

## Appendix H

### Central and State Policies Supporting the Enabling Environment

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In addition to the state policies driving demand for solar energy, the states provide various other complementary policies that support the “enabling environment” as discussed in the NRDC-CEEW main report.

#### **Grid Connectivity**

To address the issue of grid connectivity, some states have taken the lead to facilitate project development and provide support (Table H1).

**Table H1: State Policies to Address Grid Connectivity**

State	Grid Connectivity Incentives
<b>Rajasthan</b>	<ul style="list-style-type: none"> <li>The state government has provided a clear mandate for the development of adequate infrastructure by state’s transmission utility (STU) to evacuate solar power; a project costing Rs. 2900 crore for development of power evacuation infrastructure is already under execution by the utility.</li> <li>Under government policy, power transmission line from the solar power plant to substation is to be laid down by the transmission utility for projects selected for direct sale to distribution companies. However, for projects under NSM, Open Access, REC Mechanism &amp; other schemes for sale of power to parties other than distribution companies (Discoms) of Rajasthan, the project developer will lay down the transmission line.<sup>1</sup></li> <li>The Rajasthan Rajya Vidyut Prasaran Nigam (RVPN), setup in 2000, has been declared as the STU of Rajasthan. RVPN is responsible for the planning, development, operation and maintenance of the transmission facilities for lines 132 kV and above in Rajasthan. RVPN has developed a detailed project report to evacuate nearly 4,000 MW of solar and wind energy from a high renewable energy potential zone identified in Western Rajasthan. RVPN expects nearly 1,700 MW of solar power and 2,300 MW of wind power to be connected to its bulk power transmission system in the western part of Rajasthan. While some of the power is to be consumed in the state by the distribution companies, a large part of this power would be wheeled to other states to support them meeting their renewable power procurement obligations.</li> </ul>
<b>Gujarat</b>	<ul style="list-style-type: none"> <li>The Gujarat Energy Development Agency (GEDA) facilitates arranging Right of Way, water supply and in obtaining clearances and approvals, which are under the purview of the State Government.</li> <li>For solar projects under the state policy, Gujarat Energy Transmission Corporation (GETCO) lays down the lines from the solar substation to the GETCO substation subject to approval.</li> </ul>
<b>Maharashtra</b>	<ul style="list-style-type: none"> <li>The project developer is responsible for the development of evacuation infrastructure up to the metering point (or interconnection point for the renewable energy project). Beyond this point, the concerned transmission/distribution licensee is responsible for the development of evacuation infrastructure.</li> </ul>

## Solar Parks

Rajasthan and Gujarat states have announced initiatives for setting up solar parks in the states (Table H2). In addition to the states, MNRE has also announced a proposed vehicle for development of solar power.

