

Corporate Renewable PPAs in India:

Market & Policy Update

January 2021



① Introduction | 3

② Market trends | 6

③ Policy and regulatory updates | 13

④ Outlook for corporate renewable PPAs | 20

⑤ Conclusion | 23

Glossary | 25

Annex 1:

Summary of state-level updates for open access regulations | 26

Annex 2:

Recent amendments to rooftop solar regulations in India | 28

Annex 3:

Current banking regulations across different states | 29

1 Introduction



1 Introduction

More and more companies are procuring renewable power for their operations to help manage their electricity costs while contributing to corporate carbon emissions reduction targets. In India, the main drivers for many companies to do so are rising electricity tariffs for commercial and industrial consumers, falling prices for solar photovoltaic (PV) technology and corporate sustainability goals.

A frequently used approach for companies to purchase renewable electricity is a corporate renewable power purchase agreement (PPA). A corporate renewable PPA is a contract between a corporate buyer(s) and a power producer (developer, independent power producer, investor) to purchase renewable electricity at a pre-agreed price for a pre-agreed period. Corporate renewable PPAs have become increasingly varied and innovative and are now a widely used approach worldwide – companies had signed over 70 GW of capacity globally as of the end of November 2020, compared to just 300 MW in 2009.

India has also seen impressive growth in corporate renewable sourcing. According to Bloomberg New Energy Finance (BNEF), India was the second largest growth market for corporate renewable PPAs after the US in 2019, with an addition of 1.4 GW of capacity. However, in 2020, India witnessed a significant slowdown in corporate renewable PPA activity, primarily due to regulatory changes and exacerbated by the COVID-19 pandemic.

To increase the adoption of corporate renewable PPAs in India, members of the World Business Council for Sustainable Development (WBCSD) formed the India Corporate Renewable PPA Forum in 2017 to exchange practical knowledge on the effective implementation of corporate renewable PPAs for both rooftop and utility-scale renewable electricity installations in India.

We combined lessons learned from this work with research on the regulatory environment and market conditions in India to produce the WBCSD [Accelerating corporate procurement of renewable energy in India](#) report (June

2018). Because the Indian power market is constantly evolving, we are producing market and policy updates to keep our members and other companies informed of the latest developments.

The [first update](#), published in June 2019, concluded that corporate renewable PPAs flourished in India in 2017-18 due to waivers on open access charges offered by states such as Karnataka, Andhra Pradesh and Telangana. The [second update](#), published in December 2019, found that most states are withdrawing these waivers for third-party sale renewable projects and leading renewable electricity generators to shift to alternative business models like the “group captive” model.



This third market and policy update for corporate renewable PPAs in India provides readers with a renewed overview of market trends, policies and regulations from 2020, as well as an outlook for 2021. It finds that due to falling technology costs, corporate renewable PPAs in India are economically viable without government waivers on open access charges. Despite this, additional signed corporate renewable PPA capacity in India fell to 800 MW in 2020 (compared to 1.4 GW in 2019). This is due to two factors that posed new challenges for corporate renewable PPAs in 2020:

- New restrictions at state-level, including limiting banking provisions for power, reversing open access project approvals and imposing additional open access charges.
- The COVID-19 pandemic, which resulted in paused PPA negotiations, delayed permit approvals due to restricted site access and suspended project construction due to labor and equipment shortages.

Despite the evident slowdown in PPA capacity in 2020, we see a positive outlook for 2021. Company ambition for procuring renewable power is increasing, company appetite for corporate renewable PPAs is high, and power demand has bounced back to pre-COVID-19 levels.

Going forward, there is potential for government reforms in the electricity sector to significantly stimulate uptake of corporate renewable PPAs in India. The government's new draft Electricity Amendment Bill means that all states in India are likely to bear higher penalties for non-compliance with renewable purchase obligations (RPO); and the government is planning the privatization of loss-making electricity distribution companies (DISCOMs). These reforms are expected to face further delays and opposition, but if passed will drive corporate renewable sourcing competitiveness by encouraging DISCOMs to explore PPA options to fulfill RPOs and will lead to cheaper commercial and industrial (C&I) grid tariff rates.

It is a pivotal moment for corporate renewable sourcing in India – in combining company ambition with the right policy incentives and electricity sector reforms, the country can increase competitiveness and drive the implementation of corporate renewable PPAs. By enabling companies to procure renewable power, India can also support the government's *Make In India* initiative, which aims to improve the country's self-reliance and reduce its dependence on imports.

This WBCSD report begins with an overview of the corporate renewable PPA market data in India and commentary on the market dynamics that have impacted this data. The second section outlines policy and regulatory changes from 2020 at both national and state levels. The report concludes with an outlook for corporate renewable PPAs in 2021. We recommend that readers who are not familiar with options for corporate renewable sourcing in India, such as third-party sale PPAs, the group captive model and the applicability of open access charges, refer to the explanations in the WBCSD [Accelerating corporate procurement of renewable energy in India](#) report (June 2018) to aid their understanding of this report.



② Market trends



2 Market trends

INTERNATIONAL CONTEXT

Corporate renewable PPA uptake is growing around the world at a remarkable rate. According to BNEF, more than 100 companies in 23 different countries signed 19.5 GW of PPAs in 2019.¹ This capacity addition is around 6 GW higher than in 2018 and has tripled since 2017. And 2020 is set to be another record-breaking year – for the first 11 months of the year, companies signed 17.9 GW of corporate renewable PPAs globally, outpacing PPA capacity signed in the previous year during the same period (as shown in figure 1).² Decreasing renewable generation

technology costs and growing awareness of corporate renewable PPAs among both corporate buyers and developers are driving this trend.

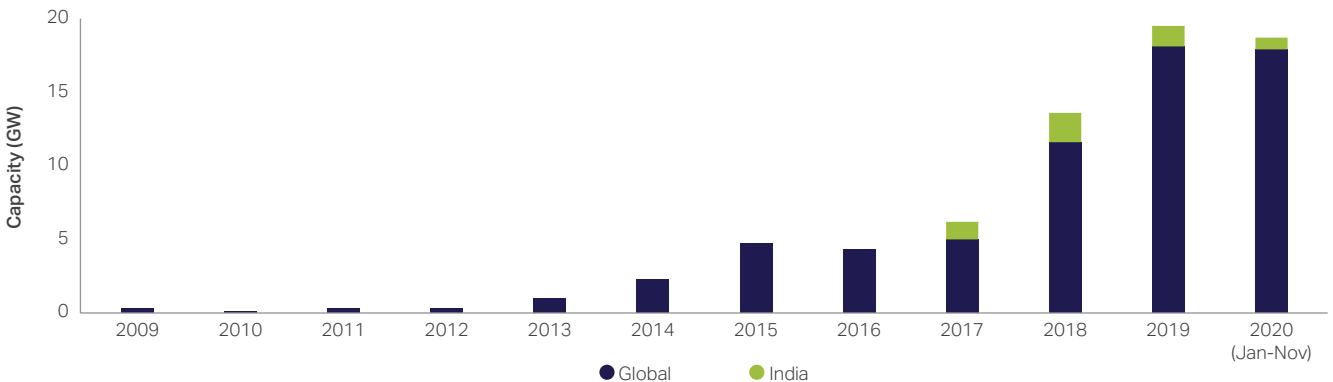
NATIONAL MARKET DATA

According to BNEF, in 2019 India was the second largest growth market for corporate renewable PPAs after the US, with an addition of 1.4 GW of PPA capacity. However, for the first 11 months of 2020, PPA capacity additions in India reached only 800 MW, mainly due to state-level regulatory changes (see section '[Policy and regulatory updates](#)' for more detail) and the COVID-19 pandemic.

updates' for more detail) and the COVID-19 pandemic.

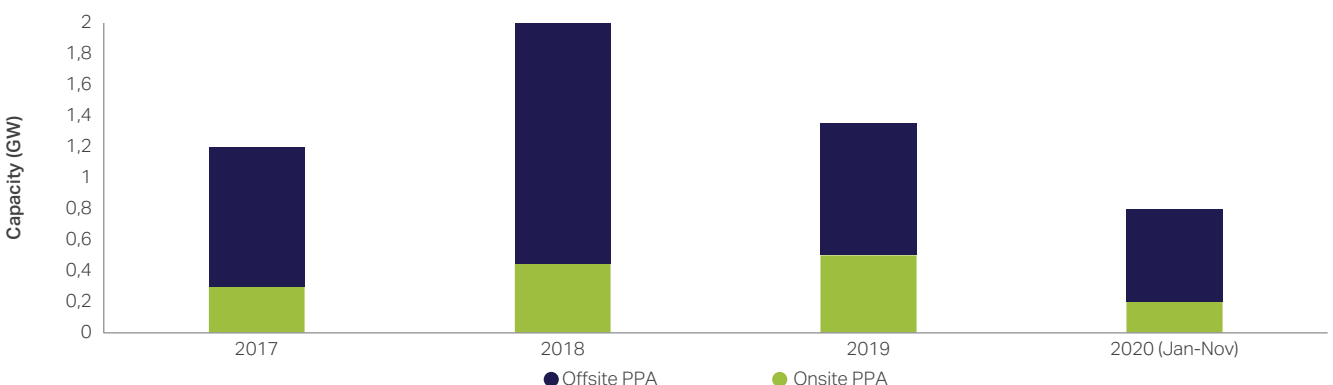
State-level regulatory changes in Karnataka have had a particularly strong influence on total PPA capacity additions in India. In 2018, nearly 81% of PPA capacity additions in India were located in Karnataka as the state had offered a 10-year waiver on most open access charges. After the government withdrew these exemptions, the market in India contracted somewhat in 2019 and significantly in 2020 (which the COVID-19 impacts exacerbated), as shown in figure 2.

Figure 1: Annual global signed corporate renewable PPA capacity



Source: Bloomberg New Energy Finance (BNEF), JMK Research. Note: Data for India includes all captive, group captive and third-party sale solar and wind PPA projects.

Figure 2: Annual India corporate renewable PPA capacity additions



Source: JMK Research. Note: Data includes all captive, group captive and third-party sale solar and wind PPA projects.

