

# Renewable Energy in India: An Analysis of the Regulatory Environment and Evolving Policy Trends

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Mapping Power: Actors and Alliances in India's Electricity Sector

WORKING  
PAPER



## INTRODUCTION

India emerged as a key player in the recent international climate talks in Paris. On the global stage, India reiterated its commitment towards clean energy and reducing carbon emissions.<sup>1</sup> India's increased thrust on renewable energy is outlined in the 2015 national budget, which set a five-fold increase in renewable energy targets to achieve 175 GW by 2022. This comprises 100 GW solar, 60 GW wind, 10 GW biomass and 5 GW small hydropower capacity, supported by a substantial budgetary allocation. The existing generation capacity is dominated by conventional coal-fired thermal power (211 GW as of May, 2016, 70% of total capacity).<sup>2</sup>

State distribution companies (**Discoms**) are by far the largest purchaser of electricity, including that from renewable energy sources. Therefore, the ability of the Discoms to purchase such power lies at the heart of the success of the national level directional shift from conventional to renewable power. However, presently, Discoms are reeling under massive debts and their actions are often dictated by local political factors rather than the achievement of operational and technical efficiency. Working towards the ambitious national renewable energy targets necessarily requires a revamp of the electricity distribution sector. Major legislative amendments and policy changes have been made and are underway at the central level to create an enabling environment for the nationwide growth of renewable energy.

This paper proposes to analyse the existing constitutional and regulatory framework within which Discoms and other key stakeholders in the renewable power sector operate. The implications of the recently proposed amendments to the Electricity Act, 2003 (**Electricity Act**), the National Tariff Policy and provisions of the Draft Renewable Energy Act will be discussed in detail. A discussion on renewable energy is incomplete without an understanding of the legislative and judicial trends that govern the Renewable Purchase Obligation (**RPO**) imposed on Discoms. The paper offers an insight into the perspectives of Discoms, regulators and governments on RPO compliance. Further, the larger debate surrounding electricity sector reform and its implications for the renewable power sector have been analysed.

## CONSTITUTIONAL BACKGROUND

India has a quasi-federal constitutional structure where legislative and executive powers are delineated between the Centre and states. The Seventh Schedule of the Constitution designates subjects over which the legislative power is assigned to the Centre (List I), states (List II), and concurrently to both (List III). Electricity is a concurrent subject under Entry 38 in List III, therefore, both Centre and states can legislate on this matter. Matters relating to inter-state transactions are in the Centre's domain while states are responsible for the intra-state sale, purchase, distribution and supply of electricity. However, in practice, the demarcation of power between the state and Centre is not as simplistic. Concurrent jurisdiction prevents the Centre from directing the states to take specific action. This can be observed in the manner that the Central Electricity Regulatory Commission (**CERC**) and the State Electricity Regulatory Commissions (**SERCs**) function. In the context of renewable energy, the CERC issued regulations in 2010<sup>3</sup>

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<sup>1</sup> Justin Worland, "Why No Country Matters More Than India at the Paris Climate Talks," *TIME*, December 11, 2015, <http://time.com/4144843/india-paris-climate-change/>.

<sup>2</sup> "CEA Monthly Report on Installed Capacity," May, 2016, [http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed\\_capacity-05.pdf](http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed_capacity-05.pdf).

<sup>3</sup> CERC (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 - Section 66, Section 178(1) read with Section 178(2)(y) of the Electricity Act confer power on the CERC to make regulations to promote the development of the power market in a manner specified and guided by the National Electricity Policy- [http://www.cercind.gov.in/Regulations/CERC\\_Regulation\\_on\\_Renewable\\_Energy\\_Certificates\\_REC.pdf](http://www.cercind.gov.in/Regulations/CERC_Regulation_on_Renewable_Energy_Certificates_REC.pdf).

(CERC REC Regulations) to boost RPO compliance by states through the introduction of the Renewable Energy Certificate (REC) mechanism. However, the onus of framing RPO regulations, setting RPO targets and its implementation is on the respective SERCs, with the CERC acting as a facilitator.

The Central Government's thrust on development of renewable energy is apparent but the constitutional framework prevents the Centre from realising its vision without the support of the states. While the Centre can facilitate and incentivise the states to achieve renewable energy targets, it cannot overstep the bounds of concurrent jurisdiction to implement or penalise non-compliance by the states. States have often used this constitutional authority to push back on reforms spearheaded by the Centre, which do not further their political agenda<sup>4</sup>. Majority of the states have been particularly slow to implement RPO as set out under the Electricity Act. For instance, even six years after the issuance of the CERC REC Regulations, most states have a low level of RPO compliance and Sikkim has not even issued its RPO regulations yet. Therefore, the issue of electricity sector reform, which has a tangible impact on the renewable energy sector, is a complex one not just from a constitutional and legal perspective but also because of its political underpinnings.

Apart from the issue of concurrent jurisdiction which covers the entire electricity sector, there are also specific enabling provisions within the Constitution which support the generation and consumption of clean energy. The Supreme Court<sup>5</sup>, in a matter relating to RPO compliance, recognised the constitutional mandate to promote renewable energy by relying on Article 21 which guarantees the right to life read with Article 51A (g) which imposes the fundamental duty on citizens to protect and improve the natural environment. Further, Article 48A directs the state to protect and improve the natural environment.

## REGULATORY FRAMEWORK

The enactment of the Electricity Act marked a paradigm shift within the power sector towards a globally competitive model, with an emphasis on renewable power. Section 86(1)(e) of the Electricity Act specifically included promotion and cogeneration of electricity from renewable sources of energy and setting of RPO targets among the functions of SERCs. The Electricity Act also empowered the SERCs to specify the terms and conditions for the determination of tariffs, and in doing so, they should be guided by "the promotion of co-generation and generation of electricity from renewable sources of energy".<sup>6</sup> The Electricity Act aimed to make the power distribution sector more transparent and accountable by unbundling the state electricity boards, resulting in the formation of independent companies with separate financial accounts for the generation, transmission and distribution of power, set up of independent regulatory commissions at the state and Central levels and the Appellate Tribunal (APTEL). However, problems in the sector persist with the corporatised entities continuing to

<sup>4</sup> State governments also periodically announce schemes which heavily subsidise certain categories of consumers, such as agricultural consumers, and provide electricity at prices which are commercially unviable for state Discoms. These decisions are typically motivated by electoral pressures. There are several instances where parties appealing to the rural votebank, reduce prices (or even provide free power) to agricultural consumers after assuming office. For example, Andhra Pradesh and Tamil Nadu after the 2004 elections and Maharashtra just prior to October 2004 elections. Even without elections of the horizon, Punjab announced free electricity to all farmers in 2005 which compelled neighbouring state Rajasthan to cut down agricultural power price under duress from its constituents. - Jessica Wallack, comment on Frank A. Wolak, "Reforming the Indian Electricity Supply Industry," in *Sustaining India's Growth Miracle*, ed. Jagdish N. Bhagwati and Charles W. Calomiris (New York: Columbia University Press, 2008), 162-163. As of 2016, these free power schemes are still operational in all the states mentioned above except Maharashtra.

<sup>5</sup> *Hindustan Zinc Limited v. Rajasthan Electricity Regulatory Commission*, Judgment dated May 13, 2015 in Civil Appeal No. 4417 of 2015 before Supreme Court.

<sup>6</sup> Section 61(h) of the Electricity Act.

function as public enterprises.<sup>7</sup> This throws some light on why even 13 years after the enactment of the Electricity Act, Discoms are reeling under a cumulative debt of Rs. 4.3 trillion.<sup>8</sup> Reasons attributable to this debt include commercially unviable tariffs, losses arising from theft coupled with transmission and billing inefficiencies.<sup>9</sup> The adverse financial condition of the Discoms affects their creditworthiness and therefore, further prevents them from raising debt. For the renewable energy sector, the financial condition of Discoms is particularly relevant since Discoms are the biggest offtakers of renewable power.

With the enactment of the Electricity Act, renewable energy found more mention in national level policy instruments such as the National Electricity Policy (NEP), formulated in 2005. The NEP stipulated a progressive shift from conventional sources to renewable energy. It stated that purchase of renewable power by the Discoms should be through competitive bidding. Further, since it would take time for renewable technology to achieve grid parity, the relevant commission has the power to determine preferential tariffs for electricity derived from renewable energy sources. Soon after, the National Tariff Policy (NTP) was released in 2006, which aimed “to guide” central and state regulators in tariff determination. The latest version of NTP in 2016 cites promotion of renewable energy as a key objective of the policy.<sup>10</sup>

In 2008, the National Action Plan on Climate Change (NAPCC) identified 8 core national missions running through 2017. One of the missions require that a minimum renewable purchase standard be set, which is increased each year till a pre-defined cap is reached. It set targets of 5% renewable energy purchase for FY 2009-10, with an increase of 1% in target each year to reach 15% renewable energy target by 2020.<sup>11</sup>

Apart from the larger framework of the Electricity Act, policies targeting specific renewable energy sources such as wind, solar, biomass and mini-hydro are operational at both the central and state level. The discussion in this paper will be limited to the former.

## Solar

### Jawaharlal Nehru National Solar Mission (JNNSM)

JNNSM aims to promote the development of solar energy for grid-connected and off-grid power generation. The primary objective is to make solar power competitive with conventional energy by 2020-2022. The commissioned capacity of grid connected solar power plants in India as of March, 2016 is 5,834 MW.<sup>12</sup> JNNSM has already led to a decrease in tariffs and overall project costs. There is growing expectation that the JNNSM's and corresponding state solar purchase obligation targets will encourage the development of domestic manufacturing capabilities in solar technology and equipment.

