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This rating methodology describes ICRA's approach to assess the credit risk of wind power producers. It aims to help issuers, investors and other interested market participants understand ICRA's approach to analysing risks that are likely to affect the rating outcomes of the companies in the wind energy sector. This rating methodology updates and supersedes ICRA's earlier methodology note on this subject, published in July 2021. While this revised version incorporates a few modifications, ICRA's overall approach to rating entities in the sector remains materially similar.

### Overview

The all-India wind energy-based power generation capacity stood at 42,633 MW as on March 31, 2023, increasing from 19,051 MW as on March 31, 2013. The share of the wind energy-based capacity within the overall installed power generation capacity in India stood at 10% as on March 31, 2023 against 9% as on March 31, 2013. Within the renewable energy mix, the wind-based capacity accounted for 34.1% of the all-India renewable energy (RE) based capacity as on March 31, 2023. The share of wind-based capacity in the RE segment has declined over the past years, owing to the subdued capacity addition since FY2017 post the shift from feed-in tariffs to competitive bid-based tariffs and the sharp increase in solar power installations driven by more competitive tariffs, wider distribution of potential areas for setting up solar projects and relatively shorter gestation period. Nonetheless, the growth potential remains high with the Government of India, as part of its climate change commitments announced at COP26 summit, setting a non-fossil fuel-based capacity target of 500 GW by 2030, with the wind segment expected to contribute 100 GW within this capacity.

The demand for wind energy is driven by a confluence of factors, including policy focus on the renewable energy sector, large untapped wind power potential, cost-competitive tariffs offered by wind-based power projects and a growing demand for electricity. The tariff competitiveness is led by expectations of higher plant load factor (PLF) with the use of wind turbine machines having higher hub height and rotor diameter and the presence of strong intermediate procurers like the Solar Energy Corporation of India (SECI) and NTPC Limited (NTPC).

Notwithstanding the strong growth potential, the wind power projects face challenges from delays in land acquisition, delays in securing transmission connectivity, delays in signing of power purchase agreements (PPAs), weak credit quality of state-owned distribution utilities (discoms) and the variation in wind availability. This apart, projects are facing tariff viability concerns owing to capital cost pressure. Additionally, the sector is exposed to regulatory challenges associated with the inconsistency in renewable purchase obligation (RPO) norms across states and against the RPO norms suggested by the Ministry of Power, Government of India and the challenges in integrating the growing share of wind power with the grid, leading to grid curtailment issues.

In addition, wind power producers remain exposed to regulatory challenge of implementing forecasting and scheduling regulations, given the variable and intermittent nature of wind-based generation.

The Government is now focused on promoting solar-wind hybrid projects along with a component of storage (battery or pumped hydro) to enable round-the-clock supply from RE projects, thereby mitigating the intermittency challenge associated with renewables. Apart from the risks associated with standalone solar or wind projects, such projects would face risks associated with the storage component, related to construction within appraised time and cost, tariff viability and operating within the prescribed efficiency level.

### ICRA’s Analytical Approach for Rating Wind Power Producers

Wind power projects are usually developed through special purpose vehicles (SPVs) with cash flow ring fencing from the sponsors. The projects typically have power purchase agreements (PPAs) for a period of 25 years, which is also considered as the useful life of the projects. The methodology articulated below is applicable for issuers with greenfield project(s) and operational project(s) (either single asset or portfolio of projects). The list of rating drivers covered here is not exhaustive but provides an overall perspective on the most important considerations. ICRA’s analytical approach for rating wind power producers can be broadly divided into the following factors:

Industry Risk Drivers	Business Risk Drivers	Financial Risk Drivers	Other Elements of Credit Risk Assessment	Management and Parentage
<ul style="list-style-type: none"> <li>▪ Regulatory risk</li> </ul>	<ul style="list-style-type: none"> <li>▪ Permitting risk</li> <li>▪ Funding risk</li> <li>▪ Construction risk</li> <li>▪ Operating risk</li> <li>▪ Asset diversification</li> <li>▪ Demand and tariff risk</li> <li>▪ Counterparty credit risk</li> <li>▪ Force majeure risk</li> </ul>	<ul style="list-style-type: none"> <li>▪ Adequacy of future cash flows</li> <li>▪ Profitability</li> <li>▪ Leverage and coverage indicators</li> <li>▪ Liquidity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Financial flexibility and risks relating to interest rates and refinancing</li> <li>▪ Foreign currency-related risks</li> <li>▪ Debt transaction structure</li> <li>▪ Accounting quality</li> <li>▪ Contingent liabilities/ Off-balance sheet exposures</li> <li>▪ Event risks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Quality of management</li> <li>▪ Financial policy</li> <li>▪ Governance structure and practices</li> <li>▪ Parentage</li> </ul>