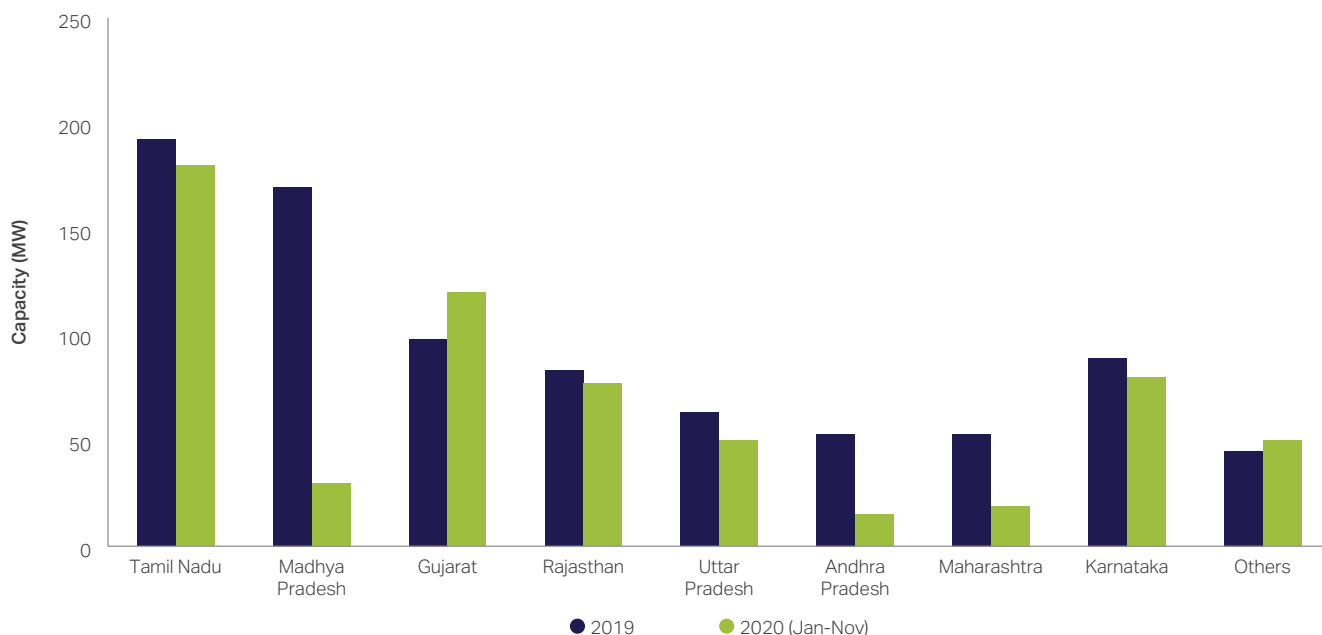
Looking at the breakdown across states, Gujarat is the only state to have increased installation capacity from corporate renewable PPAs in 2020 (January – November), as shown in figure 3. With the addition of December 2020 numbers, Tamil Nadu, Karnataka

and Rajasthan may also show a year-on-year capacity increase.

Looking at developer capacity, as shown in figure 4, Greenko, Cleantech, Continuum Wind Energy, Amplus and Adani developed the largest offsite open access renewable projects in India from

January 2019 to July 2020. In the onsite/rooftop segment, Cleantech, Fourth Partner, Amplus and CleanMax commissioned the largest PPA projects. Corporate renewable PPAs in India with solar PV assets continue to see higher installation rates than those with wind assets.

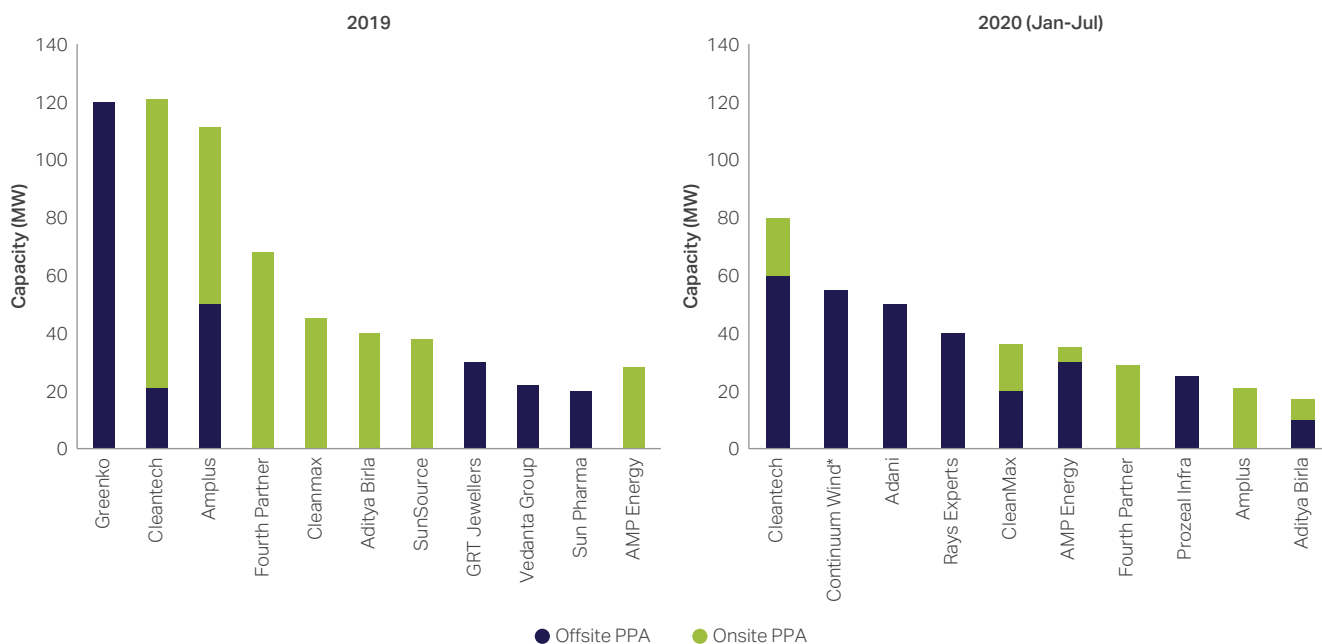
Figure 3: State installation of corporate renewable PPAs



Source: JMK Research

Note: Data includes all captive, group captive and third-party sale solar and wind PPA projects.

Figure 4: Solar corporate PPAs by leading developers

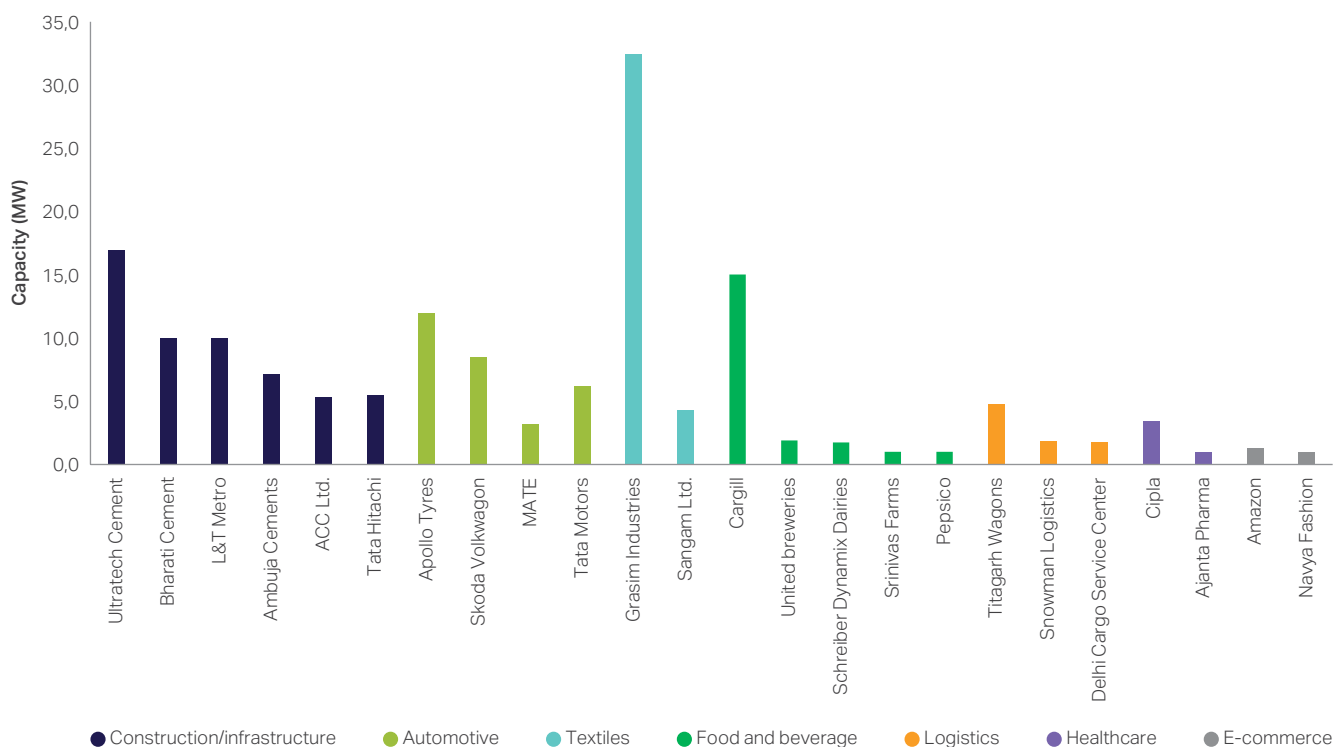


*Wind solar hybrid PPA

Source: JMK Research

Note: Data available to July 2020 only.

Figure 5: Companies procuring renewable power through corporate renewable PPAs in India (April 2019 – August 2020)



Source: JMK Research

Note: Data is not comprehensive; but as a subset it is representative of the key customer categories in the Indian market. Data available to August 2020 only.

In terms of sectors, construction, infrastructure, automotive and textile companies have been the leading consumer segments, procuring more than 165 MW of renewable power through PPAs in India between April 2019 and August 2020, as shown in figure 5. During this period, corporate buyers Grasim Industries, Ultratech Cement, Cargill and Apollo Tyres procured the most renewable capacity through corporate renewable PPAs in the country.

KEY EVOLVING TRENDS AND MARKET DYNAMICS

Several evolving market dynamics are impacting the capacity trends outlined in the previous section.

From a regulatory perspective, the reversal of DISCOM approvals for open access projects in Haryana and the imposition of additional surcharges on group captive models are developments that are limiting the uptake of corporate renewable PPAs in India.

From a market perspective, the commissioning of the first hybrid open access project, the increasing adoption of rooftop solar PPAs, the use of the newly launched Green Term Ahead Market, and continued company appetite for corporate renewable PPAs are all evolving market dynamics that are promoting uptake, while the impacts of the COVID-19 pandemic have caused short-term market constraints.

We examine each of these key evolving trends and market dynamics in more detail below.