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<sup>7</sup> Devendra Kodwani, “Institutional Endowments and Electricity Regulation in India,” 9, [http://regulation.upf.edu/bath-o6/10\\_kodwani.pdf](http://regulation.upf.edu/bath-o6/10_kodwani.pdf).

<sup>8</sup> Aparna Iyer, “Discom debt to impact states’ spending on development: RBI,” *Live Mint*, April 8, 2016,

<http://www.livemint.com/Industry/DgYTFNjUmylvsqQtWtgdEP/Power-reforms-likely-to-pressure-states-budgets-RBI.html>.

<sup>9</sup> Utpal Bhaskar, “Renewable Energy-India’s Sunrise Sector,” *Live Mint*, March 13, 2015,

<http://www.livemint.com/Politics/p17bEaMyU6xy6pMa2MisEO/Renewable-energyIndias-sunrise-sector.html>.

<sup>10</sup> An earlier draft of the NTP amendment mentioned that the state and central regulators be “necessarily” guided by the NTP in the discharge of their functions. The term “necessarily” was removed in the final version of the amendment.

<sup>11</sup> Para 4.2.2 of NAPCC.

<sup>12</sup> “Guidelines for Implementation of Scheme for Setting up of over 5000 MW Grid-connected Solar PV Power Projects under Batch-IV,” MNRE, March, 2016, 2,

<http://mnre.gov.in/file-manager/UserFiles/Guidelines-for-5000MW-Grid-Connected-power-project-under-VGF-NSM.pdf>.

Phase II of JNNSM is underway with the allocation of 750 MW under Batch I, through competitive reverse bidding on Viability Gap Funding (VGF)<sup>13</sup>, already complete. In 2014 post-election phase, the government cancelled the planned allocation of 1,500 MW under Batch II of Phase II. Instead, the Ministry of New and Renewable Energy (MNRE) has notified revised targets for grid-connected solar PV projects under Phase II in three batches, which are further divided into tranches. The implementing bodies for JNNSM are the Solar Energy Corporation of India (SECI) and NTPC Vidyut Vyapar Nigam Limited (NVVN). The details below are of the first tranche under each batch.

Batch	Target Capacity	Mode of capacity allocation	Levelised tariff for purchase of power by SECI/NVVN	Tariff for sale of power by NVVN/SECI to Discom
BATCH II	3000 MW	State specific tariff based bidding	Tariff derived through bidding process	NVVN to bundle solar power and thermal power on 2:1 basis. NVVN will sell power to Discoms based on weighted average tariff of the solar and thermal components plus trading margin of Rs. 0.07 per kWh. The weighted average of tariff will be separately calculated for each state for solar power.
BATCH III	2000 MW	State specific reverse bidding on VGF	Rs. 5.43/kWh	SECI will sell power to Discoms at fixed tariff of Rs. 5.5 per kWh.
BATCH IV	5000 MW	State specific reverse bidding on VGF	Tariff to be fixed by MNRE	Tariff for sale of solar power by SECI will be determined based on the tariff for purchase of solar power plus trading margin of Rs. 0.07 per kWh.

All guidelines specify that NVVN/SECI will sell the power to Discoms/bulk consumers at the specified tariff by entering into back-to-back long-term power sale agreements (PSAs). Given JNNSM's past success, the ambitious targets set under Phase II are not entirely unrealistic. Once the envisaged capacity becomes operational, Discoms (especially those in non-solar rich states) will have increased and assured access to solar energy.

### Rooftop Solar Projects

Various schemes have been announced by MNRE and state governments to promote grid-connected and off-grid solar rooftop projects. Further, the evolution of cost effective and high capacity battery storage technology would mean that solar power can be utilised throughout the day and will no longer be categorised as an erratic or infirm

<sup>13</sup> VGF is a one-time or deferred capital grant provided by the government at the project construction stage to support infrastructure projects that are economically justified but fall short of financial viability. The VGF 'gap' is between the revenues needed to make a project commercially viable and the revenues likely to be generated by user fees. In case of reverse bidding on VGF, the criterion for bidding is the amount of VGF required by the developer to implement the project. Under JNNSM Phase II, Batch I, VGF covered up to 30% of the project cost with a cap of Rs. 250 lakhs per MW. Bidders were selected on the basis of the lowest VGF quoted by them, subject to meeting the technical criteria.

power source. The growth of solar rooftop has led to concerns over the “utility death spiral” - a situation where households switch to solar, thereby, reducing their use of grid electricity. Consequently, the customer base required to cover the Discoms’ fixed costs shrinks, leading to increase in tariffs. The increased rates result in more customers switching to solar to reduce their bills, making solar more competitive and grid electricity an increasingly unattractive option. While claims of the death spiral may be exaggerated, the solar rooftop mechanism has led to a much-needed disruption in the sector. With solar set to achieve grid parity, Discoms need to take cognisance of the possibility of their high value industrial and commercial users abandoning the grid in favour of setting up their own rooftop solar plants. Discoms should develop an action plan which estimate the likely losses if this shift does occur on a large scale and identify measures to counteract its fiscal impact.

## Wind

The present wind power installed capacity in India is nearly 26.7 GW, accounting for around 9% of total installed capacity. The wind power potential, assessed by the National Institute of Wind Energy (NIWE) at 100 meters above ground level, is estimated to be over 302 GW. Most of this potential exists in 8 States i.e. Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and Telangana.<sup>14</sup> A National Wind Mission, along the lines of JNNISM, is also in the pipeline. There have been various schemes and incentives introduced by the MNRE to promote wind energy development, as set out below.

### Accelerated Depreciation (AD) and Generation Based Incentive (GBI)

The AD scheme was among the early initiatives of the government to promote renewable energy. AD increases the depreciation on the assets during the initial years of the asset’s useful life, which allows the developer to write off more of the value of the asset during the initial years of ownership, thereby reducing the greater proportion of taxable income. In the 2016 Budget, the AD tax benefit cap for wind projects has been revised from 80% to 40%, applicable from April, 2017.

In 2009, MNRE introduced the GBI scheme for wind power projects where wind power projects not availing the AD benefit are eligible for GBI incentive at the rate of Rs. 0.50 per unit of power fed to the grid for a period not less than 4 years and a maximum period of 10 years, subject to the ceiling of Rs. 1 Crore per MW.

AD and GBI benefits were withdrawn in 2012 because it had encouraged fraudulent schemes where investments in wind energy remained on paper while developers benefited from tax concessions. After the completion of the term of the incentives, the developers failed to maintain their wind farms or abandoned them entirely. After withdrawal of these incentives, wind generation dipped by 1500 MW in 2012-13 as compared to the previous year.<sup>15</sup> Therefore, to revive the sector, GBI was reintroduced in 2013 followed by AD in 2014.

### National Offshore Wind Energy Policy, 2015

With over 7600 km of coastline, India’s offshore wind potential is significant. Preliminary potential assessments along the western coastline of India have been encouraging and estimates suggest that offshore wind farms of capacity 1 GW along the coastline of Tamil Nadu and Gujarat are feasible.<sup>16</sup> This potential is recognised under the National Offshore Wind Policy under which NIWE has been authorised to allocate offshore wind blocks to

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<sup>14</sup> “Guidelines for Implementation of Scheme for Setting up of 1000 MW CTU connected Wind Power Projects,” MNRE, June 14, 2016, 2,

<http://mnre.gov.in/file-manager/UserFiles/Draft-Wind-1000MW-Guidelines.pdf>.

<sup>15</sup> “Wind energy dropped 1,500 MW due to withdrawal of incentives,” *Business Standard*, May 13, 2013, [http://www.business-standard.com/article/companies/wind-energy-dropped-1-500-mw-due-to-withdrawal-of-incentives-113051300447\\_1.html](http://www.business-standard.com/article/companies/wind-energy-dropped-1-500-mw-due-to-withdrawal-of-incentives-113051300447_1.html).

<sup>16</sup> “National Offshore Wind Energy Policy,” MNRE, October, 2015, 4, <http://mnre.gov.in/file-manager/UserFiles/National-Offshore-Wind-Energy-Policy-Gazzette-notification.pdf>.

developers on the basis of open international competitive bidding. All incentives extended to onshore projects such as GBI and AD will also be applicable to offshore projects.

### **Scheme for Setting up of 1000 Mw Central Transmission Utility (CTU Connected Wind Power Projects, 2016)**

In its most recent measure towards the achievement of 60 GW of wind energy by 2022, the MNRE approved the “Scheme for Setting up of 1000 MW CTU-connected Wind Power Projects” on June 14, 2016. Draft guidelines in relation to the scheme have been released and comments of stakeholders have been invited. The primary objective of this scheme is to deliver power to Discoms with poor wind resources within the state, at a price discovered through competitive bidding. It will also aid Discoms in meeting their non-solar RPO. The 1000 MW is envisaged for bidding in 2016-17, with the project capacity to be determined by SECI. The draft guidelines provide that capacity can be increased beyond 1000 MW in case there is demand from Discoms of non-windy states. Under the scheme, trading companies, which will purchase wind power from the selected bidders, will enter into back-to-back PSAs with state Discoms and other bulk consumers for a 25-year term. In case of failure of the developer to generate minimum specified energy, the developer will compensate the Discom (through the trading company) to the extent of the penalty imposed by the SERC on the Discom on account of non-compliance with RPO.