### Industry Risk Drivers

#### Regulatory risk

The regulatory risks are mainly seen for the projects having PPAs under the renewable energy certificate (REC) route or for projects selling power under the open access route. The inconsistency in the RPO norms approved across the states against the trajectory notified by the Ministry of Power, Government of India and less than satisfactory compliance of the RPO norms by obligated entities affect the demand for renewable energy and RECs. This in turn adversely impacts the projects based on the REC route. Further, any constraints in allowing open access and banking arrangements and increase in open access charges pose regulatory risks for wind power projects, which are based on third-party sale/captive consumption/group captive sale. Also, delays in adoption of the tariffs discovered through the bidding process by the concerned central and state regulators pose regulatory risks for the wind power developers and could lead to delays in project implementation.

Further, given that state-owned distribution utilities remain the key offtakers in most cases, ICRA focuses on regulatory risks in the distribution sector like delay in the tariff determination process, inadequate tariffs in relation to the cost of supply and non-implementation of any tariff order due to litigation. Challenges like these can impact the financial position of the state distribution utilities and in turn heighten the counterparty credit risk for wind power producers.

While the PPAs are contractual documents, instances of attempts to re-negotiate the PPA terms unilaterally have been seen recently, resulting in prolonged legal & regulatory proceedings. In the interim, such events could impact the payments from the offtaker, adversely impacting the project cash flows. The occurrence of such regulatory developments remains an event risk.

## Business Risk Assessment

With reference to business risk assessment, only the greenfield or expansion projects are exposed to permitting risk, funding risk and construction risk.

### Permitting risk

Permitting risk refers to an issuer's ability to secure all statutory clearances required for constructing and operating a wind power plant, as well as to comply with the applicable norms. While assessing permitting risk, ICRA evaluates the progress on land acquisition and examines the status of various clearances in accordance with the laws of the land for the projects under implementation. The critical approvals required for a wind power project include approval for transmission connectivity to the designated sub-station and long-term open access for supply of the power generated to the grid (state / inter-state network). While the permitting risk for a greenfield wind power project is lower than that of thermal or hydro-based projects, given the exemption from environmental and forest clearance (except in case of use of forest land), the developers have faced delays in the past in securing approvals for connectivity to inter-state/intra-state transmission network and completing land acquisition, leading to delays in project implementation. In case of projects awarded in renewable energy parks, which provides a developed land plot with clearances and associated infrastructure, including grid connectivity, the permitting risk is lower than that for a greenfield project at locations outside the renewable energy park.

### Funding risk

This assessment focuses on ascertaining the company's ability to tie up the requisite finances, the status of the funding tie-up and the capital structure mix. Given the capital-intensive nature of wind power projects and the typical debt-equity ratio of 70:30 or 75:25 adopted by the developers, such projects tend to have high financial leverage. The capital cost and the capital structure are evaluated in relation to other wind energy projects. The reasons for variation (if any) in the capital cost with other wind energy projects is assessed, which may be due to higher cost of land and/or equipment. The average cost of debt and the foreign exchange component in debt (if any) are also looked at. While equity would be arranged by the sponsor, the developer would be dependent on banks, financial institutions (FIs) and bond markets for debt funding. ICRA evaluates the extent of actual funding tie-up and the likelihood of the balance funding being available on time, so that project progress is not delayed due to lack of funding tie-ups. Even though project finance is generally 'non-recourse' in nature, the strength of the sponsors is an important risk mitigating factor as it imparts financial flexibility in terms of funding cost overruns or meeting other contingencies.