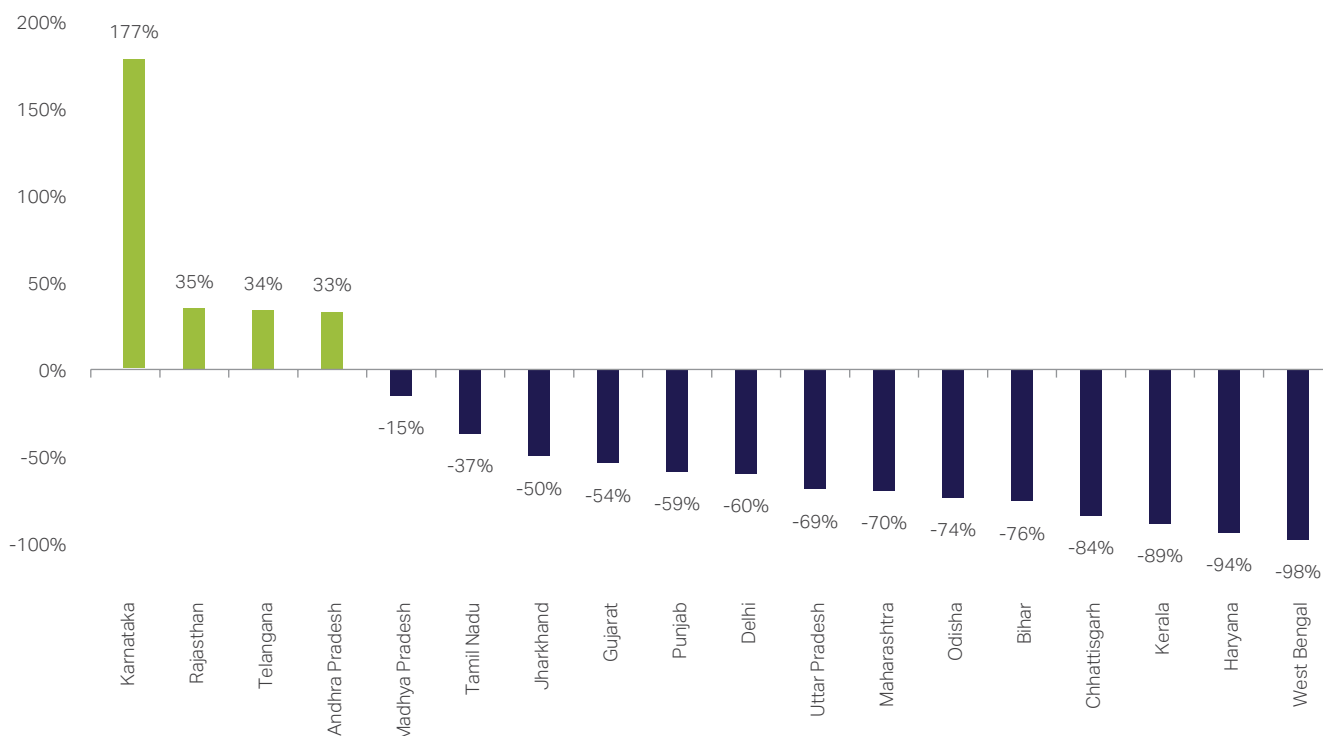
REVERSAL OF DISCOM APPROVALS FOR OPEN ACCESS PROJECTS IN HARYANA

In the previous market and policy update published in December 2019, we projected that Haryana would add significant open access solar PV capacity – about 550 MW – in 2020. Project developers

submitted applications for more than 1,900 MW but have reported that state DISCOMs in Haryana – Dakshin Haryana Bijli Vitran Nigam Ltd (DHBVNL) and Uttar Haryana Bijli Vitran Nigam Ltd (UHBVNL) – have put approvals on hold for third-party and group captive consumers to use their transmission and distribution networks. The Haryana state regulator is now planning to convert the open access projects into DISCOM PPAs for 25 years under cost-plus tariffs.

After thorough deliberations between the developers and the government, the Ministry of New and Renewable Energy (MNRE) stepped in and asked the state government to honor the signed renewable electricity contracts. We have yet to see if the state government will uphold these contracts or proceed with the policy reversal. This policy inconsistency has impacted many investors, project developers and corporate buyers.

Figure 8: State by state solar RPO compliance (as of FY 2020)



Source: Ministry of Power

The states initially approved these open access projects to fulfill state RPO obligations. As of financial year 2019-20, Haryana had a 94% deficit in its solar RPO compliance. However, in its tariff order for financial year 2020-21, the Haryana Electricity Regulatory Commission (HERC) did not impose any penalty for this deficit and waived the solar and non-solar RPO backlog of 1,850 million units (MUs) and 905 MUs respectively.

The removal of the RPO backlog is one of the key reasons that Haryana is backtracking on the approved projects. Had the RPO backlog been upheld, it would have resulted in the imposition of a penalty on the DISCOM. The DISCOM claims that fulfilling the RPO would have resulted in the passing of an additional INR 11 billion in costs to electricity consumers. HERC did not approve this, to avoid additional financial pressure on top of the effects of the COVID-19 pandemic.

IMPOSITION OF THE ADDITIONAL SURCHARGE ON GROUP CAPTIVE MODELS

To promote renewable electricity, various state governments have introduced waivers for third-party sales. In the last two years, however, state governments have withdrawn many of these waivers, leading to a shift from third-party sale models to group captive models, where the cross-subsidy surcharge (CSS) and additional surcharge (AS) are not applicable (according to the Indian Electricity Act 2003).

However, in September 2018, Maharashtra imposed an AS of INR 1.25/kWh on users of group captive models. The developers opposed this at the Appellate Tribunal for Electricity (APTEL), which ruled that the state may not levy an AS on captive users (a judgement that is currently being challenged in the Supreme Court).

For financial year 2020-21, Maharashtra has once again imposed an AS of INR 1.31/kWh on open access consumers (both captive and group captive consumers). The rationale given behind this move is that the DISCOM may no longer fully use its existing tied-up capacity, leading to losses for the DISCOM. Given that it is under regulatory proceedings, if approved, it is not possible to rule out the risk that other states may introduce such a levy.

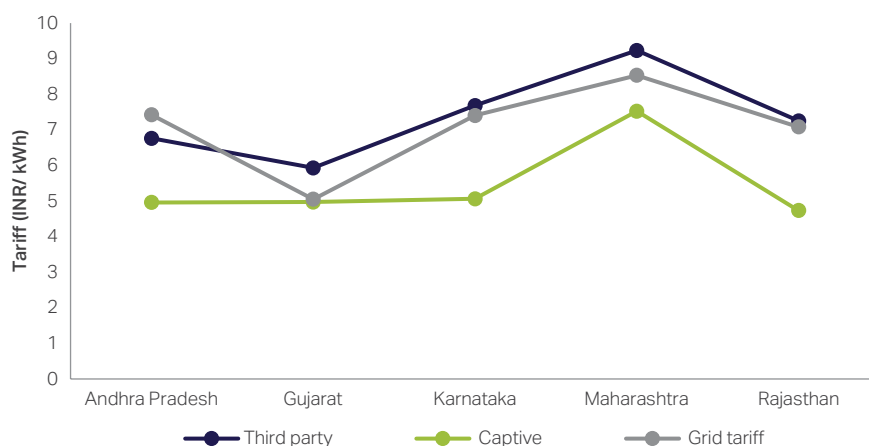


COMMISSIONING OF THE FIRST WIND AND SOLAR HYBRID OPEN ACCESS PROJECT IN INDIA

Renewable developers are exploring combined solar and wind hybrid projects (also known as multi-technology PPAs), due to supportive government policies and waivers on open access charges for such projects. According to MNRE, in a hybrid project, the rated power capacity of one resource must be at least 25% of the rated power capacity of the other resource.³ The benefits for hybrid projects include waivers on open access charges (particularly when most states are backtracking on CSS and AS waivers for third-party sale from solar plants), reduced shape and volume risk due to lower generation variability of the combined technologies,⁴ and better use of transmission infrastructure (where wind and solar plants are located at the same site).

India has seen the commissioning of a total of some 144 MW of hybrid capacity to date. States like Rajasthan, Gujarat and Andhra Pradesh have introduced dedicated policies for hybrid projects, as outlined in table 1. Andhra Pradesh initially introduced waivers on various open access charges for hybrid projects before withdrawing them in November 2019.

Figure 6: Landed cost of wind solar hybrid power for industrial consumers



Source: JMK Research

Assumptions: (1) hybrid cost fixed at INR 4/kWh across states to highlight changes due to open access charges; actual tariffs will vary; (2) landed cost calculated for industrial consumers connected at 33 kV voltage; (3) the hybrid projects use a 75:25 ratio for solar to wind.

Figure 6 represents the PPA price a company consuming open access power from hybrid projects pays. The captive model is best suited for hybrid projects in the states indicated.

INCREASING ADOPTION OF ROOFTOP SOLAR PPAS

As of 30 June 2020, rooftop PPA projects made up nearly 32% (1,851 MW) of the cumulative onsite solar installations in India. Under the rooftop PPA model, a renewable energy service company (RESCO) funds, builds and maintains a rooftop or onsite solar power plant.

The end-consumer pays for the power generated under a PPA at an agreed tariff for a fixed period, typically 12-15 years.

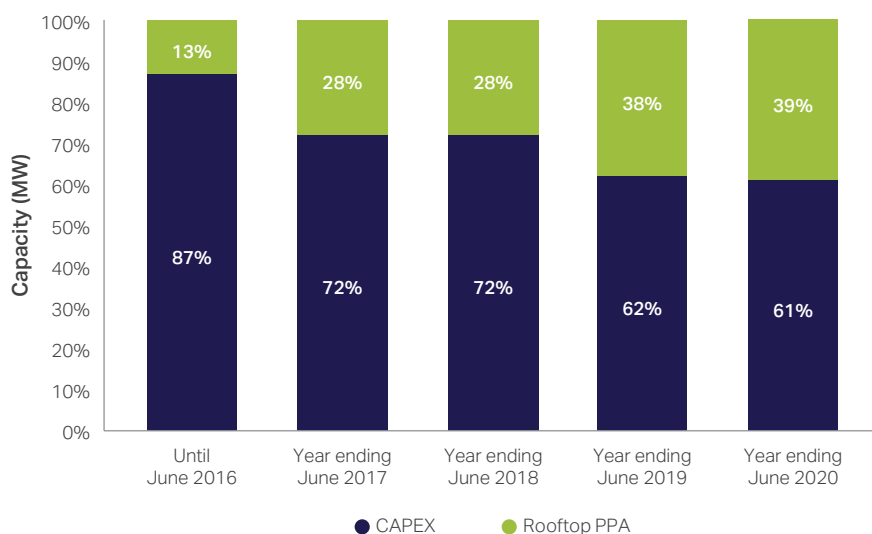
Unlike open access models, growth in rooftop PPAs is more secular. Of the total rooftop market, the proportion of the rooftop PPA market increased from 13% in 2016 to 39% in 2020,⁵ as shown in figure 9. Though cash-rich fast-moving consumer goods (FMCG) and multinational companies generally prefer the CAPEX model, post COVID-19, companies may face liquidity issues and might consider the rooftop PPA model.