## **Biomass**

Biomass-based power generation has been increasing in India with the installation of megawatt-scale plants processing a variety of biomass residues such as shells, husks, deoiled cakes, and wood. A total of approximately 500 biomass power and cogeneration projects aggregating to 4760 MW capacity have been installed in the country for feeding power to the grid. In addition, around 30 biomass power projects aggregating nearly 350 MW are under various stages of implementation. Central Financial Assistance (CFA) is extended to developers to facilitate set up of biomass plants. Developers are also entitled to concessional customs duty and excise duty exemption on equipment required for initial setting up of biomass projects. Indian Renewable Energy Development Agency (IREDA) also extends loans for setting up biomass power and bagasse cogeneration projects.<sup>17</sup> A National Biofuels Policy has also been recently framed by MNRE which defines biofuels as liquid or gaseous fuels produced from biomass resources and used in place of, or in addition to, diesel, petrol or other fossil fuels for transport, stationary, portable and other applications. The national policy states that biofuel storage, distribution and marketing will rest with oil marketing companies. The policy provides a holistic view for development and utilisation of biofuels, with one of the aspects being power generation.

In this context, it is significant to note certain SERCs have designated a separate biomass RPO under their regulations. For example, Chhattisgarh SERC has set at the biomass RPO at 3.75% to be procured from biomass based cogeneration plants. Similarly, Rajasthan has a separate RPO of 0.7% to be met through biomass and also issued a policy in 2010 for the promotion of electricity generation from biomass.

## **Small-Hydro**

India has an estimated potential of about 20000 MW of small hydropower projects (SHPs). Most of the potential is in the Himalayan states as river-based projects and in other states on irrigation canals. Setting up of SHPs falls within the purview of state governments and is largely driven by private investment.<sup>18</sup> Under the Small Hydro Power Programme (up to 25 MW), the MNRE provides CFA to set up small/micro hydro projects in both public and private sectors. Financial support is also given to state governments for identifying new potential sites, including survey and preparation of detailed project reports, and renovation and modernization of old SHPs. It also assists governments to formulate policies for the development of SHPs within the state.

<sup>17</sup> “Biomass Power and Cogeneration Programme,” MNRE, <http://mnre.gov.in/schemes/grid-connected/biomass-powercogen/>.

<sup>18</sup> “Small Hydro Programme,” MNRE, <http://mnre.gov.in/schemes/grid-connected/small-hydro/>.

While there is no dearth of policy initiatives in the renewable power sector, a necessary corollary to the promotion of generation of renewable energy is the assurance of a reliable counterparty to offtake power. The creditworthiness of the Discom i.e. the counterparty has a significant impact on sector development. For example, at the national level, the power purchase agreement (PPA) under JNNSM is executed between the power developer and SECI or NVVN. Thereafter, SECI or NVVN enter into PSAs with Discoms. In case of capacity addition under the state solar policies, since the PPA is executed between the developer and the state Discom, the creditworthiness of Discom becomes a significant determinant of the success of the state programme. For example, Gujarat, which has a high capacity of 860 MW under its solar policy, represents a solar-rich state with a creditworthy counterparty in Gujarat Urja Vikas Nigam Ltd. On the other hand, Rajasthan is another solar-rich state but of its 667 MW of installed solar capacity, none is under the state policy due to the creditworthiness of its state Discom.<sup>19</sup> The state level PPAs provide a payment security mechanism which requires the Discom to open a letter of credit and set up an escrow account in favour of the power developer to mitigate instances of payment delay by the Discom. The PPA also gives power developers the right to sell power to third parties and even terminate the PPA on account of payment default by Discom. However, the payment security mechanism largely remains on paper as Discoms lack the financial means to meet these requirements, which adversely impacts investor confidence. The regulatory and policy environment is evolving to meet these challenges at the state level but is unlikely to succeed without a dramatic improvement in the financial state of the Discoms.

## INSTITUTIONAL FRAMEWORK

Implementing reform in the power sector is a complex issue due to the multiplicity of institutional stakeholders, both at the state and the national level, and their inter-se dynamics. The table below provides an overview of the division of powers at the state and central level in the electricity sector, based on specific functions.

*Institutional Framework of Indian Electricity Sector*<sup>20</sup>

Function	Central Level	State Level	Private	
POLICY	MoP Central Electricity Authority MNRE	Department of Energy (eg. Punjab Energy Development Agency)		
REGULATION	CERC	SERC		
GENERATION	Central sector undertakings (eg. NTPC, NHPC)	State power generation companies (eg. Andhra Pradesh Power Generation Corporation)	Independent power producers (eg. Tata Power)	Captive power producers (eg. Steel industry)
TRANSMISSION	CTU (Power Grid Corporation of India Ltd.)	State transmission utility (eg. Transmission Corporation of Andhra Pradesh)	Independent transmission service providers (eg. Tata Power)	

<sup>19</sup> "A white paper on India solar and wind energy," CRISIL and PHD Chamber, February, 2015, 7, [http://www.crisil.com/pdf/ratings/CRISIL%20PHD%20Chamber%20white%20paper\\_Indian%20solar%20and%20wind%20energy%20sector\\_12Feb2015.pdf](http://www.crisil.com/pdf/ratings/CRISIL%20PHD%20Chamber%20white%20paper_Indian%20solar%20and%20wind%20energy%20sector_12Feb2015.pdf).

<sup>20</sup> Saugata Bhattacharya and Urjit R. Patel, "Assessing Power Sector Reforms," vol. 4 of *India Policy Forum* 2007-08, ed. Suman Bery et al. (New Delhi: SAGE Publications, 2008), 217.

DISTRIBUTION		State Discom	Private Discoms (eg. BSES in Delhi)
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At the central level, the MNRE is the nodal ministry dealing with renewable energy. MNRE's objective is to develop and deploy renewable energy to augment the energy needs of the country. MNRE has set up three specialised technical institutions - National Institute of Solar Energy, NIWE and Sardar Swaran Singh National Institute of Renewable Energy. IREDA is a non-banking financial company operating under the MNRE, which provides loans and also directs funds and other initiatives to promote renewable energy. Additionally, Renewable Energy Corporation of India (erstwhile SECI) is involved in all segments of renewable energy and among other things, owning solar power plants, generating and selling power and in other segments of renewable energy sector activities, including manufacturing of solar products and materials. The Ministry of Power (**MoP**) formulates the broader electricity law framework through the NEP and NTP, along with amendments to the Electricity Act, which has a direct impact on renewable power procurement and the overall institutional structure for such procurement. Therefore, at the Central level, MNRE leads the charge on renewable energy development and deployment but relies on the MoP for large-scale policy changes to further its objectives.

At the state level, there are nodal agencies and energy departments, which operate under the administrative control of state governments. These agencies channel Central-level subsidies, implement pilot projects, coordinate among other local level agencies and are also responsible for the implementation of the Energy Conservation Act, 2001. They also devise policies for the development of renewable energy within the state and oversee its implementation.

Apart from the governmental ministries and departments, state and central level regulators play a significant role in the development of the renewable energy sector. The CERC was set up in 1998 to oversee the development of electricity markets at the national level and also to design a regulatory framework for the states to follow. Subsequently, states set up their SERCs which regulate intra-state matters and oversee the implementation of various regulations such as RPO.

The table below provides an overview of the roles of state and central government agencies in policy development, regulation and promotion of renewable energy.<sup>21</sup>

Level	Central Government (MoP/Ministry of Finance)	MNRE	CERC
CENTRAL	<ul style="list-style-type: none"> <li>Develops national electricity tariff policies, which includes renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>Develops national renewable energy laws</li> <li>Sets technical standards for renewable energy</li> <li>Conducts resource assessment for renewable</li> </ul>	<ul style="list-style-type: none"> <li>Sets guidelines for feed in tariff design for different renewable energy technologies</li> <li>Regulates the regional electricity corporation</li> </ul>

<sup>21</sup> Gevorg Sargsyan et al., "Unleashing the Potential of Renewable Energy in India," World Bank, 2010, 37, [http://siteresources.worldbank.org/EXTENERGY2/Resources/Unleashing\\_potential\\_of\\_renewables\\_in\\_India.pdf](http://siteresources.worldbank.org/EXTENERGY2/Resources/Unleashing_potential_of_renewables_in_India.pdf).

	<ul style="list-style-type: none"> <li>Provides fiscal incentives to promote renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>energy; supports R&amp;D in renewable energy technologies</li> <li>Promotes effective use of information technology for renewable energy, manages database</li> <li>Reviews renewable energy programs to understand their effectiveness and efficiency</li> </ul>	<ul style="list-style-type: none"> <li>mechanism</li> <li>Regulates inter-state open access and third party sales</li> </ul>
	<b>State Government</b>	<b>State Nodal Agency</b>	<b>SERC</b>
STATE	<ul style="list-style-type: none"> <li>Develops state-level renewable energy policy</li> <li>Provides fiscal incentives for promoting renewable energy sources within the state</li> </ul>	<ul style="list-style-type: none"> <li>Conducts resource assessments for various renewable energy sources</li> <li>Allocates renewable energy projects and progress monitors</li> <li>Facilitates clearances and land acquisition</li> <li>Creates awareness and educates the masses about adoption of renewable energy</li> <li>Maintains database on renewable energy sources</li> </ul>	<ul style="list-style-type: none"> <li>Determines feed-in tariff for different renewable energy technologies</li> <li>Determines RPOs and enforcement mechanism</li> <li>Sets regulations on intra-state wheeling, open access, and third-party sale</li> </ul>

Source: World Bank, 2010

## RENEWABLE PURCHASE OBLIGATION

### Analysis of State-Level RPO Compliance Status

Under the Electricity Act, SERCs set targets for Obligated Entities<sup>22</sup>, which includes Discoms, to purchase a percentage of their total power requirement from renewable energy sources.<sup>23</sup> In its Statement of Objects and Reasons, the CERC REC Regulations cite the uniform RPO target of 5% in every state with an annual increase of 1% till 2020 to achieve the target of 15%, in accordance with the NAPCC.<sup>24</sup> The NTP also stipulated the fixation of a minimum percentage of purchase from renewable sources by SERCs, factoring in renewable energy potential in their state and its impact on retail tariffs. The NTP was later amended in 2011 to require SERCs to reserve a minimum percentage for purchase of solar energy which will go up to 0.25% by the end of 2012-2013 and further up to 8% by 2022 in its most recent version. In line with the Electricity Act, various SERCs came out with their individual

<sup>22</sup> Apart from Discoms, open access consumers and captive power plants fall under the category of Obligated Entities.

