produced 5,000 MW of solar power and the production capacity of renewable energy is estimated to increase to 8,000 MW. "The new energy paradigm presents advanced opportunities in the power sector. The energy efficiency practices will also reduce carbon emissions in the State,[1,2]The focus on the future ready micro, small and medium enterprises (MSMEs) is also expected to improve energy efficiency practices in the State. New aspects of energy conservation were highlighted during a conference on "Profitability through energy conservation and efficiency" organised by the Confederation of Indian Industry (CII) here. Solar power has evolved into more than just a replacement for our depleting resources; it has also become a symbol of our development. The solar subsidy is an effort by the Rajasthan government to bring clean and green energy to every business and private sector in the country. This will help you save money while also removing your reliance on the government grid.

Rooftop solar subsidy in Rajasthan of up to 3 kW will be eligible for a 40% subsidy. Rooftop solar installations over 3 kW and up to 10 kW will get a 40% subsidy for the first 3 kW and 20% for the remaining capacity. In comparison, installations beyond 10 kW will receive a 40% subsidy for the first 3 kW and 20% for the remaining capacity. However, there is no subsidy for capacities more than 10 kW. The Central Financial Assistance on Rooftop Solar Systems for Homes or Group Housing Societies is exclusively available to the residential sector, and there is no subsidy above 10 kW capacity. Rajasthan Renewable Energy Corporation Limited (RRECL) has enlisted the services of over 100 suppliers to build solar installations under the subsidies plan. If you're interested, your distribution company can provide you with the contact information for empaneled merchants.[3,4]

II. DISCUSSION

Solar energy is a renewable form of energy that is being appreciated by the government all over the country. The subsidy on solar panels in Rajasthan will help people adapt and afford the solar panels instead of the non-renewable form of energy.

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Some of the impacts that the subsidy will have in Rajasthan are as follows:

- It will provide employment and increase the growth of economies

Unemployment is one of the biggest problems in the economy, which drops the GDP of the country. The unemployment rate in Rajasthan is 27%. The subsidy will give people an opportunity to get employed.

- Solar power can be used at any time of the day

Power cuts are a major issue in many states, and Rajasthan is one of them. The solar panel subsidy in Rajasthan will resolve this issue as solar panels allow people to use electricity at any time of the day.[5,6]

- Supports the sustainable approach

The world needs to save for the future generation and move towards a sustainable approach. The use of green energy will save resources for future generations.

Perhaps you're wondering if you're also qualified for a solar system subsidy. The government of Rajasthan has specified the eligibility criteria for the subsidy of solar panels. Take a look at the list below to see who qualifies for solar subsidies:

- A government subsidy on a solar system is available to all residential households
- Subsidies are available for registered societies, multi-storey flats, and cooperative group housing societies
- Solar subsidy plans are available to educational institutions such as schools, colleges, etc.
- NPOs (non-profit organizations) such as nursing homes, orphanages, and other similar groups are also eligible for the subsidy
- The subsidy programme is available to farmers who want to put solar pumps in their fields

The subsidy will benefit many people to make a living. Here are some of the insights from the solar panel subsidy in Rajasthan:

- Solar Return on Investment[7,8]

The subsidy provided by the government will help to reduce the cost of solar energy. Therefore, residential and business customers who pay more than Rs.1,000 per month in power costs may think about installing an on-grid solar system to save money. It will save you money and provide you with a fantastic return on investment in renewable energy.

- Savings on the Electricity Bills

Solar electricity allows you to run all of your appliances during the day, and subsidies will help you capture these schemes' advantages. Remember that you are not utilizing grid power at this time. Therefore your electricity bill will not rise throughout the day.

- Tax Benefit & Accelerated Depreciation

The subsidy will help customers in the commercial, residential, and industrial sectors to benefit from expedited depreciation. Solar power-producing projects can take advantage of the federal government's accelerated depreciation benefit under section 32 of the Income Tax Act of 1961.[9,10]

- Companies are advised to grab the tax concession provisions under the subsidy

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Companies can utilize this to lower their tax burden significantly in the first few years of a project, up to 100% of the project cost (80% accelerated depreciation and 20% additional depreciation)

The subsidy provides concessions and exemptions on particular materials imported for the production of solar power generation items and for usage in solar power generating projects, which the federal government has legislated.

- The government will directly pay their subsidy

The government's subsidy will be paid directly to the solar system installation firm such as Waaree Energies Solar EPC solutions. You will not be directed to intermediaries.

