
Banking Restrictions on Renewable Energy Projects in India

Impact on Open-Access Market

Introduction

India's renewable energy (RE) installations have shown tremendous growth over the last few years to reach 104 gigawatts (GW) as of 30 November 2021.¹ This growth has been steered by the drastic reduction in technology costs over the last few years along with a strong policy and regulatory environment. Various state governments have helped by giving waivers and incentives to promote the increased deployment of renewable energy. One such provision provided to RE generators is "banking of power," allowing utilities to store the surplus energy generated and withdraw it later when needed. The concept was first introduced in Tamil Nadu in 1986 and is similar to a bank customer's savings account.²

In banking of power, a generating plant supplies power to the grid, without planning to sell it. Instead, the plant holds the option to draw back the power from the grid within a certain time period and against the charges specified under relevant regulations.³

Generally, banking in India is provisioned at the point of consumption by the distribution companies (discoms). Banking is only permissible for intrastate transactions. Several State Electricity Regulatory Commissions (SERCs) levy a banking charge that varies across states.

Banking of power allows utilities to store the surplus energy generated and withdraw it later when needed.

Key benefits of banking provisions for renewable energy generators include:

- It is an effective mechanism to utilize excess RE generation.

¹ Ministry of New and Renewable Energy (MNRE). [Physical Progress](#). November 2021.

² Indian Journal of Projects, infrastructure and Energy Law. Ankit [Banking of Renewable Energy](#). 19 March, 2021.

³ Uttar Pradesh Electricity Regulatory Commission (UPERC). [Draft CRE Regulations](#). 4 April, 2019.

- As solar and wind power are intermittent in nature, it is not possible to forecast the generation and supply of energy with 100% accuracy. Banking can help manage intermittency and ensure a reliable power supply.
- In some cases, banking can also provide financial benefits. Imposing banking charges can allow discoms to generate additional revenue from banked energy.
- The banking provision indirectly helps utilities in peak load shifting.
- It pushes the Commercial & Industrial (C&I) segment to increase its share of RE procurement, thereby helping to meet sustainability and RE100 targets.

Despite all the benefits, it has been observed over the last two years that state governments have been issuing or have been considering restrictive and stringent banking notifications for renewable projects. Discoms are restricting the banking provision because they fear losing high-paying C&I consumers. After adopting restrictive net metering regulations and withdrawing waivers for open access renewable projects, discoms are now restricting banking facilities to keep C&I consumers from shifting to alternative RE power procurement models.

Some reasons that different discoms or state governments have used to justify the new restrictions are:

1. The fast-paced evolution of solar technology has led to increased efficiency, which in turn led to smaller capital expenditures (CAPEX) required to set up a solar power project over the last five years. This ultimately reduced the per-unit cost of electricity generation by solar projects. Discoms have argued that to settle excess energy banked by developers, they have to buy excess power at tariffs that are linked to average power purchase costs (APPC). As per latest Central Electricity Regulatory Commission (CERC) order for FY2021/22, the national APPC is Rs3.85 per kilowatt-hour (kWh), which is higher than the per-unit cost of generation from solar projects, which is in the range of Rs2-2.8/kWh. Many discoms have been claiming the difference caused them to lose money.
2. The Ministry of New and Renewable Energy (MNRE) has set up statewide targets to achieve 175GW of RE installed capacity by 2022. States that have achieved 85% to 90% of their targets plan to withdraw the banking facility for the open access RE projects. Their primary reason for introducing a banking facility is to promote renewable energy. Since targets set by MNRE are almost achieved, they can withdraw the facilities. Because of these banking provisions, regulators have said that this leads to additional cost burden on discoms, which will lead to higher per unit electricity costs for consumers.
3. Discoms also stated that consumers in some states are taking advantage of the banking provision by drawing on banked energy during peak demand periods while injecting power during off-peak periods. The cost of power

procurement during peak period is higher. Discoms are facing losses due to the difference in power procurement costs.

Though discoms have raised valid points, the national RE target of 450GW by 2030 is still far away. Restrictive banking provisions at this early stage of the RE growth trajectory in India will create a huge setback for renewable project developers.

As part of this briefing note, the current status of banking provisions has been analysed across leading RE-rich states in India, along with the implications of these restrictive provisions upon the renewable sector.