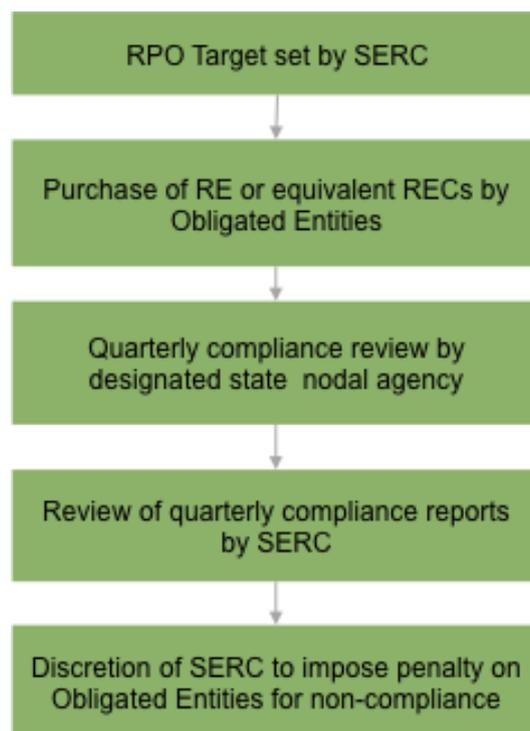
<sup>23</sup> Section 86(1) (e) of The Electricity Act.

<sup>24</sup> [http://www.cercind.gov.in/Regulations/Statement-of-Reasons\\_SOR\\_for-CERC\\_REC\\_regulations\\_2010.pdf](http://www.cercind.gov.in/Regulations/Statement-of-Reasons_SOR_for-CERC_REC_regulations_2010.pdf)

RPO targets, which were typically lower than the nationally recommended standard by NAPCC. Presently, all states except Sikkim have issued RPO/REC regulations. The RPO targets stipulated by states are set out under Annexure I. Most recently, in line with the recent amendments to the NTP in 2016, the MNRE has released the state-wise renewable energy capacity addition targets to meet the Centre's vision of 175 GW of renewable energy by 2022. MNRE has called for concerted action at the state level and emphasised the need for the SERCs to notify revised RPO trajectory in accordance with national targets which include 17% of renewable energy in the total energy mix with at least 8% derived from solar energy. An action plan to achieve these ambitious targets by 2022 is being developed by the MNRE.

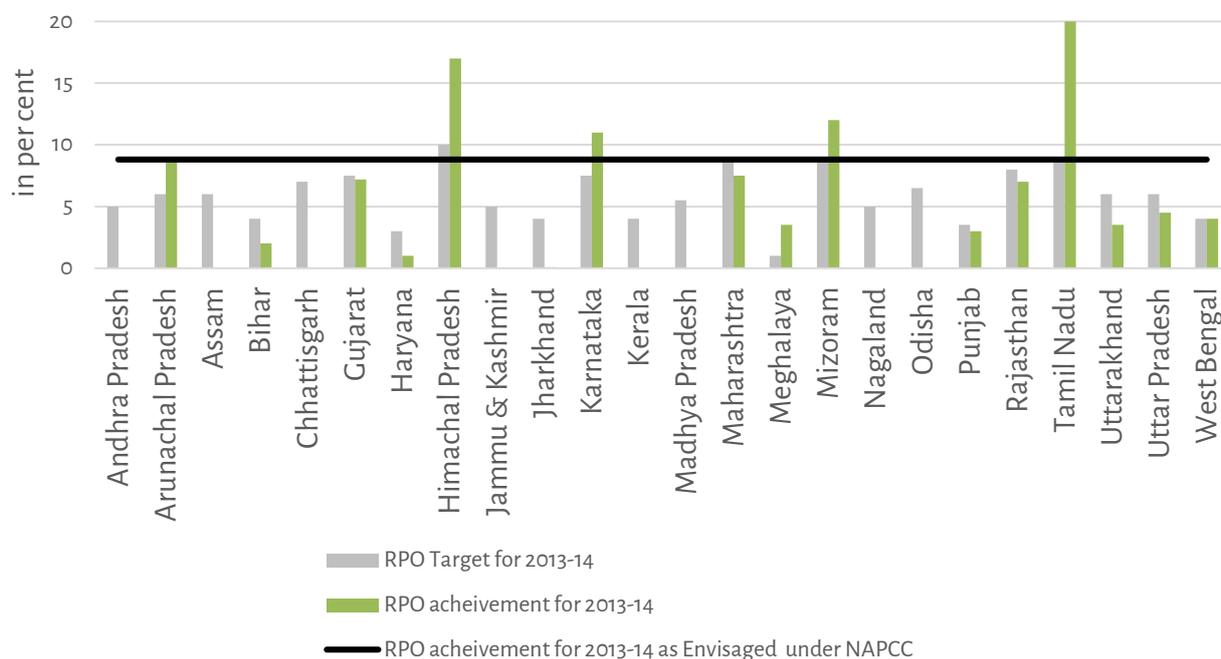
Since renewable energy generation potential is not uniform across states, the REC mechanism was introduced by the CERC. Renewable energy generators who inject power to the grid are eligible to register for issuance and dealing in RECs - a tradable certificate of proof that 1 MWh of electricity has been injected (or deemed to have been injected). This mechanism allows Obligated Entities, especially in RE-poor states, to purchase RECs to bridge any deficit in meeting their RPO target.

MNRE in its framework for REC mechanism recommended formation of state committees with the primary objective of monitoring the RPO compliance by Obligated Entities. The state regulations also incorporate the process recommended by the MNRE. The monitoring and compliance process is set out below:



While the introduction of the RPO and REC mechanism illustrated the national level shift towards renewable energy, the response from the states has not been encouraging. In 2015, the Comptroller and Auditor General's Report on the Renewable Energy Sector in India highlighted that while the NAPCC targets were 8% and 9% for the years 2012-13 and 2013-14, the national achievement against this was only 4.28 % and 4.51%, respectively. The table

below sets out the state-wise achievement of RPO and targets under NAPCC as a percentage of total energy purchased in 2013-14.<sup>25</sup>



Source: CAG Report

The data illustrates how a majority of the states have not met their RPO targets. Only six states i.e. Arunachal Pradesh, Himachal Pradesh, Karnataka, Meghalaya, Mizoram and Tamil Nadu met the targets set by the respective SERCs. Of these, only four states, i.e. Himachal Pradesh, Karnataka, Mizoram and Tamil Nadu, exceeded their RPO targets. It has been observed that RPO targets often end up being treated as the ceiling rather than an incentive for a systemic shift towards the purchase of renewable energy.<sup>26</sup> States cite concerns over grid integration, nature of infirm power, relatively higher costs of power procurement and adverse financial health of Discoms as reasons for the largely tepid response to RPO. Even the REC mechanism has not met with much success as Discoms find little solace in purchasing RECs while also having to pay for actual electricity to meet power requirements. Additionally, the failure of the SERCs to effectively implement and monitor RPO compliance has led to the current state of affairs where Discoms continue to flout RPO. For instance, out of 29 SERCs, only 10 have initiated suo-motu proceedings to review RPO compliance status. Further, the timelines for RPO compliance review process are uncertain, with RPO compliance reporting only up to FY14 (or FY12 in some cases) having been undertaken.<sup>27</sup>

Evidently with Discoms struggling to meet their existing RPO, the proposed upward revision of RPO targets is unlikely to be met with much enthusiasm. However, it would be interesting to observe the emergence of new actors who see opportunities, monetary and otherwise, arising from the increase in renewable energy capacity addition and RPO targets.

<sup>25</sup> "Report of the Comptroller and Auditor General of India on Renewable Energy Sector in India," Report No. 34 of 2015, 15, [http://www.cag.gov.in/sites/default/files/audit\\_report\\_files/Union\\_Civil\\_Performance\\_Renewable\\_Energy\\_Report\\_34\\_2015\\_chap\\_2.pdf](http://www.cag.gov.in/sites/default/files/audit_report_files/Union_Civil_Performance_Renewable_Energy_Report_34_2015_chap_2.pdf)

<sup>26</sup> "Report on India's Renewable Electricity Roadmap," Niti Ayog, February, 2015, 29,

<http://niti.gov.in/content/report-indias-renewable-electricity-roadmap-2030-full-report>.

<sup>27</sup> "RPO Compliance Framework for Captive/OA Transactions at State Level," Presentation by USAID/INDIA before Forum of Regulators, November 30, 2015, <http://www.forumofregulators.gov.in/Data/Meetings/Minutes/51.pdf>.



## Judicial Trends in RPO Enforcement

Recent judgments by the Supreme Court and APTEL indicate increasing pressure over states and SERCs to meet their RPO targets.