Table 1: Waivers on open access charges across different states for hybrid projects

OPEN ACCESS CHARGES	GUJARAT	RAJASTHAN	ANDHRA PRADESH
Cross-subsidy surcharge	50% concession for third-party	-	50% concession for captive/third-party given in initial policy issued in 2018; waivers withdrawn in November 2019
Additional surcharge	50% concession for third-party	-	-
Transmission charges	-	50% concession for captive/third-party	50% concession for captive/third-party given in initial policy issued in 2018; waivers withdrawn in November 2019
Wheeling charges	-	50% concession for captive/third-party	

Source: JMK Research

Figure 9: Rooftop PPA market installation trends in India



Source: Bridge To India (2020). "Rooftop Map". June 2020.

PPA tariffs for projects installed under the rooftop PPA model are also falling – in line with declining solar module prices. The tariff trend for rooftop PPAs declined from INR 5.5–5.0/kWh in 2017 to INR 4–3.5/kWh in 2020.

USE OF THE NEWLY LAUNCHED GREEN TERM AHEAD MARKET (GTAM)

The Green Term Ahead Market (GTAM) is a newly launched alternative platform for renewable developers to sell power in the open market without long-term PPAs. With GTAM, corporate buyers can buy renewable power and fulfil their RPO obligations, while meeting their short-term electricity demand at competitive prices. GTAM gives corporate buyers the option to purchase renewable power from power exchanges while continuing to procure power from DISCOMs. When using GTAM, corporate buyers do not need to tie up capacity in advance or sign power purchase agreements with DISCOMs or electricity generators.

GTAM trade activity has been encouraging since its launch on 21 August 2020. Its trading volumes are becoming competitive with the conventional market

volumes on the power exchange. Its market clearing prices were on average about 30% higher than in conventional markets from September 2020 to November 2020. With the absence of policy and regulatory consistency linked to long-term open access renewable purchasing (as explained in Policy and regulatory updates), GTAM may prove to be a more attractive option for certain corporate buyers.

SHORT-TERM IMPACT OF THE COVID-19 PANDEMIC

The COVID-19 pandemic is widely considered to have slowed PPA implementation in India in 2020, though there is no published quantitative data to confirm the extent of its impact. Information gathered from industry stakeholders shows that during the initial lockdown: (1) companies paused negotiations for new PPAs; (2) restrictions on travelling to sites led to permit approval delays; and (3) project construction was suspended in some cases due to the government declaring force majeure and due to supply chain constraints for component parts.

The unprecedented impact of COVID-19 is likely to result in PPA contracts becoming more complex

to accommodate new risks. The economic impacts of COVID-19 have also resulted in credit rating downgrades for some corporate buyers,⁶ leading developers to factor in greater credit risk, resulting in higher PPA prices for new PPAs. Developers will undertake additional due diligence on the corporate buyer market position, their relationships with vendors, and goods and services tax (GST) filing trends. They will likely introduce new contract clauses to mitigate damages and establish suitable mechanisms to temper emerging risks and obligations for both parties – during pandemics and other force majeure events.

Given the economic impacts of the COVID-19 pandemic, corporate renewable PPAs may gain more traction in the coming years as C&I consumers with liquidity issues may opt for this model to limit capital investment, while still being able to buy renewable electricity.

CONTINUED COMPANY APPETITE FOR CORPORATE RENEWABLE PPAS

Despite limited capacity additions in 2020, company interest in corporate renewable PPAs remains high. Power demand in India has bounced back to pre-COVID levels⁷ and we expect negotiations paused in 2020 due to the COVID-19 pandemic and resulting economic uncertainty to resume in 2021. Going forward, there is a likely to be a spur in demand for corporate renewable PPAs due to corporate sustainability commitments by leading corporate buyers. This includes companies such as Tata Motors, Infosys, Dalmia Cement, Mahindra Holidays & Resorts, Ikea, Accenture, Adobe, Carlsberg Group, Sony, Starbucks and Panasonic, all of which have voluntarily pledged to meet 100% of their electricity demand with renewable electricity through the RE100 initiative and have electricity load in India.

③ Policy and regulatory updates



3 Policy and regulatory updates

The uptake of corporate renewable PPAs in India is highly dependent on policies and the regulatory environment at both the national and state levels. In December 2019, RE100 companies cited India as the sixth most challenging market for corporate sourcing of renewables.⁸ Companies reported the main barriers to be a fragmented policy and regulatory framework that differs from state to state, and uncertain charges and taxes on the procurement of renewable power.

Over the past year, state-level regulatory hurdles have negatively impacted the corporate renewable PPA market, including backtracking on previously provided waivers and approvals, new restrictions on power banking provisions, the levying of additional surcharges on captive and group captive renewable energy projects and limiting net metering regulations to only residential consumers.

At the national level, the government is trying to bring in electricity reforms through its draft National Electricity Amendment Bill and through the privatization of DISCOMs that are loss-making, as well as by reducing exposure to imports and focusing on domestic manufacturing as part of its Make in India initiative.

We examine national- and state-level policy and regulatory updates in 2020 and their impact on corporate renewable PPAs in India in detail below.

CENTRAL POLICIES AND REGULATIONS

DRAFT ELECTRICITY (AMENDMENT) BILL 2020

The Ministry of Power issued the draft Electricity (Amendment) Bill 2020 on 17 April 2020. There are certain provisions in the draft bill that – if put into law – will impact corporate renewable PPAs.

- Strict RPO compliance:** The draft regulations impose stricter penalties on DISCOMs in the case of non-compliance with the RPO. We expect higher penalties for a shortfall in the purchase of RPOs to push DISCOMs to grant open access permission for third-party sale and hence fulfill their targets, thereby increasing the number of signed corporate PPAs. The penalty trajectory would be as follows:

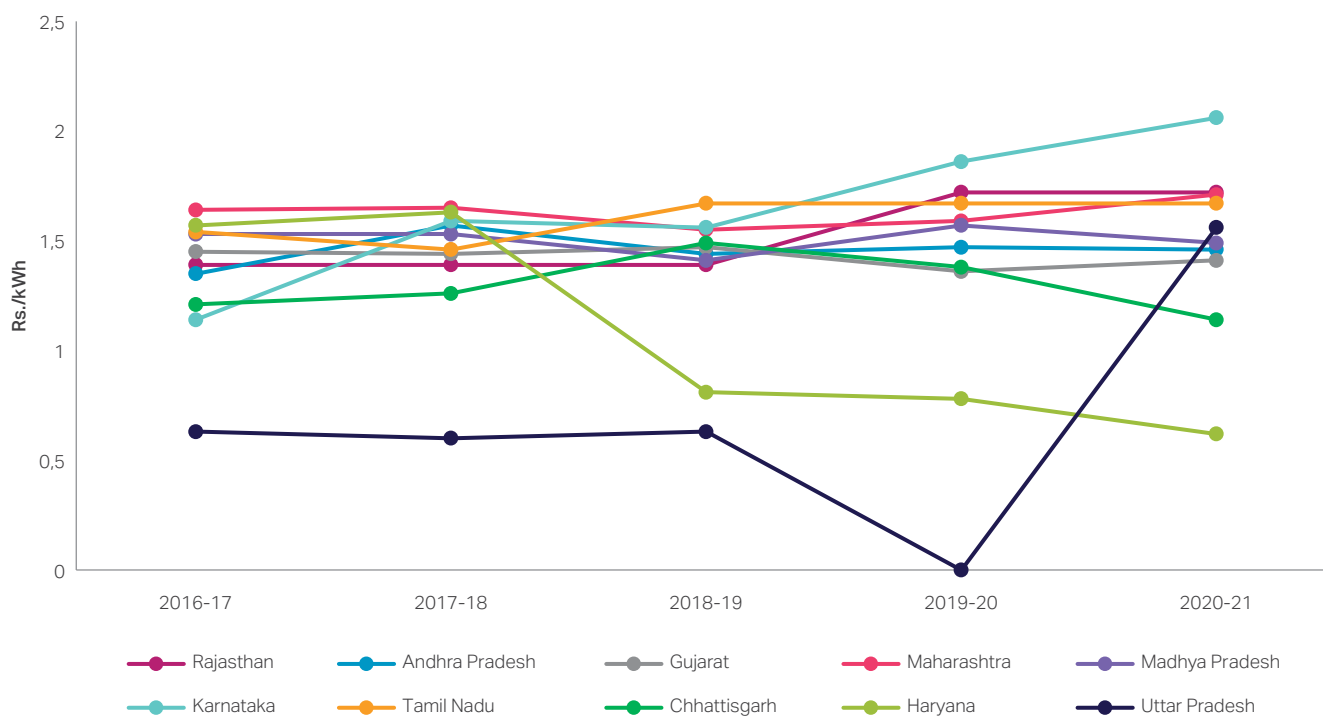
SHORTFALL	PROPOSED PENALTY
First year shortfall	INR 0.5/kWh
Second year shortfall	INR 1/kWh
Beyond second year shortfall	INR 2/kWh

- National Renewable Energy Policy:** The draft regulations propose a National Renewable Energy Policy, which promotes electricity generation from renewable sources and prescribes a minimum percentage of purchase of electricity from renewable sources – including hydropower.⁹ The Central Ministry will propose

the renewable targets in consultation with state regulators, which is likely to result in higher targets for each state (due to the inclusion of hydropower compared to the current RPO). This will ensure a higher proportion of renewable electricity in the power generation mix in each state, which can further stimulate corporate renewable PPAs.

- Cross-subsidy surcharge (CSS) reduction:** C&I consumers currently pay an additional CSS, leading to higher-than-average electricity tariffs, while the government subsidizes the tariffs paid by residential and agricultural users. The proposed amendment mandates the state electricity regulatory commission to abide by the National Tariff Policy (which had no mention in the previous Electricity Act, 2003) to reduce the CSS. This would result in a further strengthening of the open access framework. According to current regulations, the CSS should go down year-on-year, though many states have been reluctant to adhere to this, as shown in figure 10. The average increase in CSS in the last few years across various states was about 1-5%, while some states like Karnataka and Uttar Pradesh have seen the CSS increase by 12-25% in the last five years.

Figure 10: Cross-subsidy surcharge trend from FY 2016-17 to FY 2020-21



Source: Tariff regulations of various State Electricity Regulatory Commission (SERC's), JMK Research

IMPACT OF DISCOM PRIVATIZATION

DISCOM losses in India are significant and have increased from Rs 338.94 billion in financial year 2016-17, to Rs 496.23 billion in financial year 2018-19. The government has taken various measures in the past to address this. However, these have not generated substantial results to date. The privatization of DISCOMs is now under discussion, with C&I consumers poised to be one of the most impacted beneficiaries of this move.