Banking Restrictions at Central Level

In August 2021, the Ministry of Power issued draft electricity (Promoting Renewable Energy through Green Energy Open Access) rules,⁴ which allow banking on a monthly basis only for open-access consumers.⁵

Table 1: Banking Restrictions Proposed by Ministry of Power

Date of Issue	Status	Banking Regulation
Aug 2021	Draft	According to Ministry of Power draft electricity (Promoting Renewable Energy through Green Energy Open Access) rules, 2021: <ul style="list-style-type: none">Banking charges will be permitted on a monthly basis for open accessThe quantum of banked energy by the green open-access consumers shall not be more than 10% of the total annual consumption of electricity from the distribution licensee by the consumers.

Source: Ministry of Power, JMK Research.

Since renewable sources of energy are intermittent in nature, imposing restrictions of 10% cap will not motivate RE developers. Banked energy also indirectly helps discoms with peak load shifting, and imposing restrictions will result in more unstable grid management. States are likely to follow suit and introduce similar restrictions.

Status of Banking Regulations Across Major States

In last few months, some RE-rich states have moved from an annual to a monthly banking period, while some have completely withdrawn banking facilities for RE

⁴ Ministry of Power. [Draft Electricity \(Promoting Renewable Energy Through Green Energy Open Access\) Rules](#). August 2021.

⁵ Open access is a regulatory mechanism allowing a grid-connected bulk consumer, holding a valid contract demand for 1,000 kVA or more, to meet part of or its entire electricity requirements through alternative sources.

projects.

- Gujarat and Maharashtra have moved from an annual banking period to a monthly banking facility.
- In Andhra Pradesh, the banking facility has been completely withdrawn. The Andhra Pradesh government amended its key renewable policies to pull back the incentives given to RE developers in November 2019. The amendment removed, banking of 100% of energy, which had been allowed throughout the year for solar, wind, and hybrid projects.
- Following in Andhra Pradesh's footsteps, Karnataka Electricity Regulatory Commission (KERC) in August 2020 has also proposed to discontinue the banking facility extended to renewable projects. However, in its latest issued interim order to remove regulatory uncertainty, KERC decided in September 2021 to allow a banking facility for solar projects with annual settlement periods and with banking charges of 2%.
- Rajasthan has restricted its banking facility for third-party transactions.
- Madhya Pradesh does not allow a banking facility for discom-registered captive projects.⁶

⁶ A captive plant in India may be set up by any person, or group of persons (including companies) for generating electricity primarily for self-consumption.

Table 2: Banking Regulations Summary Across Key States

State	Applicable Banking Regulation/ Policy	Banking allowed	Banking Settlement Period	Banking Charges	Restrictions	Applicability	Remarks
Andhra Pradesh	Andhra Pradesh Solar Policy, 2018	Not allowed					Through last amendment dated 18.11.2019 of Solar Policy, government has withdrawn its banking facility
Bihar	Bihar Electricity Regulatory Commission (BERC) banking of power from energy-based captive generating plant regulations, 2018	100%	Monthly	2%	Drawal of banked energy not permitted during peak hours. For third parties, banking provisions are not issued	Allowed for adaptive consumers	Last regulation issued in 2018
Gujarat	Gujarat Solar Policy 2021	100%	Solar- Daily (7 AM to 6 PM) Wind, Wind Solar Hybrid- Monthly	Solar- Rs.1.5/kWh banking charge for high-tension (HT) consumers Rs1.10/kWh for low-tension (LT) consumers Wind, Wind Solar Hybrid- No banking charge	Banking not allowed for projects under Renewable Energy Certificate (REC) mechanism	Allowed for captive and third- party sale	For hybrid projects: Banking allowed in 15-minute time blocks for consumers claiming renewable attributes, or on a monthly basis for other consumers
Haryana	Haryana Electricity Regulatory Commission (HERC) terms and conditions for determination of tariff from RE sources, renewable purchase obligation and renewable energy certificate regulations, 2021	100%	Annual	Rs.1.50/kWh	Banked energy cannot be redeemed during peak months (May to September) and in the peak hours as per time of day (TOD) regime	Allowed only for 100% captive consumers	DISCOM will allow banking as much as 100 megawatts (MW) cumulatively