APTEL, in its judgment dated 16 April 2015, in *Indian Wind Power Association v. Gujarat Electricity Commission and others*<sup>28</sup> held that SERCs can allow carry forward of RPO strictly in accordance with the regulations, with non-availability of RECs as a pre-condition for any carry forward. In this case, Indian Wind Power Association and other stakeholders in the wind industry challenged an order of the Gujarat Electricity Regulatory Commission (**GERC**) to waive Discom shortfall in meeting RPO. The primary issues that arose in this case are set out below.

- Can the GERC waive the shortfall of Discoms in meeting RPO in FY 2012-13 despite availability of RECs?
- Under what circumstances can the GERC revise RPO targets for a given FY?
- Can GERC allow adjustment of excess purchase of solar RPO by Discom against fulfillment of its non-solar RPO?

The Discoms contended that they were unable to meet RPO due to insufficient availability of wind energy generation in Gujarat in FY 2012-13 as compared to previous years, coupled with the unwillingness of the wind power generators to sell energy at the preferential tariff. Therefore, if the RPO is not waived then it will result in an unfair financial burden on the Discoms and consumers. They also argued that the REC mechanism was put in place merely as a mitigation mechanism in case of non-availability of renewable energy within the state and does not apply to RE-rich states. The APTEL dismissed this argument and held that the REC mechanism was an alternative to renewable power procurement and in a resource surplus state, the Discoms must exercise their choice to decide the mode of renewable power procurement based on sound commercial principles.

On the second issue, the APTEL held that if the SERC, based on its experience from previous years, considers the RPO targets to be unrealistic, it can revise the target at the beginning of the relevant FY. It can also revise RPO targets on occurrence of *force majeure* events, which includes natural calamities, which preclude the fulfilment of RPO or on account of inadequate capacity addition within the state, which is beyond the control of the Discom. However, revision cannot be made in a situation where the Discom has not made efforts to procure renewable power or equivalent RECs. Also, even in situations where there are actual supply constraints, revision of RPO has to be uniform and cannot be different for different Obligated Entities.<sup>29</sup> In this case, Discoms failed to execute PPAs with wind developers since they wanted to procure power based on the tariff from previous years and not the revised tariff determined by the GERC in its most recent order. Therefore, this case does not qualify for RPO target revision.

On the third issue, the APTEL decided to not interfere with GERC's decision to allow adjustment of excess purchase of solar RPO by Discom against the fulfilment of its non-solar RPO. However, going forward, APTEL held that the GERC should not allow the Discoms to alter the technology specific RPOs since this defeats the purpose of designating separate RPOs for solar and non-solar sources. Further, it is relatively uneconomical to procure excess solar RPO for adjustment of shortfall in non-solar RPO as opposed to the purchase of cheaper non-solar REC to meet such shortfall.

<sup>28</sup> Judgment dated April 16, 2015 in Appeal no. 258 of 2013; Appeal No. 21 of 2014 and IA-28 of 2014 before the APTEL.

<sup>29</sup> GERC revised the RPO to zero for some of the deemed Discoms, for GUVNL the revised RPO was 7.4%, for Torrent Power 3.81% and for TEL (Dahej) it was 1.49%.

Soon after, on 20 April 2015<sup>30</sup>, the APTEL reiterated the above decision in another order and held that Discoms should prepare a plan for RE purchase as part of its tariff petitions to the SERC. In this case, petitions were filed by the Associations of Wind Energy Generators, Developers and Manufacturers of Wind Turbine and Association of Developers of SHPs in relation to RPO compliance by Obligated Entities across states. Nearly 20 states filed submissions before the APTEL regarding the implementation of RPO within their states.<sup>31</sup> In exercise of its power under Section 121 of the Electricity Act, APTEL issued the following directions:

- SERCs should decide RPO targets before commencement of multi year tariff period.
- Discoms should submit RE procurement plan as part of tariff petition to SERCs.
- Monitoring of RPO compliance should be carried out periodically.
- SERCs can carry forward or review RPO strictly as per the regulations, provided non-availability of REC is a pre-condition for carry forward.
- In case of non-compliance, SERC must impose penalties on the Discom.
- Power to relax and exempt RPO should be exercised judiciously under exceptional circumstances.

In May 2015, the Supreme Court delivered a landmark judgment in *Hindustan Zinc v. Rajasthan Electricity Regulatory Commission (RERC)*<sup>32</sup>. The crux of the case was to clarify that RPO fulfilment was not limited to state Discoms and that captive power generation companies and open access users also fall within its ambit. While deciding in favour of RERC, the Supreme Court relied on Article 21 which guarantees the right to life, Directive Principles of State Policy under Article 48A read with Fundamental Duties under Article 51A(g) of the Constitution which impose an obligation on the state and citizens to protect the environment. The decision also challenges the power of high courts to issue stays in cases of RPO non-compliance. With the Supreme Court now ruling in favour of imposition of RPO, the existing stays in favour of captive power generators and open access users may become redundant. An interesting contention raised by the appellants was that the surcharge imposed by RERC in case of shortfall in meeting their RPO was in the nature of a tax and therefore under Article 265 of the Constitution<sup>33</sup>, RERC did not have the authority to impose or collect such a tax. The Court rejected this argument to hold that the surcharge levied was not in the nature of tax and had statutory backing under Section 142 and 147 of the Electricity Act. It is an alternative method for ensuring compliance with RPO regulations and a necessary provision for the achievement of the renewable energy goals safeguarded under the Electricity Act. This decision obviates any future challenge to the power of SERCs to impose penalties on Discoms and other Obligated Entities in cases of RPO non-compliance. While the power of SERCs to impose penalties on Obligated Entities is provided under the Electricity Act and relevant state RPO regulations, SERCs have used these powers rarely despite high rates of non-compliance. In this context, a Supreme Court precedent provides the necessary judicial impetus for SERCs to impose strict penalties on erring Discoms and other Obligated Entities.

In the aftermath of the Supreme Court and APTEL decisions, there has been a cascading effect with many instances of SERCs taking stricter action against Obligated Entities in case of RPO non-compliance, coupled with proactive measures towards its enforcement. For instance, In response to a petition<sup>34</sup> filed by Punjab State Power Corporation Limited (PSPCL) on carry forward of RPO compliance in FY 2014-15, Punjab State Electricity Regulatory Commission (PSERC) directed PSPCL to comply with the RPO latest by December 2015, failing which further action under the

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<sup>30</sup> *Indian Wind Energy Association and others v. APERC and others*, Judgment dated April 20, 2015 in O.P. No. 1 of 2013 & IA No. 291 & IA No. 420 of 2013, O.P. No. 2 of 2013 & O.P. No. 4 of 2013 before the APTEL.

<sup>31</sup> Andhra Pradesh, Kerala, Nagaland, Uttar Pradesh and Sikkim did not respond to APTEL's notice and did not file any submissions.

<sup>32</sup> Judgment dated May 13, 2015 in Civil Appeal No. 4417 of 2015 before Supreme Court.

<sup>33</sup> Article 265-No tax shall be levied or collected except by authority of law

<sup>34</sup> Order dated July 28, 2015 in Petition no. 38 of 2015 before the PSERC.

regulations may be initiated. PSERC did not accept PSPCL's argument on its inability to purchase RECs and cited the APTEL judgment, which has directed SERCs to enforce RPO strictly. It is relevant to note that PSERC had, in previous years, allowed for carry forward of RPO.

The Uttarakhand Electricity Regulatory Commission (**UERC**) was the first to impose penalties on its Discom for RPO non-compliance. It imposed a penalty of Rs.20,000 on the Managing Director of the Discom and further directed the Discom to comply with its pending RPO by March 2014, failing which an additional penalty of Rs.2000 per day thereafter will be imposed.<sup>35</sup> In 2015, as an unprecedented step, Maharashtra Electricity Regulatory Commission (**MERC**) directed the Discom to constitute a separate 'RPO Regulatory Charges Fund' to purchase RECs to fully meet RPO. Previously, the MERC had ordered Obligated Entities in Maharashtra to demonstrate compliance with RPO targets for four years starting from FY 2010-11 to FY 2013-14 cumulatively by March 31, 2014 or face fines that could be as high as Rs. 13.40/unit.<sup>36</sup>

Despite this positive trend of courts and regulatory authorities to uphold RPO compliance, the many instances of relaxation of RPO by SERCs continue. In 2014, Chhattisgarh State Electricity Regulatory Commission passed an order on non-compliance of RPO by Chhattisgarh Discoms for the year 2011-12 and 2012-13 where it failed to mention any action to be taken or any penalty to be imposed on the Discoms.<sup>37</sup> In 2014, Madhya Pradesh Electricity Regulatory Commission (**MPERC**) imposed a token penalty of Rs. 25,000 on Madhya Pradesh Power Management Co Ltd for non-compliance of solar RPO in FY 2011-12 to FY 2013-14.<sup>38</sup> As of December 2015, the MP Discom had still not met its RPO target for previous years. In this context, Green Energy Association filed another petition<sup>39</sup> before the MPERC to seek a cumulative imposition of solar RPO on the Discom for FY 2015-16. Surprisingly, MPERC decided to not impose any penalty on the Discom and only directed it to make efforts towards fulfilment of its RPO. It also allowed Discoms to mitigate prior default through the excess purchase of solar energy in coming years. This decision clearly contravenes the principles established by APTEL in earlier orders. Another recent case<sup>40</sup> before the APTEL dealt with the issue of utilisation of the RPO fund by the Himachal Pradesh Electricity Regulatory Commission (**HPERC**). The HPERC RPO Regulations provided that compensation recovered on account of non-fulfilment of the RPO should be utilised partly for the purchase of RECs and partly for the development of sub-transmission infrastructure. In contravention of these regulations, HPERC allowed the entire compensation of Rs. 17.23 crores to be spent on development of sub-transmission infrastructure. While the APTEL did not strike down HPERC's decision in this particular instance, it held that in all future cases, HPERC will have to decide the percentage of the compensation fund which will be utilised towards purchase of RECs in case of shortfall in meeting RPO by Obligated Entities.<sup>41</sup> In a similar move, the Rajasthan Electricity Regulatory Commission has gone as far as to amend its RPO regulations<sup>42</sup> to allow utilisation of the RPO fund exclusively by state transmission utilities to develop transmission infrastructure, without any obligation to purchase RECs. These decisions clearly militate against the entire rationale of setting up a fund under RPO regulations.