In September 2020, the Ministry of Power issued draft Standard Bidding Documents (SBD) for the privatization of DISCOMs across all states and Union Territories (UTs). The first-of-its-kind draft SBD was prepared with the objective of enhancing the operations and finances of India's loss-making DISCOMs. Along

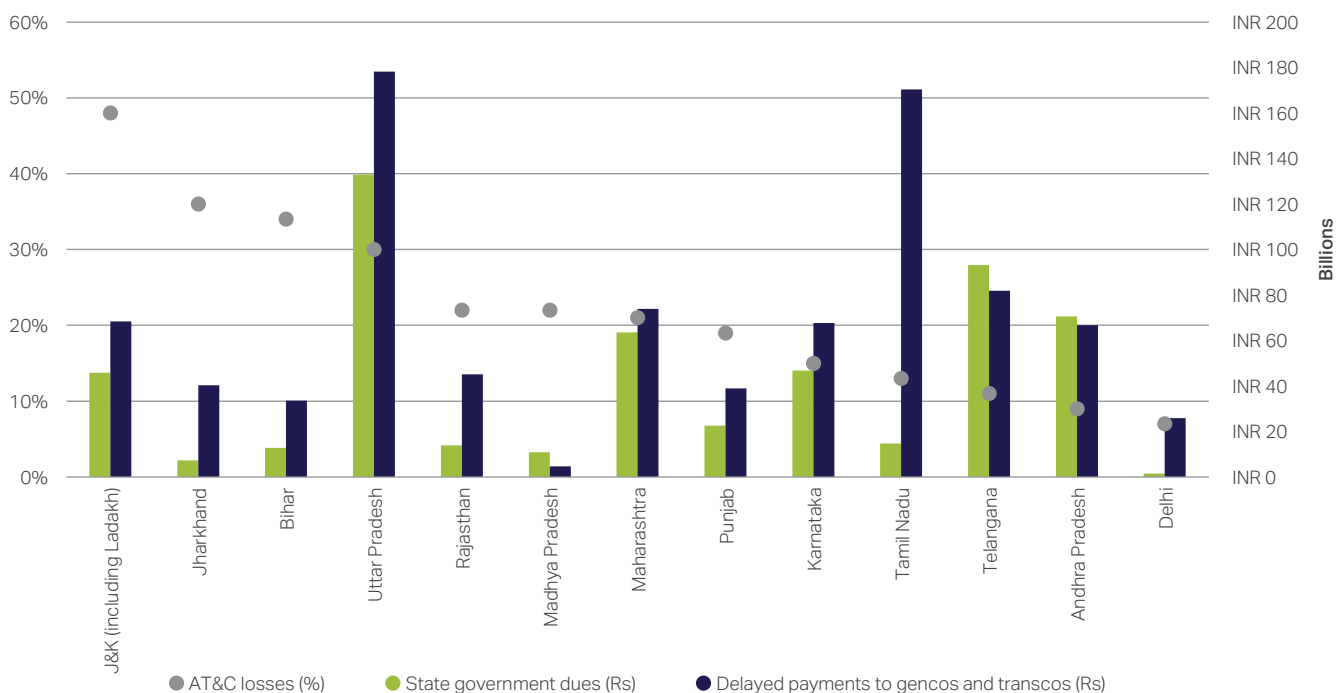
with the government's target to complete the privatization of DISCOMs in UTs by January 2021, there are also efforts to encourage this process in states such as Uttar Pradesh, Haryana, Gujarat, Karnataka and Assam.

Transformation in the governance and operational management of DISCOMs through privatization would enable an upgrade of DISCOM assets, more efficient asset management, quality customer service and improved metering and billing processes. These improvements would lead to greater revenue and profit generation for the DISCOMs. With lucrative business models managed under private companies or public-private partnerships (PPPs), DISCOMs will be able to lower their tariffs for electricity consumers, especially for C&I consumers as tariffs are currently highest for this segment.

As the DISCOM tariffs would become more competitive with respect to corporate PPA tariffs, there would be little to no imposition of restrictions on availing benefits like waivers in the corporate open access market, allowing the latter market to grow unrestrained.

Despite these efforts, the government's DISCOM privatization initiative has faced hurdles. Setbacks to DISCOM privatization extend the deterioration of their financial health, which will in turn continue to adversely affect growth and the expansion of corporate renewable procurement. Therefore, if delays in the DISCOM privatization procedure continue, the amount of additional charges levied on corporate renewable PPAs will increase.

Figure 11: Indian states with the most underperforming DISCOMs



Data source: Ministry of Power

It is important to note that the state-owned non-banking financial companies (NBFCs) appointed to provide financial assistance to the loss-making DISCOMs (the Power Finance Corporation and its subsidiary, the Rural Electrification Corporation), have sanctioned nearly INR 1.2 trillion under the central government’s liquidity package scheme. In addition to substantially reducing outstanding DISCOM dues, this liquidity infusion could also improve DISCOM attractiveness for privatization going forward.

and basic custom duties (BCDs) on imported modules.

The Ministry of Finance first introduced SGDs between July 2018 and July 2020 to promote domestic manufacturing and curb imports from China, Taiwan and Malaysia. It subsequently extended SGDs to 29 July 2021 for all solar cells and modules imported from China, Thailand and Vietnam. From April 2022, the Ministry is expected to impose 25% and 40% BCD on the import of solar cells and solar modules respectively, to replace the

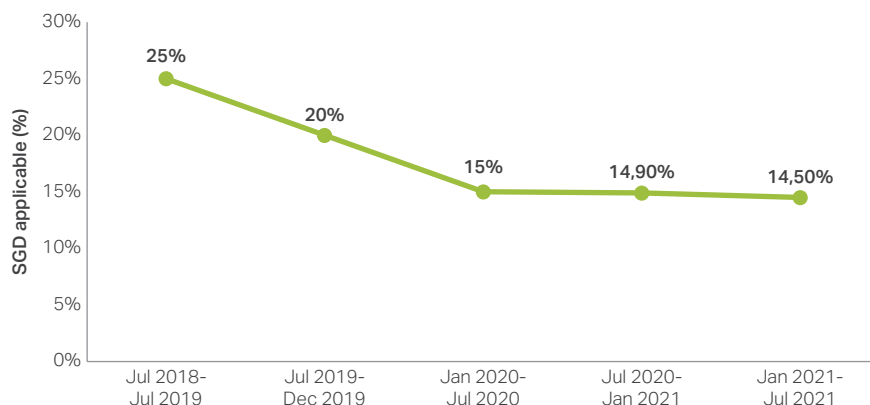
current SGD regime. These taxes will lead to increased project costs, altering the trajectory of solar tariffs in India and threatening project pipelines. Figure 12 shows the SDG rate applicability over time.

In the short term, these additional duties are likely to increase tariffs for corporate renewable PPAs because of cost increases. However, in the longer term, corporate demand for renewable electricity procurement may significantly drive the market for domestic module manufacturers and increase competitiveness.

IMPACT OF THE SAFEGUARD DUTY (SGD) AND BASIC CUSTOM DUTY (BCD)

COVID-19 has highlighted the risk of overdependence on imported component parts and the importance of self-reliance. As part of the government’s Make in India initiative, there is a new emphasis on building domestic module manufacturing capabilities. To provide a level playing field for domestic module manufacturers, the government is planning to impose safeguard duties (SGDs)

Figure 12: SGD rate applicability



Source: MNRE, Directorate General of Trade Remedies (DGTR), Ministry of Finance

STATE POLICIES AND REGULATIONS

OPEN ACCESS REGULATIONS

Open access regulations determine the procedures and charges for using the public grid to wheel power from an offsite renewable power plant to the premises of a corporate buyer. These regulations are determined primarily at the state level under a framework provided at the national level. Changes in these regulations can materially affect the viability of renewable procurement from offsite projects.

Over the past few months, various state governments have withdrawn previously agreed waivers for open access charges. This has negatively impacted market sentiment as developers have invested in some states where earlier open access provisions were favorable.

Some states are also putting restrictions on the sanctioned or contracted load for open access consumers. In 2020, states like Gujarat and Maharashtra withdrew waivers from open access consumers. However, states like Chhattisgarh have developed coherent policies to promote open access.

Table 2 outlines examples of waivers and benefits and [annex 1](#) lists full details of state-level changes in open access regulations.

NET METERING REGULATIONS

Net metering is a regulatory provision that helps to increase demand for and the penetration of rooftop solar installations. With net metering, a company consumes the electricity generated by its rooftop solar system and injects any excess electricity into the grid. The company can also import electricity from the grid when its demand exceeds the generation from the rooftop solar system. At the end of the settlement period, the electricity consumer only pays for the “net” electricity used – the difference between the electricity produced through the rooftop solar system and the electricity consumed over the billing period.

It took several years for the central government to ensure that all states offer net metering regulations to promote rooftop solar installations. Recent policy changes restricting net metering for C&I consumers in certain states are a major setback in that effort and in 2021,

several states may move from net-metering to gross-metering for C&I consumers, further threatening growth of corporate renewable power procurement. [Annex 2](#) lists the details of recent state level changes in net metering provisions.

As an example of such inconsistencies, Maharashtra – India’s largest industrial state – had, in January 2020, proposed the Grid Support Charges (GSC), a new impost for electricity consumers that have a sanctioned load above 10 kW for rooftop solar. The cost of building distribution infrastructure and the cost of balancing the grid and power banking will be at the foundation of these charges. The state issued a new notification declaring that unless it achieved its 2,000 MW rooftop solar target, it would not apply any GSC. But in the long term, GSC rates will be applicable and will be the deciding factor in the viability of large rooftop solar installations in Maharashtra. Such changes in regulations usually create confusion among stakeholders.

Table 2: Examples of waivers and benefits in selected states

STATE	HIGHLIGHTS
Chhattisgarh	<ul style="list-style-type: none"> The Chhattisgarh Electricity Regulatory Commission (CSERC) has waived the CSS for electricity consumers using open access solar
Uttarakhand	<ul style="list-style-type: none"> Waived CSS charges for third-party sale
Gujarat	<ul style="list-style-type: none"> Withdrawal of all waivers for third-party sale, but to promote wind solar hybrid projects it has offered 50% concession on CSS and AS No restriction on project capacity and the existing ceiling of 50% of the contracted load for setting up rooftop solar projects will no longer be applicable
Odisha	<ul style="list-style-type: none"> No CSS payable for one year by consumers using renewable power 20% transmission & wheeling charge is payable for one year by consumers using power from renewable sources (excluding co-generation & biomass)

BANKING RESTRICTIONS

When a generator is wheeling electricity from an offsite renewable power plant to the premises of a corporate buyer, it can virtually bank the electricity for consumption by the customer at a later date. Accounting methods ensure the virtual banking of the electricity. Banking provides renewable developers with a mechanism to use excess generation at a later point in time and, in some cases, avail financial benefits.

We have recently observed that regulators are restricting banking of renewable power in many renewable resource-rich states by moving from annual banking to monthly banking periods. Solar resource-rich states like Gujarat and Maharashtra, which often have surplus generation, have already moved to monthly banking for the third-party sale of renewable power. This move will affect the viability of renewable electricity projects.