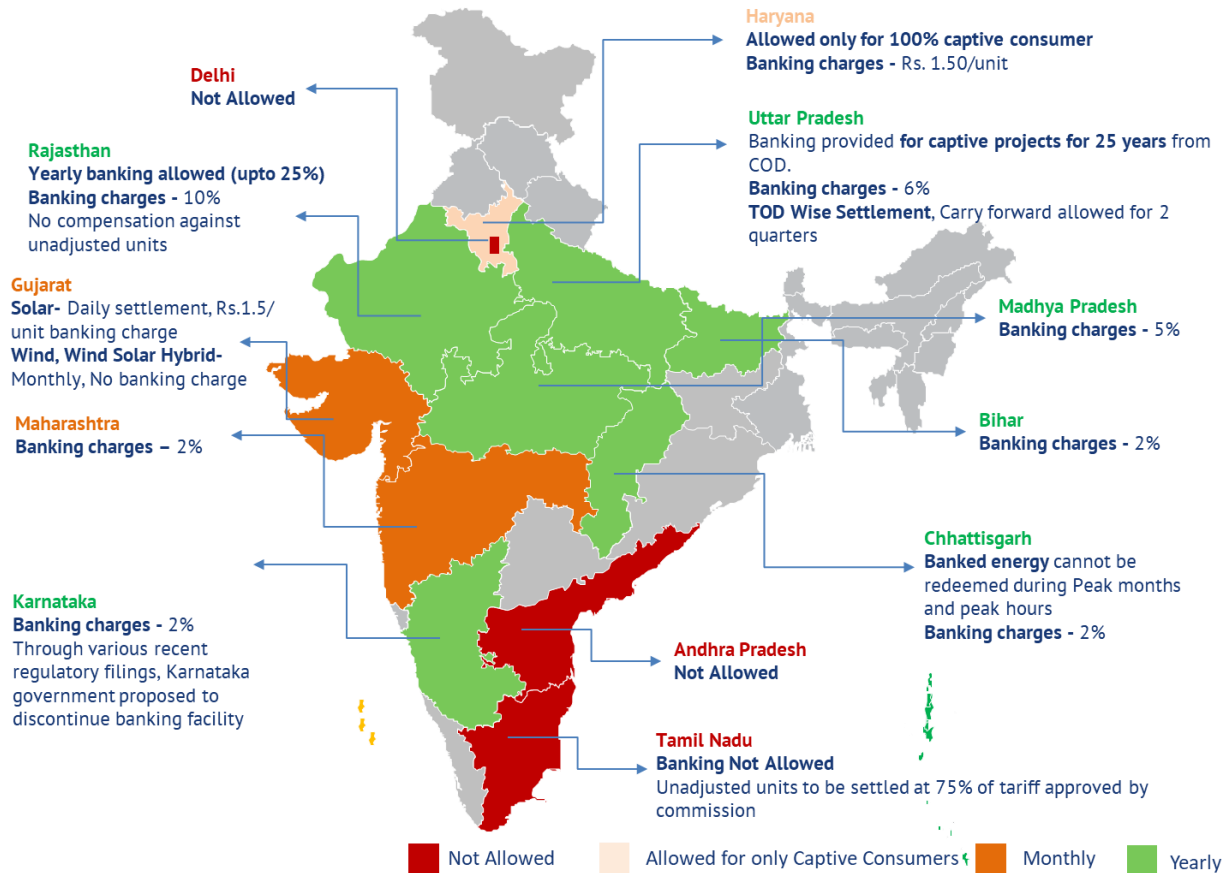
Chhattisgarh	Chhattisgarh State Electricity Regulatory Commission (CSERC) Decentralized Renewable Energy (DRE) Regulations, 2019	100%	Annual (April-March)	2%	Banked energy cannot be redeemed during peak months (<i>i.e.</i> , June 25 to July 25, September 10 to October 10 and March 15 to April 15) and in peak hours (6 p.m. to 11 p.m.)	Allowed for captive and third- party sale	In draft amendment to CSERC DRE Regulations, a 5% banking charge has been proposed
Karnataka	Karnataka Electricity Regulatory Commission (KERC) order on wheeling and banking charges	100%	Annual (April-March)	2%	No Restrictions	Allowed for captive and third- party sale	Through various regulatory filings, Karnataka government has proposed to discontinue its banking facility
Maharashtra	Maharashtra Electricity Regulatory Commission (MERC) distribution open- access regulation	100%	Monthly	2%	Energy banked during peak TOD may be drawn during off-peak TOD. Energy banked during off-peak TOD may not be drawn during peak TOD	Allowed for captive and third- party sale	Per last issued tariff order for rooftop PV projects, banking charges are 7.5% for HT and 12% for LT consumers
Rajasthan	Rajasthan Electricity Regulatory Commission (RERC) RE regulations	25%	Annual	10%	Banked energy not allowed to redeem during peak hours	Allowed for captive and third- party sale	Per Rajasthan's 2019 solar and wind hybrid policies, banking is also allowed for hybrid projects as well
Tamil Nadu	Banking not allowed						Banking not allowed Settlement mechanism: Purchase of excess generation/ unutilized banked energy shall be at 75% of lowest tariff discovered during the year through competitive bidding (State/ Solar Energy Corporation of India (SECI))