<sup>35</sup> Order dated January 22, 2014 in suo moto proceedings initiated by UERC.

<sup>36</sup> Case no. 49 of 2013; MERC order dated July 22, 2013.

<sup>37</sup> Order dated 15 October 2014 in Suo-Motu Petition no. 50 of 2013(M) before CSERC.

<sup>38</sup> MPPMCL argued that they could not fulfill the RPO in the past years through purchase of RECs due to poor financial condition of Discoms. The Commission rejected MPPMCL's plea on the grounds that RECs are readily available in the market and the retail tariff order for FY 2014-15 included the amount to procure energy from renewable sources to meet RPO- *Green Energy Association v. MPPMCL and other*, Order dated October 20, 2014 in Petition no. 14 of 2014 before the MPERC.

<sup>39</sup> *Green Energy Association v. M.P. Power Management Co. Ltd and others*, Order dated December 9, 2015 in Petition no. 34 of 2015 before the MPERC.

<sup>40</sup> *Green Energy Association v. HPERC and others*, Order dated December 10, 2015 in Appeal no. 54 of 2015 before the APTEL.

<sup>41</sup> *Green Energy Association v. HPERC*, Judgment dated 10 December 2015 in Appeal no. 54 of 2015 before APTEL.

<sup>42</sup> (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) (First Amendment) Regulations, 2016.

The judicial trend and regulatory environment are relatively more conducive to enforcing RPO compliance than it was in the past. SERCs, which have typically taken a sympathetic stance towards RPO non-compliance by Discoms by allowing carry-forward of RPO as a matter of course, are beginning to impose penalties and setting stricter deadlines for compliance but these cases are few and far between. As discussed, a major roadblock in the success of the RPO/REC mechanism is the inability of Discoms to purchase power on account of massive debts. While Section 142<sup>43</sup> of the Electricity Act recognizes the discretion of SERCs to impose penalties in case of contravention of its regulations, majority of the SERCs continue to avoid imposing penalties or impose token penalties on Discoms in case of RPO non-compliance, often acting against their own RPO regulations. At the same time, various measures are being employed by the Centre to aid the ailing Discoms such as UDAY<sup>44</sup>. While the UDAY Scheme is being widely regarded as a success, it is relevant to note that it requires Discoms opting for the scheme to fulfil their RPO outstanding since April 1, 2012, within a period decided in consultation with the MoP.<sup>45</sup> In the Uttar Pradesh, the Memorandum of Understanding (MoU) signed under UDAY provides the Discom with an extended timeline of 3 years after it reaches break even i.e. FY 2019-20 to meet all RPO targets which have been outstanding from April 1, 2012 to March 31, 2015.<sup>46</sup> Further, the MoUs signed by the MoP with different states are non-standard and some MoUs such as in case of Bihar do not even refer to RPO compliance. Since UDAY is a Centre driven scheme, it comes as a surprise that the Central Government is employing a non-uniform metric for RPO compliance across different states and, in some cases, allowing carry forward of RPO, a move that is directly in conflict with the recent decisions of APTEL. While this discrepancy is yet to face a judicial challenge, it certainly sets the wrong tone for future policy interventions to aid Discoms and takes away from the Centre's renewable energy ambitions.

## IMPLICATIONS OF REFORMS ON DISTRIBUTION COMPANIES

### Segregation of Content and Carriage

According to Jessica Wallack, India's federal division of jurisdiction is to blame for the current state of the distribution sector which she characterises as "*mostly public, mostly bankrupt, overseen by the most politicized regulators*".<sup>47</sup> Wallack's comments are not far off the mark as state Discoms presently enjoy monopoly over electricity distribution in most of the states. In absence of competition, there have been serious lapses in their functioning, making it necessary to effectively break their stronghold. With a view to encourage competition in the electricity supply sector, the Electricity Bill, 2014 (the **Bill**) was introduced in the Lower House of Parliament on

<sup>43</sup> Section 142 – "In case any complaint is filed before the Appropriate Commission by any person or if that Commission is satisfied that any person has contravened any of the provisions of this Act or the rules or regulations made thereunder, or any direction issued by the Commission, the Appropriate Commission may after giving such person an opportunity of being heard in the matter, by order in writing, direct that, without prejudice to any other penalty to which he may be liable under this Act, such person shall pay, by way of penalty, which shall not exceed one lakh rupees for each contravention and in case of a continuing failure with an additional penalty which may extend to six thousand rupees for every day during which the failure continues after contravention of the first such direction." The Electricity Bill, 2014 proposes to increase the penalty to Rs. 1 crore and also specifically include RPO non-compliance as a case where SERCs can impose penalties

<sup>44</sup> UDAY or Ujjwal Discom Assurance Yojana requires state governments to take over 75% of the debt held by their Discoms, of which 25% of the debt is to be serviced through state government-guaranteed bonds issued by the Discoms. While implementation of UDAY is not mandatory, it has received a positive response with 10 states having already joined the scheme as of May, 2016 and eight more expected to join soon.

<sup>45</sup> UDAY Scheme for Operational and Financial Turnaround of Discoms, Clause 9-  
[http://powermin.nic.in/pdf/Uday\\_Ujjawal\\_Scheme\\_for\\_Operational\\_and\\_financial\\_Turnaround\\_of\\_power\\_distribution\\_companies.pdf](http://powermin.nic.in/pdf/Uday_Ujjawal_Scheme_for_Operational_and_financial_Turnaround_of_power_distribution_companies.pdf)

<sup>46</sup> Tripartite Memorandum of Understanding between MoP, Government of Uttar Pradesh and UP Power Corporation Limited, Clause 1.3(f), January 30, 2016, [http://powermin.nic.in/pdf/MoU\\_Uttarpradesh.pdf](http://powermin.nic.in/pdf/MoU_Uttarpradesh.pdf).

<sup>47</sup> Jessica Wallack, comment on Frank A. Wolak, "Reforming the Indian Electricity Supply Industry," in *Sustaining India's Growth Miracle*, ed. Jagdish N. Bhagwati and Charles W. Calomiris (New York: Columbia University Press 2008), 157.

December 19, 2014 which, among other amendments, provides for separation of content and carriage functions of state Discoms. The Bill creates a new category of licensee, i.e. the supply licensee, and redefines the role of the existing category of distribution licensees. Supply licensees are proposed to supply i.e. sell electricity to consumers using the distribution lines developed and maintained by distribution licensees. The amendment allows for one distribution company but multiple supply licensees in one area.

Predictably, the proposed amendment has met with outcry from the majority of states as it aims to dismantle the existing system. The Standing Committee on Energy submitted a report to the Government in May 2015<sup>48</sup> where it set out the various objections of the states against the proposed amendment. States such as Karnataka, Assam and Orissa welcomed the proposed changes but highlighted the need to upgrade the existing infrastructure for effective implementation. Smaller states and union territories such as Himachal Pradesh, Pondicherry and Goa raised questions regarding the feasibility of further unbundling in their states which have low load density to begin with. The most common concern was that private players, without any investment in the distribution network, will be able to cherry pick high-value consumers and the state Discoms will be left with subsidised consumers like agricultural consumers. States emphasised the right of choice must be that of the consumer and not the supplier. A possible corollary to the cherry picking argument, though not raised by any of the states, is that under the new regime, state supply licensees, in order to meet their RPO targets, will continue to purchase relatively expensive renewable power but since they will be largely serving subsidised and other low-value consumers, it will lead to an overall decline in their revenue. While private supply licensees will also be required to meet RPO, the higher cost of the renewable power procurement will be offset by the dominant high-value consumers within their revenue pool. This point is moot in the absence of any literature on how the RPO mechanism will operate when segregation of content and carriage is implemented.

Concerns that private supply licensees would engage in cherry-picking are legitimate but can be addressed. According to Anish De, partner with Infrastructure and Government Services (IGS) at KPMG, these concerns can be allayed through a range of institutional measures such as setting up a universal service obligation fund (**USOF**) which exists in the telecommunications sector.<sup>49</sup> The Forum of Regulators (**FoR**) recommends a phased approach. Since electricity is a concurrent subject, such a model should be implemented after extensive consultations with stakeholders, including state governments, state utilities, consumers and non-governmental organisations. Further, the mechanism may need to be modified before being implemented in smaller states, especially hilly states. According to Sushanta Chatterjee, Joint Chief (Regulatory Affairs) at CERC, a pilot project in specific areas should be the first step, prior to large-scale implementation, to determine the efficacy of this model and assess the costs involved.<sup>50</sup>

Presently, the Central Government is pushing for a major shift towards renewable energy coupled with an increased interest in improving the financial health of Discoms. As discussed, the Centre's measures have largely met with opposition from the states, particularly on the issue of separation of carriage and content. According to news reports, the MoP has clarified that the proposed changes to the Electricity Act will be enabling in nature and not

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<sup>48</sup> "Standing Committee on Energy Report on the Electricity (Amendment) Bill 2014", (New Delhi: Lok Sabha Secretariat, 2015), <http://www.prsindia.org/uploads/media/Electricity/SC%20report-Electricity.pdf>.