In addition, Rajasthan, Andhra Pradesh and Madhya Pradesh have recently completely withdrawn the banking provision for renewable projects, while Karnataka is planning to restrict it to a 15-minute period.

[Annex 3](#) summarizes the current banking regulations across different states.

IMPACT OF REGULATORY CHANGES ON ELECTRICITY TARIFFS

C&I consumers in India are likely to pay high grid tariffs due to cross-subsidization. In the last four years, grid tariffs have increased by about 2% (excluding financial year 2020-21) across the key industrial states of Tamil Nadu, Maharashtra, Gujarat, Andhra Pradesh, Karnataka, and Uttar Pradesh. Though tariffs have mainly declined or remained the same in financial year 2020-21, this is primarily due to the COVID-19 pandemic and is not representative of the underlying

trend. Because of generally rising grid tariffs, companies are adopting alternate renewable procurement models in the form of PPAs. These are often not only cheaper and greener, but also offer tariff certainty for 10-12 years.

STATE TARIFF TRENDS FOR OPEN ACCESS PROJECTS UNDER THE THIRD-PARTY SALE MODEL

Tariffs for third-party sale are generally high across states due to the withdrawal of various waivers granted to renewable power projects earlier on. States like Maharashtra, Gujarat, Madhya Pradesh, Karnataka, and Haryana have third-party open access charges that are higher than grid/DISCOM tariffs. This makes third-party sale unviable in these states. However, states like Gujarat, Rajasthan, Andhra Pradesh, Orissa, Uttar Pradesh, Chhattisgarh, Karnataka and Tamil Nadu have third-party sale charges lower than the grid tariff, but still higher than the group captive model. Increasing third-party sale tariffs will deter

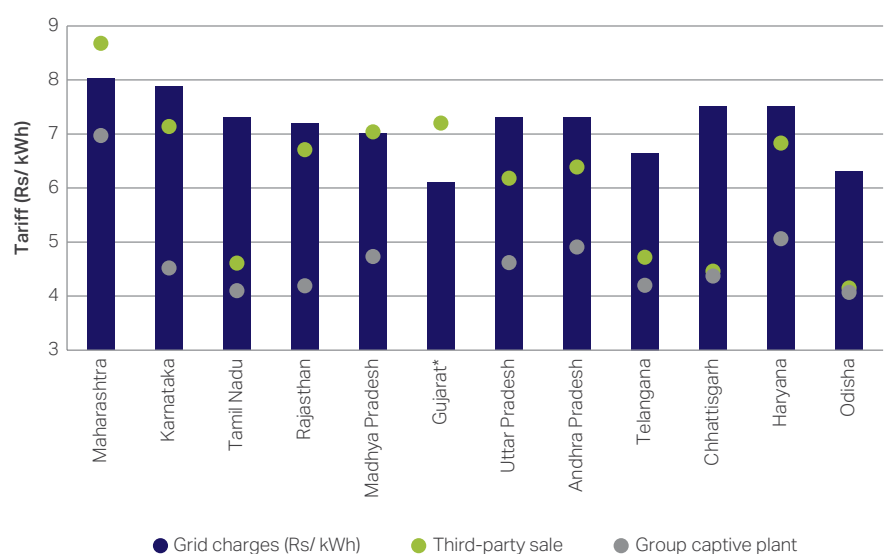
large corporate buyers from opting for this model and, as a result, companies are increasingly moving towards group captive models.

STATE TARIFF TRENDS FOR OPEN ACCESS PROJECTS UNDER THE GROUP CAPTIVE MODEL

Tariffs for group captive models are usually lower than third-party sale due to CSS and AS exemptions, which form a substantial portion of open access charges (as a provision of the Electricity Act 2003). States such as Chhattisgarh and Orissa have the same tariffs for third-party and group captive as these states provide waivers for renewable open access projects, as shown in figure 13.

The group captive model is viable in almost all states, except Gujarat which does not permit the group captive model. Recently, Maharashtra has also levied an AS of INR 1.31/kWh on group captive, which may make the group captive model unviable.

Figure 13: Landed cost of solar power for industrial consumers



Source: JMK Research

Assumptions: (1) solar power purchase cost fixed at INR 3.50/kWh across states to highlight changes due to open access charges; actual tariffs vary; (2) landed cost of solar calculated for industrial consumers connected at 33 kV voltage; (3) Grid charges are estimated DISCOM net tariff for consumers; (4) the group captive model is not permitted in Gujarat.

Figure 14 provides the means to analyze the viability of the third-party sale model and the group captive model for different states.

Figure 14: Viability of third-party sale and group captive models by state



Data source: JMK Research

Note: While open access projects are feasible in states like Rajasthan, Haryana and Andhra Pradesh, these states are no longer giving approvals or are reluctant to give approvals for new renewable open access projects.

④ Outlook for corporate renewable PPAs



4 Outlook for corporate renewable PPAs

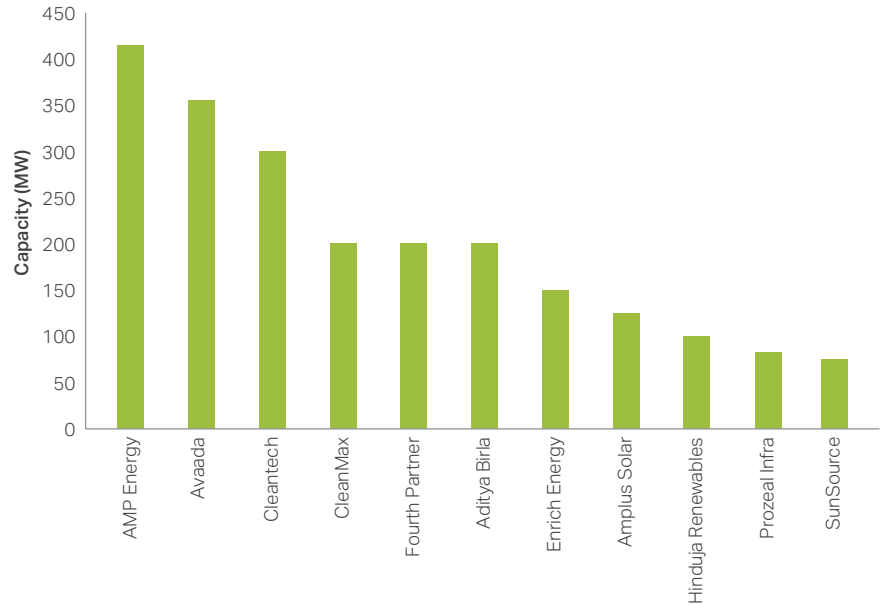
EXPECTED PROJECT PIPELINE FOR 2021

Going forward, there is likely to be a spur in demand for corporate renewable PPAs due to increased corporate sustainability ambitions and action by leading corporate buyers in India. The number of RE100 member companies with electricity loads in India continues to grow: 74 RE100 members report operations in India as of December 2020 and their average renewable electricity share has increased from 32% in 2018 to 39% in 2020.¹⁰

Various developers have entered the open access segment and are planning substantial additional capacity development in the coming years:

- CleanMax: 200 MW of planned capacity in Karnataka, Gujarat and Haryana.
- AMP Energy: 400 MW of planned capacity in Uttar Pradesh and Rajasthan.
- Enrich Energy: 150 MW of open access solar projects in Maharashtra.

Figure 15: Developers with known open access projects in the pipeline



Source: JMK Research

- Amplus Solar: 75 MW of planned capacity in Haryana, despite regulatory setbacks in the state.

Based on this pipeline, JMK Research estimates that in next 12-18 months, companies will likely commission more than 1 GW of new open access offsite

renewable electricity projects in India. The country is likely to see another 500-550 MW added under onsite rooftop OPEX models. As a result, capacity additions in 2021 in India are likely to achieve similar or could even surpass volumes observed in 2019.



EMERGING PPA STRUCTURES

To meet this growing demand and the diverse needs of corporate buyers considering PPAs, we expect alternative corporate renewable PPA structures to gain interest in India, in addition to increased uptake of rooftop solar PPAs, hybrid PPAs and GTAM. We outline three examples of alternative structures below: virtual PPAs, interstate PPAs, and round-the-clock PPAs.

VIRTUAL PPAS

In a virtual PPA (VPPA), the corporate buyer agrees to purchase renewable power through a corporate PPA, without physical delivery of electricity and therefore without sleeving or transmission fees. VPPAs are more flexible in their structure than physical PPAs as the corporate buyer and power producer do not have to be connected to the same electricity network. VPPAs are most common in liberalized power markets.

The financial settlement of a VPPA has four steps: (1) the corporate buyer and power producer agree to a PPA price; (2) the power producer delivers the renewable electricity to the grid and receives the variable market price; (3) the power producer and corporate buyer settle the difference between the agreed PPA price and variable market price; and

(4) the corporate buyer continues to purchase its electricity at the variable market price, which the VPPA now hedges (see figure 15).¹¹

To our knowledge, corporate buyers have not yet signed any VPPAs in India to date, due in part to unfamiliarity with the structure and in part to low liquidity in the Indian power market. However, some large-scale corporate buyers are now considering this contract structure, particularly those who have already implemented conventional rooftop solar, group captive or third-party sale structures and who are looking to raise their ambition to reach 100% renewable power. VPPAs may also be attractive for those looking for shorter contract terms in India (e.g., <10 years) to reduce tenor risk.

INTER-STATE PPAS

Another emerging option that corporate buyers are exploring is the inter-state PPA. Under this structure, a corporate buyer can use the group captive model to build its own renewable power plant in a preferred state to meet its electricity demand in another state.

To date all corporate renewable PPAs signed in India have been in-state, i.e., where renewable electricity generation and consumption take place within a single state.

The inter-state structure is similar to the growing trend in Europe of cross-border or pan-European PPAs, where a PPA signed with a renewable project in one or more countries covers electricity demand in another country or in several countries. This allows the corporate buyer to simplify renewable electricity purchasing by covering many loads across different countries, as well as choosing the renewable project with the most advantageous conditions (in terms of electricity price and production).

For the inter-state model to work in India, the parties to the PPA will need to engage with the respective DISCOMs in both states. Once corporate buyers have signed and proven the first project, we expect this model to gain popularity quickly, particularly in states with high policy incentives.