**Table H2: State Policies for Solar Parks**

State / Organization	Solar Parks Initiatives
<b>Solar Energy Corporation of India</b>	<ul style="list-style-type: none"> <li>The Solar Energy Corporation is in very early stages of development, but the Ministry of New and Renewable Energy Corporation has announced that one of the activities of the proposed entity could be to put up a 1,000-MW solar park in the country.<sup>2</sup></li> </ul>
<b>Rajasthan</b>	<ul style="list-style-type: none"> <li>Solar Parks with capacity of more than 3.0 GW are at various stages of development in Jaisalmer, Bikaner, Barmer and Jodhpur districts of the state.</li> <li>The Rajasthan Solar Development Company Ltd (RSDP) has been created for development of Solar Parks. RSDP will formulate policy and rules in respect of land allotment, selection and qualification of firms, grid connectivity and infrastructure plans. It is expected that solar project developers and management of Solar Parks will share the cost of development of solar parks.</li> <li>The solar park in Bhadla (Jodhpur district) will accommodate both solar photovoltaic (PV) power plants (Phase I) and concentrated solar power (CSP) plants (in subsequent phases). A high-level master plan is being developed with support of the Asian Development Bank (ADB) to ascertain the feasibility of the chosen location, and to prepare a detailed project report including laying out of plots, planning for common infrastructure, and developing cost estimates and financing plans. This park will be spread over 10,000 hectares (a survey for 3,000 hectares of land has been completed). The government targets a capacity 3,000 MW from the Jodhpur park, and the current bidding will be for 100 MW. Parks in three other places such as Jaisalmer, Bikaner, and Barmer districts are being planned to make Rajasthan a solar power hub in the world with an aim to generate up to 11,000 megawatt (MW) in 12 years.</li> </ul>
<b>Gujarat</b>	<ul style="list-style-type: none"> <li>Gujarat government has announced a number of large-scale solar parks, the first phase of which would add 500 MW of generating capacity. The Gujarat Power Corporation Limited (GPCL) would develop the solar park and lease the land to the project developers, while the Gujarat Energy Transmission Corporation Limited (GETCO) is mandated to develop the transmission evacuation from the identified interconnection points.</li> <li>Gujarat government has announced a solar park in Charnaka with an area of 3000 acres, sufficient for a solar production capacity of 500 MW. 22 projects currently under construction at Charnaka and are on schedule to be commissioned by December 2012. In total, the state utility has signed power purchase agreements for 958 MW.<sup>3,4,5</sup></li> </ul>
<b>Maharashtra</b>	<ul style="list-style-type: none"> <li>Metropolitan Region Development Authority (MMRDA), GOM is aiming setting up a Solar Park on a 117-hectare plot at Taloja, Maharashtra.<sup>6</sup></li> </ul>

## Roads

Roads or accessibility of solar PV sites are sometimes a barrier to project development, as the availability of the solar resource and favorable land for project development cannot always be aligned with proximity to existing roads. Thus, an early assessment of the extent of new road infrastructure required is important. While the solar policy does not address the issue of roads, some states have actively anticipated this requirement and are providing support to projects by helping establish road infrastructure (Table H3).

**Table H3: State Policies to Address Infrastructure Issues**

State	Infrastructure Policies
Rajasthan	<ul style="list-style-type: none"><li>Rajasthan has created the Rajasthan Renewable Energy Infrastructure Development Fund (RREIDF) for transmission network, roads etc.</li></ul>
Gujarat	<ul style="list-style-type: none"><li>The Gujarat Energy Development Agency (GEDA) helps the requirement of creation/upgrading of connecting infrastructure to the project site, i.e., roads etc.</li></ul>
Maharashtra	<ul style="list-style-type: none"><li>In Maharashtra, the public works department constructs roads on behalf of the project if funding is made available to the department from the project's promoters.</li></ul>

## Supporting agencies

NSM creates several incentives to promote a solar “ecosystem” within India. A list of the key institutional players and their roles in utility solar power.

- IREDA is a public limited Government company, under the control of Ministry of New and Renewable Energy (MNRE), to promote, develop and extend financial assistance for renewable energy and energy efficiency/ conservation projects. IREDA provides generation-based incentives to states and utilities for every unit of power purchased from rooftop PV and small-scale solar power plants. Special manufacturing incentives provide capital subsidies, low-interest loans and tax incentives for integrated manufacturing facilities. Capital subsidies ranging from 30-90% are available for off-grid solar lighting and other solar energy uses in rural communities.
- CERCs, SERCs, state governments, state nodal agencies, and regional electricity corporations
- NTPC Vidyut Vyapar Nigam (NVVN) was set up as the nodal agency for sale and purchase of solar power under phase 1 of the national solar mission and undertakes the sale of bundled power to utilities at the regulated prices.
- Solar Energy Corporation of India (SECI): This organization was announced in early 2012, with an initial paid capital of 20 billion rupees. SECI is designated to gradually take over responsibility for federal solar projects, currently being managed by NVVN.<sup>7</sup>