<sup>49</sup> Telephonic interview on June 2, 2016 - There is a higher capital cost associated with providing electricity in rural areas coupled with lower revenue generation in these areas due to lower population density, low income and limited commercial activity. USOF can be funded through a levy, which will be a fixed percentage of the gross revenue of the private participants. Funds can be diverted from the USOF to provide subsidies to supply licensees who operate in rural areas or service other underserved consumers.

<sup>50</sup> Interview at CERC office on June 2, 2016.

mandatory. Therefore, implementation of segregation of carriage and content will be left to states' discretion.<sup>51</sup> It remains to be seen in what form the amendment will finally be passed, but for the renewable energy sector, the implications of segregation of content and carriage are significant. The obvious consequence is that financial health of Discoms is expected to improve in the long run with the introduction of competition in this sector. More importantly, tariff setting, which is currently dictated by political populism, will move towards a competitively determined model if the proposed amendments go through. Further, supply licencees, motivated to achieve maximum profits out of the competitive tariffs, would want to reduce their power procurement costs. Therefore, suppliers would want to purchase power increasingly from either cheaper renewable sources or more efficient and cleaner generation plants.<sup>52</sup> In parallel, developer risk will be mitigated to some extent with the choice of more creditworthy counterparties in the private sector. This is also likely to induce international companies and investors with larger renewable power sector ambitions to enter the Indian market.

## National Tariff Policy 2016

The NTP was revised in 2016 and now has an increased emphasis on renewable energy. From the Discoms' perspective, there are some significant changes. The revised policy is in favour of competitive bidding, as opposed to the prevalent preferential tariff mechanism, for renewable power procurement by states to keep tariffs low. Further, an overall maximum of 35% of installed capacity only can be procured by the state from SERC determined tariff. This limit includes all generation, not just renewable energy. This marks a progressive shift from the preferential tariff regime towards competitively determined tariffs. In case of the solar sector, tariff discovery through competitive bidding has brought down the cost of power. Therefore, from the Discoms' perspective, this is a positive move and is likely to allow them to procure more renewable power to meet their RPO and at a lower cost.

It also proposes to increase the solar RPO to 8% of electricity consumption, excluding hydro power. This is a significant deviation from the Electricity Act and current RPO regulations, which require that RPO be calculated on 'total consumption' which includes hydro power. In the absence of a parallel amendment in the Electricity Act to this effect, this change excluding hydro power from total consumption is unlikely to be implemented. The NTP also provides clarity on renewable generation obligation, which brings thermal generators into the mix by allowing them to bundle renewable energy with their thermal generation. Purchase of such power by Obligated Entities will go towards meeting their RPO targets.

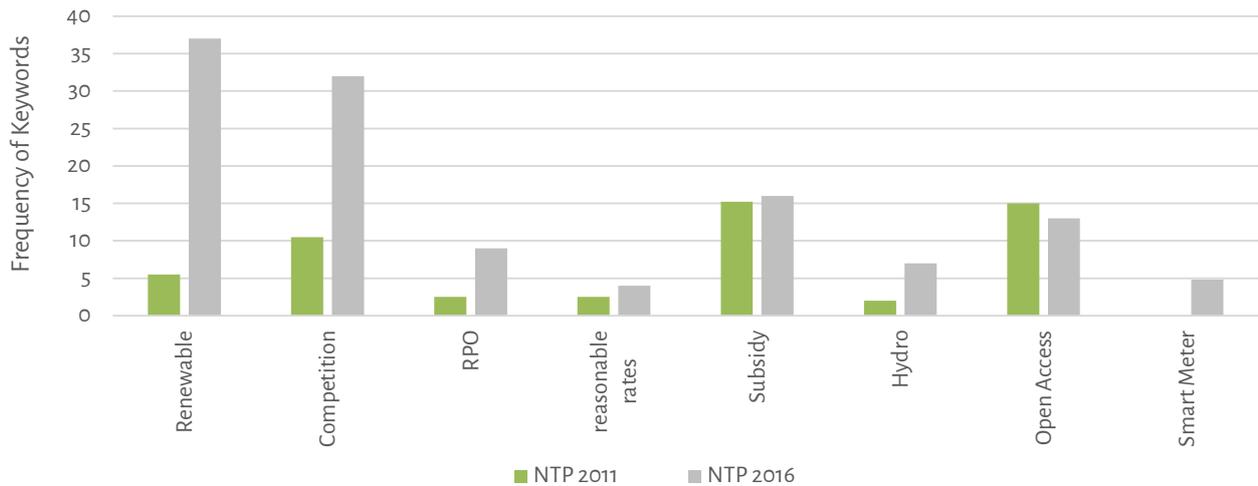
An interesting analysis<sup>53</sup> which compares the frequency of occurrence of certain key words in NTP 2016 amendment vis-à-vis the 2011 amendment is indicative of the larger policy shift towards renewable energy and competition in the sector.

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<sup>51</sup> "Electricity Act amendments must for meaningful reforms: AIPEF," *Business Standard*, January 28, 2016, [http://www.business-standard.com/article/pti-stories/electricity-act-amendments-must-for-meaningful-reforms-aipef-116012801454\\_1.html](http://www.business-standard.com/article/pti-stories/electricity-act-amendments-must-for-meaningful-reforms-aipef-116012801454_1.html).

<sup>52</sup> "Roll out Plan for Introduction of Competition in Retail Sale of Electricity," Forum of Regulators, July, 2015, 121, <http://www.forumofregulators.gov.in/Data/study/Retail.pdf>.

<sup>53</sup> "Analysis of Amendments in National Tariff Policy," January 22, 2016, <http://reconnectenergy.com/blog/2016/01/analysis-of-amendments-in-national-tariff-policy/>.

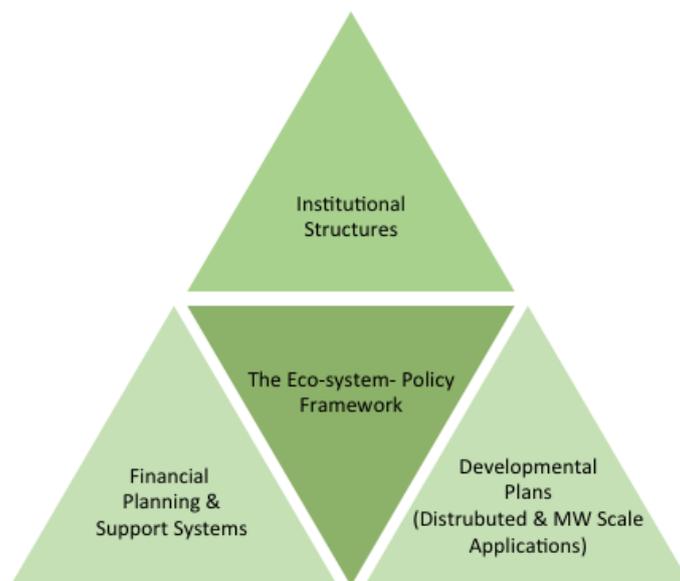


The recent amendment also throws up the question of the binding nature of the NTP. The NTP states that CERC and SERCs “shall be guided” by it. There is no positive obligation on states to enforce NTP or any penalties imposed for deviating from it. In fact, from previous NTPs several provisions remain only on paper. For example, many states have not even met the 3% solar RPO requirement. Further, it is relevant to note that the proposed amendment to the Electricity Act says “*the provisions of Tariff Policy shall be followed by the Appropriate Commission for the purpose of Tariff determination.*” Therefore, there is a clear emphasis on making the provisions of the NTP binding on SERCs but how states incorporate these at the local level remains to be seen.

## Draft Renewable Energy Act, 2015

The MNRE is spearheading the enactment of the National Renewable Energy Act (**Draft Act**). While the larger umbrella provisions of Electricity Act promote renewable energy, there is a need for to put in place holistic structural and institutional mechanisms, which are fundamental to the synchronised growth of the renewable energy sector. These institutions include the National Renewable Energy Committee, the National Renewable Energy Advisory Group, and the Renewable Energy Corporation of India. Actions to build the supporting ecosystem are also addressed—resource assessment, testing facilities and a monitoring and verification programme, and policies to promote local manufacturing. The proposed framework can be represented in the manner set out below<sup>54</sup>.

<sup>54</sup> “Analysis on Draft Renewable Energy Act 2015,” July 17, 2015, <http://reconnectenergy.com/blog/2015/07/analysis-on-draft-renewable-energy-act-2015/>.



From the perspective of the Discoms, the proposed enactment is significant in laying down mandatory national targets for RPO within one year of it coming into force and also provides for a centralised RPO compliance monitoring mechanism. Discoms will be required to formulate five year plans towards meeting their renewable energy targets. The Draft Act also details penalties which can be imposed by the SERCs for non-compliance of RPO which includes a fine of up to 1 crore and/or imprisonment up to 3 months for each continuing contravention. MNRE will also have the power to intervene to provide financial support to Discoms “*such that they become indifferent in the choice between conventional and renewable electricity resources until grid parity is achieved*”.