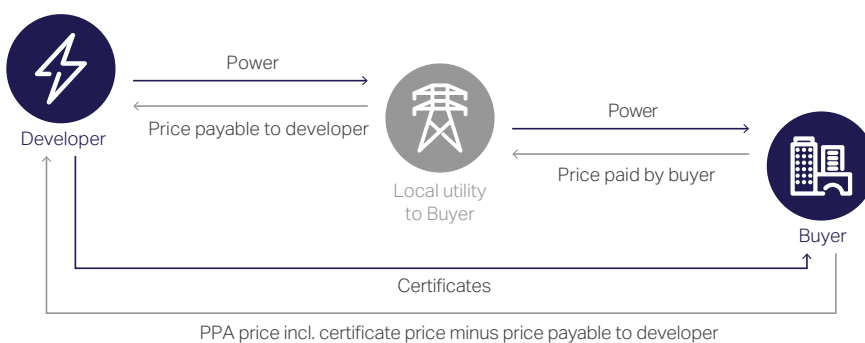
ROUND-THE-CLOCK PPAS

In May 2020, the first utility-scale round-the-clock (RTC) renewable electricity and storage PPA tender was awarded. This tender specified for the first time an average monthly capacity utilization factor (CUF) of 70% and an annual CUF of 80% (previous tenders had been in the range of 18-22% for solar, 20-25% for wind and 30-40% for wind and solar hybrid power plants).

This is an important development for India's renewable power sector, as, if developed at scale, this model can help to stabilize variable generation from renewable power sources to contribute to grid stability.

It is too early to say when it may become cost-effective to apply the utility-scale RTC PPA structure to corporate PPAs. In the meantime, we are seeing increased interest from corporate buyers in battery storage projects to enable them to increase the renewable portion of their electricity consumption.

Figure 16: Structure of a VPPA



Source: WBCSD

5 Conclusion



7 Conclusion

This report finds that additional corporate renewable PPA capacity in India fell substantially, to 800 MW in 2020, due to regulatory hurdles imposed by state regulators and the COVID-19 pandemic. However, the market is set to grow in 2021 as companies seek to meet their renewable electricity targets, manage their electricity costs and obtain tariff certainty in the longer term.

In the short term, COVID-19 caused a market slowdown and project delays due to site access and supply chain constraints. Financial repercussions from the pandemic also resulted in credit rating downgrades for some corporate buyers, which has led project developers to factor in a greater credit risk, resulting in higher PPA prices for new PPAs signed. In the longer term, PPA prices are likely to stabilize or drop again, owing to falling technology costs along with an increase in demand from corporate buyers.

In addition to impacts from the COVID-19 pandemic, state-level regulatory hurdles, such as backtracking on waivers to open access charges, imposing additional surcharges, restricting banking provisions for power, limiting net metering connections for C&I consumers, and reluctance in giving net metering connection approvals to renewable projects, have also impacted corporate renewable PPAs in 2020.

Despite these market and regulatory hurdles, government efforts to introduce electricity sector reforms have the potential to significantly stimulate uptake of corporate renewable PPAs in India. If implemented successfully, the privatization of loss-making DISCOMs can open new pathways to reform the power sector. C&I consumers would be one of the most impacted beneficiaries if this reform is successful, as it would facilitate access to a wider array of electricity procurement options for corporate buyers at lower prices.

The provision of stricter RPO compliance according to the draft Electricity Amendment Bill will also drive the market for new open access renewable power projects. A stable and transparent policy framework is crucial to keeping corporate renewable PPAs attractive and states should ensure the implementation of consistent statutory requirements to ramp up growth.

Furthermore, with the Indian Government's renewed focus on the Make in India initiative to limit the country's dependence on imports, corporate demand from the renewable PPA market will be imperative to driving domestic solar module manufacturing.

In the meantime, corporate buyers have started to explore new business models to steer their renewable power procurement needs. New PPA offerings like hybrid PPAs have already gained traction. Alternative options like GTAM are now also available to fulfill consumers' renewable power requirements. In the coming months we also expect corporate buyers to investigate alternative PPA structures, such as VPPAs and interstate PPAs. These structures may compete with the existing models in the longer run, as open access may become a less desirable option due to the risk of state governments withdrawing waivers. In the longer term, structures including battery storage, such as utility-scale RTC PPAs, may also be applicable for corporate PPAs.

Going forward, we expect to see greater demand for corporate renewable PPAs due to ever-growing corporate sustainability commitments by companies with operations in India. The current PPA project pipeline and the expected increase in demand show that signed PPA capacity additions in 2021 are likely to recover to reach the higher volumes observed in 2019.

Glossary

average power purchase cost

(APPC): The weighted average pooled price at which the distribution licensee has purchased the electricity, including cost of self-generation.

additional surcharge (AS):

DISCOMs impose an additional surcharge to recover stranded costs due to stranded power purchase agreements (PPAs) and stranded assets due to consumers procuring power through open access.

Appellate Tribunal for Electricity

(APTEL): Hears appeals against the orders of the adjudicating officer or the Central and State Electricity Regulatory Commissions under the Electricity Act, 2003.

banking: When a generator is wheeling electricity, it can virtually bank the electricity for consumption by an end-customer later. The bank is not a physical electricity storage facility; rather, accounting methods ensure the virtual banking of electricity.

basic custom duty (BCD): A tax imposed under Customs Act 1962 that is applicable to imported items; the government has the right to create exemptions or reduce the BCD on any item.

capacity utilization factor:

The ratio of the actual electricity generated by a renewable electricity project over the year to the equivalent electricity output at its rated capacity over the year.

captive buyer: The end user of the electricity generated by the captive generating plant.

captive model: A power asset in which the captive buyer consumes at least 51% of the electricity generated and owns at least 26% of the equity.

commercial and industrial (C&I):

A business segment set up with the sole motive of gaining profit.

commercial operation date

(COD): The date on which the commercial operation of the power plant begins, after successful testing and injection of power at the point of delivery (the metering point between the power producer and the utility at the pre-determined voltage level).

corporate renewable PPA:

An agreement between a private company and a power producer (developer, independent power producer, investor) to purchase renewable electricity at a mutually agreed tariff, tenor and capacity.

cross-subsidy surcharge (CSS):

A charge levied to recover the cost of the utility providing subsidized power to certain categories of consumers, such as the poor, religious entities and agriculture.

DISCOM: A local electricity distribution company.

group captive model: Under this unique structure provided under the 2003 Electricity Act, C&I consumers can set up power plants for their collective use; they should have at least 26% of the equity in the plant and must consume at least 51% of the power produced.

independent power producer

(IPP): An entity that is not a public utility but that owns facilities to generate electric power for sale to utilities and end-users.

net metering: A billing mechanism allowing onsite projects to feed excess electricity to the grid, reducing their own electricity bills; usually limited to solar rooftop, though some states allow other sources to qualify as well.

off-taker: The buyer of electricity in a PPA.

open access: 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.

OPEX: An operating expenditure-based model in which an investor invests the upfront capital cost of the project and the consumer pays for the electricity consumed/supplied by the project developer.

power purchase agreement

(PPA): A contract between a power producer and a buyer of electricity for an agreed tariff, tenor and capacity.

renewable purchase obligation

(RPO): Obligations imposed by a state electricity regulatory commission (SERC) on certain entities to purchase electricity from renewable sources.

state electricity regulatory

commission (SERC): The electricity regulator in each Indian state; one of their key responsibilities is to determine retail electricity tariffs and open access charges.

safeguard duty: A tax imposed on imported products in order to protect the domestic industry against a surge in imports of a competing products.

tariff: The cost per unit of electricity that a buyer pays.

virtual PPA (VPPA): A contract structure where the corporate consumer agrees to purchase a project's renewable electricity for a pre-agreed price, without physical delivery of electricity.

hybrid PPA: A contract structure combining the renewable electricity sources of solar and wind to generate power.

Annex 1: Summary of state-level updates for open access regulations

STATE	EARLIER PROVISIONS ON OPEN ACCESS REGULATIONS	UPDATE ON OPEN ACCESS REGULATIONS
Uttar Pradesh	<p>In September 2019, the state introduced its regulations for captive and renewable energy generating plants, including:</p> <ul style="list-style-type: none"> • A 50% exemption on wheeling and transmission charges for captive and third-party sale • A 100% waiver on transmission for interstate sales and 100% exemption of state CSS for interstate sales of power for captive/third-party use 	<p>In December 2019, the state introduced the Uttar Pradesh Electricity Regulatory Commission (Terms and Condition for Open Access) Regulations, 2019, including:</p> <ul style="list-style-type: none"> • Consumers availing open access facilities will have to pay the transmission & wheeling charges, CSS, AS, standby charges (to the distribution companies), imbalance charges (if applicable) as described in the regulation and amended from time to time • No additional surcharge for FY 2020-21
Gujarat	<p>CSS exempted for third-party sale and captive renewable power plants</p>	<p>In May 2020, GERC issued a tariff framework for the procurement of solar power, including:</p> <ul style="list-style-type: none"> • Wheeling charges applicable for third-party sale, while 50% exempted for captive power • Transmission losses and charges applicable for both third-party and captive • CSS applicable to third-party at 50% of normal CSS • Additional surcharge of INR 0.37/kWh for open access consumers (third-party sale only) to be effective from 1 April 2020 to 30 September 2020
Maharashtra	<p>Transmission charges increased for all open access transactions.</p>	<p>According to tariff for FY 2020-21:</p> <ul style="list-style-type: none"> • All open access charges applicable to third-party sale projects • Additional surcharge applicable to captive consumers as well • Additional surcharge of INR 1.34/kWh for open access consumers (both third-party and group captive) to be effective for FY 2020-21
Odisha	<ul style="list-style-type: none"> • CSS waived for both third-party and captive power. • Transmission and wheeling charges 80% exempted for both third-party and captive power plant 	<p>No changes in earlier provisions. No additional surcharge for FY 2020-21</p>
Rajasthan	<p>The government had waived CSS for all solar plants commissioned between April 2014 and March 2019; however, it did not extend the exemptions beyond 31 March 2019</p>	<p>In December 2019, the state introduced the Rajasthan Solar Energy Policy 2019, with transmission and wheeling charges exempted for solar projects of maximum 25 MW capacity, setup between December 2019 and March 2023, as per the following criteria:</p> <ul style="list-style-type: none"> • For solar projects setup for captive consumption outside the premises of the consumer, there is a 50% exemption for transmission and wheeling charges for 7 years • For third-party sale open access projects, there is a 50% exemption for transmission and wheeling charges for 7 years • For solar projects with storage, for captive/third-party sale, there is a 75% exemption for transmission and wheeling charges for 7 years. <p>Additional surcharge of INR 0.80/kWh for open access consumers (third-party sale) for FY 2020-21.</p> <p>In November 2020, the state incorporated the RERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020, including:</p> <ul style="list-style-type: none"> • Renewable energy with storage projects installed after the date of notification of these regulations and before 31 March 2023, shall receive a 75% exemption in intra-state transmission and wheeling charges. These projects could be for captive use or for third-party sale under open access. This exemption is applicable for the first seven years of operation from the project's date of commissioning.