III. RESULTS

The total project capacity for Rajasthan is 45 MW, based on an average project size of 6 KW. There is a chance that about 7000-8000 projects will be installed only under the Subsidy Scheme.

Vendors Who Have Been Appointed: Only empaneled providers and vendors should install the system for residential customers. Subsidy on solar panels in Rajasthan will be distributed in a structured manner which will help people take the utmost advantage of this scheme. Almost every state provides an online platform for submitting a subsidy application. You can contact your state's nodal agency through them. The subsidy rate varies from state to state. Each state has its solar agency with its own set of rules. In India, the government often gives 20% to 90% subsidies. The solar subsidy will allow people to install solar panels in their homes directly at the subsidized rate. Waaree can help you navigate the process easily and make good use of this scheme. MNRE (Ministry of New and Renewable Energy - Central Government) will have installed 227 Gigawatt (22,70,00,000 kilowatt). To meet this goal, the government is encouraging solar energy in a variety of ways. The subsidy on solar panels in Rajasthan will have a huge investment. The government has also set aside Rs.5,000 crore for solar subsidies alone. Solar panels may now be installed at a reasonable cost, thanks to government incentives. Nokh solar park is a 925 megawatt (MW) solar project being developed in Jaisalmer district of Rajasthan, India. Rajasthan Solarpark Development Company Limited (RSDCL), a subsidiary of Rajasthan Renewable Energy Corporation (RREC), is developing the project in partnership with National Thermal Power Corporation (NTPC). An implementation support agreement (ISA) was signed between the companies, under which RSDCL will develop the basic infrastructure, while NTPC will develop the solar photovoltaic (PV) projects in the solar park. The Indian solar park project will involve an investment of more than Rs44.5bn (\$589.39m), including Rs40bn (\$529.7m) for the development of solar photovoltaic (PV) projects and Rs4.5bn (\$59.6m) for the construction of basic infrastructure. It is being developed under the Union Ministry of New and Renewable Energy's (MNRE) scheme for the development of solar parks and ultra-mega solar power projects and is in line with the Rajasthan Solar Energy Policy, 2011. Scheduled to be completed the project is expected to contribute Rs185m (\$2.4m) a year in the form of development charges to the state exchequer for 25 years. The proceeds will be used to develop the state's renewable energy and transmission infrastructure. The solar park site is located at Nokh village in Tehsil Pokaran of Jaisalmer district in the state of Rajasthan.[11]

Rajasthan is one of the most preferable destinations for solar park projects in India due to the availability of the highest number of sunny days in a year, high insolation, private non-agricultural land, and large tracts of government-owned land. The state government's Rajasthan Solar Energy Policy and Rajasthan Wind and Hybrid Energy Policy also support the investors. Nokh solar park will have four sections, with three sections of 245MW each being developed in engineering, procurement, and construction (EPC) mode and a 190MW section in developer mode. "Scheduled to be completed the project is expected to contribute Rs185m (\$2.4m) a year in the form of development charges to the state exchequer for 25 years." The development of 735MW (3x245MW) balance of system package of the project includes site clearance and geotechnical investigation, design, and construction of foundation and erection of module mounting structure (MMS) for PV panels, including fixing and interconnection of PV modules. Other works include design, engineering, manufacturing, supply, transportation, installation, testing, and commissioning of solar PV panels.

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The project will also involve the construction of a central monitoring and control station with switchgear room, battery room, supervisory control and data acquisition (SCADA) room, storeroom, and security cabin. NTPC issued a tender to select developers for the 190MW section of the solar project at Nokh Solar Park .[12]

IV. CONCLUSIONS

RSDCL will build four park pooling substations and transmission lines for power evacuation from the Nokh solar park. Power will be transmitted to a 33/220kV pooling station through a 33kV capacity cable and will reach the 765kV Bhadla-II sub-station of Power Grid Corporation of India (PGCIL) from the solar park. The company will construct 220kV and 132kV transmission lines for the solar park on a turnkey basis in Jaisalmer. Associated electrical equipment, including transformers, panels, protection system, breakers, isolators, and cables required for interfacing with the grid will also be installed. Development of solar parks in Rajasthan by RSDCL=RSDCL is a special purpose company established for the development and management of solar parks in Rajasthan. It developed Bhadla solar park, a 2.25GW solar complex, covering more than 14,000 acres in Jodhpur district under the MNRE scheme. The state government plans to develop more than 1,000MW capacity solar parks in Jodhpur, Jaisalmer, Bikaner, and Barmer districts in a phased manner.[13]

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