## Other key acts and regulation affecting grid-connected solar

- Water Act 1974, amended 1988: The Water Act conforms closely to the provisions of the Environment Protection Act (see below) and enables State Pollution Control Boards to set standards for the discharge of effluent and quality of water received. A solar project is required to get permission from the State Pollution Control Board before setting up operations.
- Air Act 1980 for prevention and control of pollution: The Air Act seeks to control air pollution by declaring restricted areas, prohibiting the use of polluting fuels and substances, and regulating the appliances that give rise to air pollution. State pollution control boards are authorized to implement standards set by a Central Pollution Control Board.
- Environment Protection Act 1986: The Environment (Protection) Act was enacted in 1986 after the 1984 gas leak in Bhopal and was designed for central government coordination of the various central and state authorities established under the Water and Air Acts. The Environment Protection Act gives the central

government the power to set standards on the environment, to prevent accidents, hazardous wastes, etc. The Act empowers the government to test and impose penal punishment for violations.

- Forest Conservation Act 1980: The Forest Conservation Act prohibits the use of forest-land for any other purpose without central permission. Violation or a lack of permit for use of forest-land for non-forest use is a criminal offence.<sup>8</sup>
- Scheduled Tribes and other Traditional Dwellers (Recognition of Forest) Rights Act, 2006: This Act provides for the diversion of forest-land for certain developmental activities for the local community. Under the Act, Gram Sabha is empowered to make recommendation for the diversion of forest-land (less than 1 hectare) for development of non-conventional energy resources.<sup>9</sup>

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<sup>1</sup> Mr. Sudhansh Pant, Chairman Discoms, CMD Jaipur Vidyut Vitaran Nigam Ltd., *Intersolar* conference presentation, December 2011.

<sup>2</sup> "Solar Energy Corpn plans to set up 1,000 MW part", *Panchabuta*, February 9, 2012, [panchabuta.com/2012/02/09/solar-energy-corp-n-plans-to-set-up-1000-mw-park/](http://panchabuta.com/2012/02/09/solar-energy-corp-n-plans-to-set-up-1000-mw-park/) (accessed April 27, 2012).

<sup>3</sup> Sudheer Pal Singh, "Gujarat to host Asia's largest solar energy park in two years", *Business Standard*, June 29, 2011, [www.business-standard.com/india/news/gujarat-to-host-asias-largest-solar-energy-park-in-two-years/440883/](http://www.business-standard.com/india/news/gujarat-to-host-asias-largest-solar-energy-park-in-two-years/440883/) (accessed April 27, 2012).

<sup>4</sup> "Can I or I can't? A developer in Dilemma and update of Solar PV projects development at Gujarat, India", *Movya Consultancy*, July 26, 2011, <http://movya.com/blog/?p=116> (accessed April 27, 2012).

<sup>5</sup> Maulik Pathak, "Gujarat solar park likely to produce 300MW by the end of December", *Livemint*, August 16, 2011, [www.livemint.com/2011/08/15220339/Gujarat-solar-park-likely-to-p.html?atype=tp](http://www.livemint.com/2011/08/15220339/Gujarat-solar-park-likely-to-p.html?atype=tp) (accessed April 27, 2012).

<sup>6</sup> "Clean Technology Fund Investment Plan For India", October 3, 2011, <http://moef.nic.in/downloads/public-information/IP-CTF-2011.pdf> (accessed April 27, 2012).

<sup>7</sup> Saurabh Chaturvedi, "India Government to Setup Solar Firm", *Wall Street Journal*, January 27, 2012, [online.wsj.com/article/SB10001424052970204661604577186364061054928.html#articleTabs%3Darticle](http://online.wsj.com/article/SB10001424052970204661604577186364061054928.html#articleTabs%3Darticle) (accessed April 27, 2012).

<sup>8</sup> "Review of the existing environmental norms concerning the power sector", *The Energy and Resources Institute*, <http://www.cercind.gov.in/chapter1.pdf> (accessed April 27, 2012).

<sup>9</sup> Shawahiq Siddiqui, Sanjay Upadhyay, Shilpa Chohan, "Making an environmentally sensitive and socially equitable Solar Energy Development in India", Heinrich Böll Foundation, March 7, 2011.