STATE	EARLIER PROVISIONS ON OPEN ACCESS REGULATIONS	UPDATE ON OPEN ACCESS REGULATIONS
Tamil Nadu	As per Open Access Regulations, 2005, CSS waived for captive plants No AS for captive renewable power plants	<ul style="list-style-type: none"> • 50% of transmission and wheeling charges • 70% of CSS in case of third-party open access consumers • 100% exempted in captive power consumer • AS exempted for captive consumers • Electricity tax exempted for 2 years • No additional surcharge for FY 2020-21
Haryana	In March 2019, the state amended its solar policy, withdrawing exemptions from wheeling and transmission charges, CSS, and AS for third-party sale of renewable power	No change in earlier withdrawals. DISCOMs to levy an AS of INR 1.15/kWh for second half of FY 2019-20 on open access consumers (third-party sale only).
Uttarakhand	In April 2018, CSS imposed on open access consumers except captive plants	CSS waived for 3 rd party as well AS of INR 1.11/kWh for open access consumers (third-party sale only) to be effective from 1 April 2020 to 30 September 2020.

Source: JMK Research



Annex 2: Recent amendments to rooftop solar regulations in India

STATE	PROVISION IN ORIGINAL NET METERING REGULATIONS	RECENT AMENDMENTS
Uttar Pradesh	All electricity consumers are eligible for net metering	According to the January 2019 notification, C&I consumers are no longer eligible for net metering. They can now only opt for gross metering. Under gross metering, C&I electricity customers will receive 25% higher compensation than the weighted average tariff of large-scale solar projects (>5MW), as determined through competitive bidding in the last financial year.
Tamil Nadu	Net metering available for domestic, commercial and government buildings	According to the March 2019 notification, C&I consumers (except low-tension (LT) commercial consumers) are no longer eligible for net metering. Gross metering is also not allowed for high-tension (HT) C&I consumers.
Himachal Pradesh	All consumers of DISCOMs are eligible for net metering	Since April 2019, only domestic electricity consumers with a letter of approval are eligible for net metering, while C&I consumers are no longer eligible. Gross metering is also not allowed.
Karnataka	All electricity consumers are eligible for net metering	In December 2019, an order passed by the Karnataka Electricity Regulatory Commission (KERC) allows net metering or gross metering for all LT residential electricity consumers. For all other LT & HT categories of electricity consumers, only gross metering is allowed.
Gujarat	RESCO model not allowed	Consumers may set up rooftop solar system under the RESCO model and lease them to third parties; group ownership of solar projects for self-consumption is also allowed.
West Bengal	Net metering available for domestic, C&I and government consumers	In January 2021, the West Bengal Electricity Regulatory Commission issued an amendment stating that consumers having a sanctioned load demand of up to 5 kW may set up a solar PV system under the net metering provision. For consumers installing rooftop solar systems with a capacity greater than 5 kW, only the gross metering facility shall be allowed.

Source: JMK Research



Annex 3: Current banking regulations across different states

STATE	BANKING REGULATIONS FOR RENEWABLE ENERGY
Andhra Pradesh	<p>In November 2019, the state amended its solar, wind and hybrid policies:</p> <ul style="list-style-type: none"> The state will withdraw the power to bank energy given to generators for solar, wind and hybrid projects. It will treat any injection of electricity between synchronization and declaration of the commercial operation date (COD) as inadvertent power and the state DISCOMS will pay no fee for it.
Rajasthan	<p>In line with the RERC (terms and conditions for tariff determination from renewable energy sources) Regulations released in November 2020:</p> <ul style="list-style-type: none"> Banking of energy is allowed only for captive consumption within the state, provided that there is a maximum ceiling of 25% of the energy injected by the renewable electricity captive generating station at the consumption end on a 15-minute time block basis. 10% of the banked energy deducted as banking charges prior to banked energy withdrawal.
Gujarat	<p>In May 2020, the Gujarat Electricity Regulatory Commission issued an order that:</p> <ul style="list-style-type: none"> Allows a one-month banking facility. Allows the offsetting of excess generation in one billing cycle in proportion to generation in peak and normal hours. Does not allow banking for a third-party and allows offset to take place on a 15-minute time block with open access consumer consumption. Distribution licensee to purchase surplus power after offsetting at INR 1.75 per unit. <p>According to the Gujarat Solar Power Policy 2021 released in December 2020:</p> <ul style="list-style-type: none"> For projects under captive use and under third-party sale, a banking charge of INR 1.50/kWh for both high-tension (HT) and low-tension (LT) consumers is applicable. For MSME units and others that are not demand-based consumers, it will be INR 1.10 /kWh.
Maharashtra	<p>In the state:</p> <ul style="list-style-type: none"> Banking is permitted on a monthly basis. MERC has approved banking charges in the form of energy adjustment. For this purpose, the commission has linked banking charges to wheeling loss for FY 2020-21. It will be 7.5% for HT and 12% for LT lines for the energy being banked in the grid.
Tamil Nadu	<p>The October 2020 order issued by TNERC for the procurement of solar power has the following provisions:</p> <ul style="list-style-type: none"> Banking permitted on a monthly basis. Purchase of excess generation/unused banked energy shall be at 75% of lowest tariff as determined during the year through competitive bidding in the state or by the Solar Energy Corporation of India (SECI).
Karnataka	<ul style="list-style-type: none"> The current banking period allowed is for 6 months. However, a recent notification by Karnataka Electricity Regulatory Commission (KERC) in August 2020 proposes to discontinue the banking facility extended to renewable projects. The commission has invited stakeholders to comment but backtracking on the banking facilities already available to the developers is the restrictive stance the government has taken.
Madhya Pradesh	<p>October 2019 saw the announcement of the 8th amendment of the co-generation and generation of electricity from renewable energy sources, stating that:</p> <ul style="list-style-type: none"> Banking is no longer available for the captive generation of renewable energy plant generators. A captive renewable generation source is a renewable power plant set up by any person to generate electricity primarily for their own use and includes a power plant set up by any cooperative society or association of persons to generate electricity primarily for the use of the members of the cooperative society or association.

Source: Tariff orders of various state electricity regulatory commissions, JMK Research

Endnotes

1. Source: Bloomberg New Energy Finance (BNEF) (2020). "Corporate Clean Energy Buying Leapt 44% in 2019, Sets New Record". 28 January 2020. Retrieved from: <https://about.bnef.com/blog/corporate-clean-energy-buying-leapt-44-in-2019-sets-new-record/>.
2. edie newsroom (2020). "BNEF: Covid-19 causing drop in US corporate clean energy purchases". 14 August 2020. Retrieved from: <https://www.edie.net/news/10/BNEF--Covid-19-causing-drop-in-US-corporate-clean-energy-purchases/>.
3. Ministry of New and Renewable Energy (MNRE) (2018). "National Wind Solar Hybrid Policy". May 2018. Retrieved from: <https://mnre.gov.in/img/documents/uploads/2775b59919174bb7aeb00bb1d5cd269c.pdf>.
4. For more information, see WBCSD (2019). *How multi-technology PPAs could help companies reduce risk*. Available at: <https://www.wbcsd.org/Programs/Climate-and-Energy/Energy/REscale/Resources/How-multi-technology-PPAs-could-help-companies-reduce-risk>.
5. Source: Bridge To India (2020). "Rooftop Map". June 2020.
6. Bloomberg (2020). COVID-19: Indian companies are getting downgraded like never before. *Deccan Herald*. 13 May 2020. Retrieved from: <https://www.deccanherald.com/business/business-news/covid-19-indian-companies-are-getting-downgraded-like-never-before-837122.html>.
7. International Energy Agency (IEA) (2021). "Covid-19 impact on electricity". Retrieved from: <https://www.iea.org/reports/covid-19-impact-on-electricity>.
8. RE100, The Climate Group, CDP (2019). *Annual Report. Going 100% renewable: how committed companies are demanding a faster market response – Progress and Insights*. December 2019. Retrieved from: <https://www.there100.org/sites/re100/files/2020-09/RE100ProgressandInsightsAnnualReport2019.pdf>.
9. Note this is larger in scope than the RPO, which only refers to targets for wind and solar generation.
10. RE100, Climate Group, CDP (2020). *Growing renewable power: Companies seizing leadership opportunities, RE100 2020 Annual Report*. Retrieved from: <https://www.there100.org/growing-renewable-power-companies-seizing-leadership-opportunities>.
11. For more information, see WBCSD (2018). *Innovation in Power Purchase Agreement Structures*. Available at: <https://www.wbcsd.org/Programs/Climate-and-Energy/Energy/REscale/Resources/Innovation-in-Power-Purchase-Agreement-Structures>.

ACKNOWLEDGEMENTS

This paper was drafted by WBCSD and JMK Research & Analytics. We thank the following co-authors:

- Jyoti Gulia, Director, JMK Research & Analytics
- Akhil Koshy Thayillam, Research Associate, JMK Research & Analytics

DISCLAIMER

This publication is released in the name of the World Business Council for Sustainable Development (WBCSD). It is the result of a collaborative effort between WBCSD, JMK Research & Analytics and representatives from companies participating in the India Corporate Renewable PPA Forum. A range of WBCSD members reviewed the material, thereby ensuring that the document broadly represents the majority view of the India Corporate Renewable PPA Forum. It does not mean, however, that every company within the forum agrees with every word.

This publication has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, legal or other professional advice.

To contact WBCSD about this report:

Surbhi Singhvi
Manager, Energy
Singhvi@wbcسد.org

ABOUT WBCSD'S RESCALE PROJECT

REscale brings together leading companies representing the full renewable energy value chain to accelerate the deployment of renewables and the transition to a low-carbon electricity system. REscale members share the ambition to scale up renewable deployment beyond average growth.

This report builds on the previous WBCSD report on corporate renewable PPAs in India: [Accelerating corporate procurement of renewable energy in India](#) (June 2018). This previous report discusses options for renewable power procurement in India and examines key PPA terms, regulatory landscapes and market barriers. It also delves into financing options and concludes with recommendations for corporate buyers. The India Corporate Renewable PPA Forum is the platform undertaking this work.

To find out more about REscale, the Corporate Renewable PPA Forum and previous reports, visit our [webpage](#) or contact:

Lucy Hunt
Manager, Energy
hunt@wbcسد.org

ABOUT THE WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT (WBCSD)

WBCSD is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. We help make our member companies more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies.

Our member companies come from all business sectors and all major economies, representing a combined revenue of more than USD \$8.5 trillion and 19 million employees. Our global network of almost 70 national business councils gives our members unparalleled reach across the globe. WBCSD is uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

Together, we are the leading voice of business for sustainability: united by our vision of a world where more than 9 billion people are all living well and within the boundaries of our planet, by 2050.

www.wbcسد.org

Follow us on [Twitter](#) and [LinkedIn](#)

**World Business Council
for Sustainable Development**

Maison de la Paix
Chemin Eugène-Rigot 2B
CP 2075, 1211 Geneva 1
Switzerland

www.wbcsd.org