The Draft Act also mentions the appointment of a National Renewable Energy Advisory Group (**NREAG**), which will include various stakeholders such as producers and users of renewable energy sources, distribution utilities, academia, research institutions and think tanks. CUTS International, in its comments to the Draft Act, highlighted the need for inclusion of one representative from the civil society organisations (which have been working on renewable energy issues) among the members. The same organisation may or may not necessarily be a think tank or research institution. Further, it noted that the National Renewable Energy Committee (**NREC**), a body set up for facilitating inter-ministerial coordination, did not have any representatives from the industry, civil society and think tanks.<sup>55</sup> While the Draft Act does provide that the NREC will consult the NREAG and other stakeholders in the course of its decision-making process, this is need based and not a prerequisite. The issue highlighted by CUTS International is also part of a larger dialogue on the involvement of civil society organisations in power sector reforms. A report by Prayas, an NGO involved in the energy sector, revealed that despite an enabling legal and regulatory framework for public participation, the involvement of civil society groups in the regulatory process has been sporadic at best<sup>56</sup>. It stressed the role of civil society to support initiatives of regulatory commissions by providing informational support as well as by building pressure on utilities and large consumers to respond

<sup>55</sup> “CUTS Comments on the Draft Renewable Energy Act 2015,” [http://cuts-international.org/crc/pdf/CUTS\\_Comments\\_on\\_Draft\\_National\\_Renewable\\_Energy\\_Act-2015.pdf](http://cuts-international.org/crc/pdf/CUTS_Comments_on_Draft_National_Renewable_Energy_Act-2015.pdf).

<sup>56</sup> One instance was the 2004 petition filed by Greenpeace, an NGO, before Odisha Electricity Regulatory Commission requesting it to pass an order to the discoms to explore the possibilities of purchase of power from renewable energy at least to the tune of 10% of the total purchase of power from various existing sources. In wake of this petition, the commission in its April 2005 order decided that for the year 2006-07, 200 million units (MU) of power will be purchased by the Discoms from renewable sources. Greenpeace’s petition was followed by another petition by Bhubaneswar-based Project Development Consultants. In response to the second petition, the commission passed an order dated August 20, 2005 and directed the utilities to procure 3% of the total purchase during 2007-08 from the renewable sources. This percentage has to go up at the rate of 0.5% annum for each subsequent year to reach a level of 5% by 2011-12.

positively to such regulatory initiatives. These groups can also contribute towards making the regulatory process more accountable by demanding more coherent but ambitious approach towards clean energy. This role is facilitated when there is a legal basis for it written into the electricity law. For the perspective of Discoms, civil society organisations can better communicate with other consumers and help create awareness about measures such as theft reduction and metering. This can be done through direct partnerships with the Discom, but these interactions can be facilitated and structured by the regulator as well.<sup>57</sup>

## CONCLUSION

The Indian electricity sector is in the midst of a seismic shift, with the Centre targeting 40% renewable sources in the energy mix by 2030. These ambitious targets are bolstered by legislative, regulatory and policy interventions at the national and state level. This is also in line with global trends favouring green industrial policy for a clean and sustainable form of economic growth. Instead of control over the market, the emphasis has now shifted to engagement with the market through the creation of an enabling policy environment.<sup>58</sup> However, while there is clarity at the Central level on driving renewable energy reform, there is an obvious unease at the state level. As discussed, the role of Discoms is elemental to the success of any renewable energy policy. The current environment that Discoms operate under is far from ideal and clouded by state level politics. Changes at the central level, such as the segregation of content and carriage, are necessary to destabilise existing power structures and chart out an achievable path to green growth.

Effective implementation of the RPO scheme is key to achievement of India's renewable energy targets. Unfortunately, previous years have shown that ensuring RPO compliance is an uphill battle with majority of the Discoms unable, and often unwilling, to meet RPO. While there have been instances of some SERCs hauling up Discoms for non-compliance, often SERCs have acted as accomplices by routinely allowing carry forward and waiver of RPO. In the absence of concrete action from the SERCs and state governments towards RPO fulfillment, the downward trajectory of RPO compliance is likely to continue.

This also brings into focus the need to think more intently about the long-term nature of the reform process. While a policy shift may not necessarily be able to account for all stakeholders' interests, it must certainly acknowledge it. This could not be more true for the Indian energy sector as a participatory mechanism is not just recommended but necessary, given the division of powers under the Constitution. While the shift to renewable energy may not be embraced by all states, the Centre also needs to take a closer look at state-specific realities and address existing institutional inefficiencies before moving ahead with its reform agenda.

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<sup>57</sup> Davida Wood, "Bridging the Governance Gap: Civil Society, Democratization and Electricity Sector Reform," December, 2005, 20, [http://pdf.usaid.gov/pdf\\_docs/Pnado643.pdf](http://pdf.usaid.gov/pdf_docs/Pnado643.pdf).

<sup>58</sup> Ashwini K. Swain, "India's Green Industrial Policy Pursuing Clean Energy for Green Growth," *Economic and Political Weekly* 49, no. 9 (2014): 19.

**Annexure I: State-Wise RPO**

STATE	RE Technology	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Andhra Pradesh	Non-Solar		4.75%	4.75%	4.75%	4.75%	4.75%					
	Solar		0.25%	0.25%	0.25%	0.25%	0.25%					
	Total		5.00%	5.00%	5.00%	5.00%	5.00%					
Arunachal Pradesh	Non-Solar		4.10%	5.45%	6.80%							
	Solar		0.10%	0.15%	0.20%							
	Total		4.20%	5.60%	7.00%							
Assam	Non-Solar	2.70%	4.05%	5.40%	6.75%							
	Solar	0.10%	0.15%	0.20%	0.25%							
	Total	2.80%	4.20%	5.60%	7.00%							
Bihar	Non-Solar	2.25%	3.75%	4.00%	4.25%							
	Solar	0.25%	0.25%	0.50%	0.75%	1.00%	1.25%	1.50%	1.75%	2.00%	2.50%	3.00%
	Total	2.50%	4.00%	4.50%	5.00%							
Chhattisgarh	Non-Solar			3.75% (Biomass) & 2% other RE	3.75% (Biomass) & 2.25% other RE	3.75% (Biomass) & 2.50% other RE						
	Solar			0.50%	0.75%	1.00%						
	Total			6.25%	6.75%	7.25%						
Delhi	Non-Solar		3.25%	4.60%	5.95%	7.30%	8.65%					
	Solar		0.15%	0.20%	0.25%	0.30%	0.35%					
	Total		3.40%	4.80%	6.20%	7.60%	9.00%					
JERC (Goa & UT)	Non-Solar	1.70%	2.60%	2.60%	2.70%	2.70%	2.80%	2.80%	2.80%	2.90%	2.90%	3.00%
	Solar	0.30%	0.40%	0.40%	0.60%	0.85%	1.15%	1.50%	1.85%	2.20%	2.60%	3.00%
	Total	2.00%	3.00%	3.00%	3.30%	3.55%	3.95%	4.30%	4.65%	5.10%	5.50%	6.00%
Gujarat	Non-Solar	5.50%	6.00%	6.00%	6.75%	7.50%	8.25%					
	Solar	0.50%	1.00%	1.00%	1.25%	1.50%	1.75%					
	Total	6.00%	7.00%	7.00%	8.00%	9.00%	10.00%					



Meghalaya	Total	6.00%	7.00%	9.00%								
	Non-Solar	0.45%	0.60%	0.60%	0.60%							
	Solar	0.30%	0.40%	0.40%	0.40%							
Nagaland	Total	0.75%	1.00%	1.00%	1.00%							
	Non-Solar	6.75%	7.75%	7.75%	7.75%							
	Solar	0.25%	0.25%	0.25%	0.25%							
Orissa	Total	7.00%	8.00%	8.00%	8.00%							
	Non-Solar	4.90%	5.35%	5.80%	6.25%	6.70%						
	Solar	0.10%	0.15%	0.20%	0.25%	0.30%						
Punjab	Total	5.00%	5.50%	6.00%	6.50%	7.00%						
	Non-Solar	2.37%	2.83%	3.37%	3.81%							
	Solar	0.03%	0.07%	0.13%	0.19%							
Rajasthan	Total	2.40%	2.90%	3.50%	4.00%							
	Non-Solar				7.50%	8.20%	8.90%					
	Solar				1.50%	2.00%	2.50%					
Sikkim*	Total				9.00%	10.20%	11.40%					
	Non-Solar			2.75%	3.50%	4.25%						
	Solar			0.25%	0.50%	0.75%						
Tamil Nadu	total			3.00%	4.00%	5.00%						
	Non-Solar	8.95%	8.95%	8.95%	9.00%	9%						
	Solar	0.05%	0.05%	0.05%	2.00%	2%						
Tripura	Total	9.00%	9.00%	9.00%	11.00%	11%						
	Non-Solar	0.90%	1.90%		1.45%	1.65%	1.85%					
	Solar	0.10%	0.10%		1.05%	1.10%	1.15%					
Uttarakhand	Total	1.00%	2.00%		2.50%	2.75%	3.00%					
	Non-Solar			6.00%	7.00%	8.00%	9.00%	11.00%				
	Solar			0.05%	0.075%	0.10%	0.30%	0.50%				
	Total			6.05%	7.08%	8.10%	9.30%	11.50%				

Uttar Pradesh	Non-Solar	4.50%	5.00%	5.00%	5.00%							
	Solar	0.50%	1.00%	1.00%	1.00%							
	Total	5.00%	6.00%	6.00%	6.00%							
West Bengal	Non-Solar			3.90%	4.35%	4.80%	5.25%	5.70%	6.60%	7.50%		
	Solar			0.10%	0.15%	0.20%	0.25%	0.30%	0.40%	0.50%		
	Total	3.00%	4.00%	4.00%	4.50%	5.00%	5.50%	6.00%	7.00%	8%		

**Source:** Indian Renewable Energy and Energy Efficiency Policy Database

\*Sikkim is yet to notify its RPO regulations. The targets mentioned above are as set out under the draft regulation issued by the Sikkim State Electricity Regulatory Commission.