Delhi	Delhi Electricity Regulatory Commission (DERC) issued open-access charges and related matters (Fourth Amendment) Order, 2021: Banking is not applicable for the supply of electricity from RE sources through open access						
Uttar Pradesh	Uttar Pradesh Electricity Regulatory Commission (UPERC) captive and RE generation plants (CRE) regulations	100%	Annual	6%	TOD wise settlement, power banked in Qth quarter shall be allowed to withdraw within (Q+2) th quarter	Allowed for captive consumers	Banking provided for captive projects for 25 years from the commissioning date (COD).
Madhya Pradesh	Madhya Pradesh Electricity Regulatory Commission (MPERC) cogeneration and generation of electricity from renewable sources of energy regulations	100%	Annual	5%	No banking allowed for DISCOM-registered projects	Allowed for captive and third- party sale	Banking is allowed with annual settlement, 5% banking charges and settlement at the end of financial year at the lowest tariff, determined through competitive bidding.

Source: State Electricity Regulatory Commissions (SERCs), JMK Research.

Electricity is a concurrent subject in India with both central and state level regulators involved. As can be seen from the table above, there is no uniformity across states, and all states have different provisions for banking.

Figure 1: Summary of Banking Provisions Across Key States



Source: JMK Research.

As can be seen from the above figure, most RE-rich industrial states have shifted from annual to monthly banking provisions. For major states, banking charges are in the range of 2% to 12.5% of the banked energy. Banking provisions are also likely to be restricted to time-of-day or daylong across most states.

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Way Forward

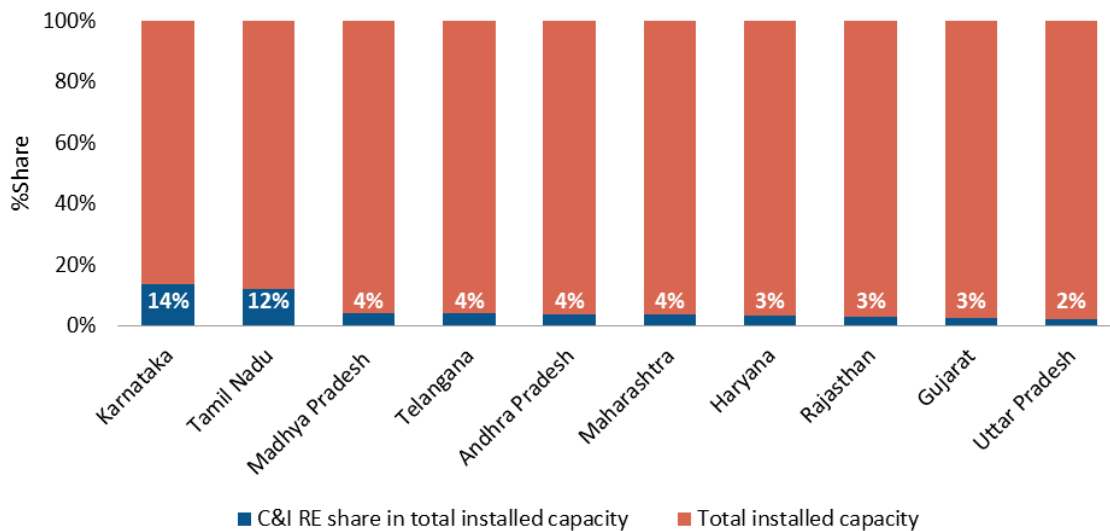
Banking provisions are important for solar and wind projects. There is a high potential for excess energy generation during peak summer or windy seasons that can be utilized later with a banking facility. However, in the absence of a banking facility or with restrictions to monthly banking, excess generation is lost. Without banking power and without any commercial settlement mechanism for excess energy, the whole business model for solar projects selling power via open access will become unviable.

These restrictive regulations hamper both sides of the RE market—demand and supply. Considering India’s target of 450GW of RE installed capacity by 2030, it is necessary to have a banking facility for RE projects.

As can be seen from Figure 2, C&I’s RE segment is just 2% to 14% of the total (thermal+RE) installed capacity across key RE-rich states in India. In terms of contribution of total electricity generation, this is less than 1% of overall electricity generation portfolio across most of these states.

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Figure 2: C&I RE Share in Total Installed Capacity in India (as of March 31, 2021)



Source: Central Electricity Authority (CEA), MNRE, JMK Research.

Introducing restrictive measures at this stage is not good for the RE sector. Statewide targets are necessary for rooftop and open-access RE segments. Until the targets are reached, it is imperative that no restrictions are imposed on RE capacity additions. An example of removing a bottleneck from the sector occurred in March 2020, when Maharashtra Electricity Regulatory Commission (MERC) decided not to impose any grid support charges on rooftop solar installations until the state achieved 2,000 megawatts (MW) of rooftop capacity.

Discoms should also justify the increase in cost efficiency and revenue because of these restrictive banking provisions. Instead, regulators can promote banking by

allowing banked energy with Discoms to contribute to their Renewable Purchase Obligation (RPO), as well.

Consistency in central policy and regulatory implementation over the long term has been a critical issue for the Indian solar market. It is also important that a uniform regulatory framework be brought across different states to encourage development in the Indian solar ecosystem. Because of different banking provisions and banking charges, project developers face confusion and uncertainties when dealing with different states. Regulations should not be retrospective, and commissioned projects should not be affected by restrictive regulations and notifications.

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The RE banking period needs to be adequate to expand the pool of RE procurers from discoms. Banking provision need not burden developers with excess banking charges and withdrawal charges. States should adopt uniform provisions and regulations to create clarity for industry stakeholders and renewable project developers.

More restrictions might lead the project developers to look at alternate options to utilize unbanked excess energy. Some possible options include:

- **Exploring Green Term Ahead Market (GTAM) and Integrated Day Ahead Market (IDAM) trading platforms:** From a generator's point of view, the problem of excess energy can be settled by selling the excess energy in the GTAM market at competitive rates. Intra-day contracts and day ahead contingency contracts can be availed to utilize this banked energy.⁷ The GTAM market would give generators access to the pan-India market, certainty in despatch and payment guarantees. In the first year of operations that began in August 2020, the average traded prices of solar and non-solar contracts in the GTAM on the Indian Energy Exchange (IEX) were Rs3.48/kWh and Rs4.06/kWh respectively. After deducting all open-access charges, the seller can still earn net additional revenues of Rs1- 3/kWh.
- **Deploy Battery Energy Storage Solutions (BESS):** Generators can also embed Battery Energy Storage Systems (BESS) solutions to store excess energy and supply it during the winter season. BESS solutions help in grid balancing and in adequate use of generated energy. These solutions can be deployed at a generator's end (in case of an open-access plant) or at a consumer's end. This will incur additional costs, leading to increases in PPA tariffs between developer and consumers. However, in the long run, with

⁷ Indian Energy Exchange (IEX). [Green Term-Ahead Market](#).

continued declines in battery prices, BESS can aid in rejuvenating the electricity sector by improving the integration of RE sources with the grid via peak load shifting.

Alternatively, discoms can explore the option to procure banked energy themselves, instead of the developer/end consumer. For availing banking in any state, a Wheeling and Banking Agreement (WBA) is signed by project developers with respective state discoms. Instead of returning power back to the end consumer/developer, discoms can simply pay for the quantum of banked energy after each month at their lowest cost of procurement (discovered in any competitive bids in state, SECI, or NTPC tenders). However, rather than changing every year, it should be fixed at least for the year in which the WBA was signed, unless further amended by developer.

Furthermore, with government plans to spend about Rs24,000 crores to set up domestic solar cells and modules,⁸ and domestic PV manufacturers making large expansion investments, imposing restrictions to curb the open-access and rooftop solar markets is not right for sector growth at this point. An entire ecosystem needs to be built to drive future investments and growth in the sector. Government policies will play a critical role to drive this market.

To conclude, imposing restrictions at this phase of renewable industry growth in India will have a minimal effect on discom finances, but their impact on reaching the nation's RE target could be huge. The government needs to weigh the pros and cons and then decide the future course of action.

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⁸ Economic Times. [Govt to enhance funding under PLI for solar manufacturing](#). 14 November, 2021.

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