### Construction risk

Construction risks refer to challenges associated with the physical construction of a plant (including the associated evacuation network which is in the project scope) as well as stabilisation of its design operating parameters (which includes plant availability and PLF) after commissioning. Delays in either can lead to time and cost overruns. The wind power projects are typically executed under the turnkey nature of project execution<sup>1</sup>, wherein the entire responsibility, including land acquisition and development, is taken by the EPC contractor. Fixed-price, fixed-time contracts, with adequate clauses for liquidated

<sup>1</sup>Turnkey responsibilities comprise activities related to purchase/lease of land, obtaining various statutory permissions, supply of wind turbines, installing and commissioning of the same and subsequently, providing of the operations & maintenance (O&M) services

damages (LD) are usually the mitigating factors against construction risk (essentially, the risk gets transferred to the engineering, procurement & construction, or EPC, contractor). Unlike a thermal or a hydro project where there could be a multiplicity of contractors, wind power projects typically have the wind turbine generator (WTG) manufacturing company as the EPC contractor. However, in recent years, major wind IPPs have themselves ventured into the EPC business, wherein the wind turbine generators are supplied and installed by the manufacturers and the balance work is undertaken by other sub-contractors.

While assessing construction risks, ICRA evaluates the status of project construction vis-a-vis the scheduled COD, including the transmission connectivity to the designated grid sub-station. Further, risk of any delay in availability of the grid sub-station by the Central or the state transmission utility (as applicable) is evaluated. In all project ratings, ICRA carries out a sensitivity analysis to evaluate the impact of the delay in commissioning or in stabilisation of plant operations on the projected cash flows and debt-servicing ability. The LD clauses, which are a part of the contract with the EPC contractor, are also evaluated to assess their adequacy with respect to the loss of profits and/or liquidated damages payable by the developer to offtakers. ICRA endeavours to assesses the creditworthiness of the EPC contractor, to the extent possible, and its ability to pay the LD charges to the developer, if the situation so demands.

**Operating risk**

The operating risks for an issuer engaged in wind power generation arises from the vulnerability of the plant’s PLF to variability in wind speed, which is susceptible to weather conditions at the project location. While the technology used in WTG machines is proven, ICRA evaluates the track record of the supplier in the Indian market. ICRA analyses the actual performance (especially plant availability and PLF) of the operational projects and its variance against the P-90 generation estimate as per the wind resource assessment study by the entity’s consultant. Projects which meet or exceed the generation estimates are viewed positively by ICRA. While assessing the wind variability risk, ICRA considers the base case PLF in its financial projections, in line with the P-90 estimate of the wind resource assessment study. For projects with an operating track record beyond three years, ICRA considers the actual PLF level as base case assumption in the projections.

A wind power plant’s PLF also remains vulnerable to the availability of WTG machines for generation. The plant availability and in turn the PLF could get adversely impacted, in case of inadequate maintenance by the O&M partner. In this context, ICRA reviews the O&M contract to assess the available mitigants such as LD clauses for any shortfall in machine availability below the guaranteed level. In case of any financial constraints with the O&M contractor, ICRA examines the ability of the developer to undertake self O&M and the availability of spare parts for the WTGs.

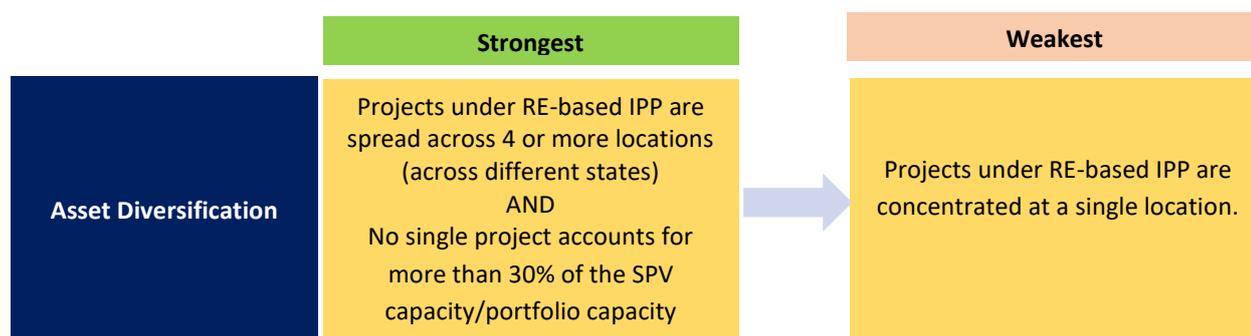
Also, ICRA examines the track record of grid availability for the project and the incidence of any grid availability issues in the region. ICRA evaluates the compensation clause for non-availability of grid in a PPA and factors in the benefit of such clause in the financial projections suitably. In case of PPAs which do not have such compensation clause due to non-availability of grid, ICRA assesses the impact of the same on cash flows, particularly in states where such an issue has prevailed in the past and is likely to remain. The scoring thresholds for the operating parameters of a wind power project is provided below:

	Strongest	Weakest
<b>Plant Availability (PAF)</b>	PAF > 97%	PAF < 85%
<b>Grid Availability (GA)</b>	GA > 97%	GA < 85%
<b>Plant Loan Factor (PLF)</b>	PLF >= P-90 estimate and track record of more than 18 months	PLF < 75% of P-90 estimate

In addition, ICRA assesses the impact of the scheduling and forecasting mechanism approved by the regulators for wind power projects, wherein higher-than-permitted deviation between the actual and the forecasted generation will attract penalties. Given the variable and intermittent nature of generation by wind power projects and the limited track record of the Indian wind power players in forecasting with the required accuracy, the impact of such penalties on the financial profile of the wind power producer is evaluated.

**Asset diversification**

Most wind power SPVs have single location projects, leading to asset concentration and exposing the project performance to weather conditions at that site. Also, there is a greater degree of risk from any force majeure events. In case of projects spread across multiple locations in different states, ICRA draws comfort from the geographical diversity of the portfolio, which acts as a mitigant against the wind variability risk to some extent.



**Demand and tariff risks**

The demand risk for a wind power project is normally sought to be mitigated by a long-term power purchase agreement (PPA) tie-up, which generally links tariff payment to the electricity units supplied by the wind power project. A wind power project can tie up the PPA in multiple ways, including with [a] central intermediate procurer or state distribution utility (discom) through the competitive bidding route, [b] state discom through the feed-in tariff mechanism (prevalent till FY2017) along with generation-based incentive (if available), [c] state discoms at the average power purchase pooled cost (APPC) rate and availing renewable energy certificates (RECs) and [d] large commercial and industrial (C&I) customers under the third-party PPA or captive mode. At present, majority of the projects are securing PPAs through the bidding route with intermediate procurers (like the SECI and the NTPC) or state discoms followed by PPAs with C&I customers.

For assessing the demand risk, ICRA evaluates the status of the PPA tie-up and the provisions of the PPA such as tenure, tariff, take or pay obligation, PLF floor and cap, billing and payment security mechanism, compensation clauses for grid unavailability and grid curtailment, events of default and termination payments. The presence of a long-term PPA at a fixed tariff rate is viewed favourably by ICRA, given that it mitigates the risk associated with demand and pricing. Within the various revenue models, the PPAs with Central nodal agencies are viewed more favourably compared to the PPAs with state distribution utilities and C&I customers, due to factors such as adequate payment security mechanism and benefit of tripartite agreement signed by the Central nodal agencies like SECI with the Government of India, state governments and the Reserve Bank of India, for realising payments from discoms. Further, PPAs having clauses mitigating risks associated with grid curtailments and having termination payments in case of buyer event of default are viewed favourably.

Though wind-based energy generation is allowed as a ‘must run’ principle under the Indian Electricity Grid Code, backdown restrictions have been imposed by the utilities in the past in a few cases. ICRA assesses the tariff competitiveness of the wind energy tariff in a PPA in relation to the average power purchase cost as well as the marginal variable cost of power purchase for the offtaker utility. For projects having PPAs with third-party consumers or for captive consumption, ICRA assesses the regulatory environment related to the eligibility criterion for group captive projects, adequacy of the banking and wheeling arrangements and open access charges. Also, for projects with C&I customers, the adequacy of the lock-in period in the PPA

in relation to the debt tenure and availability of termination payments is evaluated. For projects availing the REC benefit, ICRA evaluates the REC sale trends and price movement on the power exchanges. Further, for projects selling power at the APPC rate, delay in determination or deviation from the CERC's regulations for determining the APPC increases the business risk of the wind assets.

For projects wherein the PPA tenure is lower than the debt tenure, such projects remain exposed to demand and tariff risk. In such a scenario, wind power projects with a competitive cost of generation can explore the avenues for power sale, especially in states with relatively higher tariffs for HT industrial/commercial customers, besides utility auction route. However, such projects also remain exposed to regulatory risks arising from any restriction imposed by the utilities on open access and/or an increase in open access charges by the SERCs in the respective states.

### Counterparty credit risk

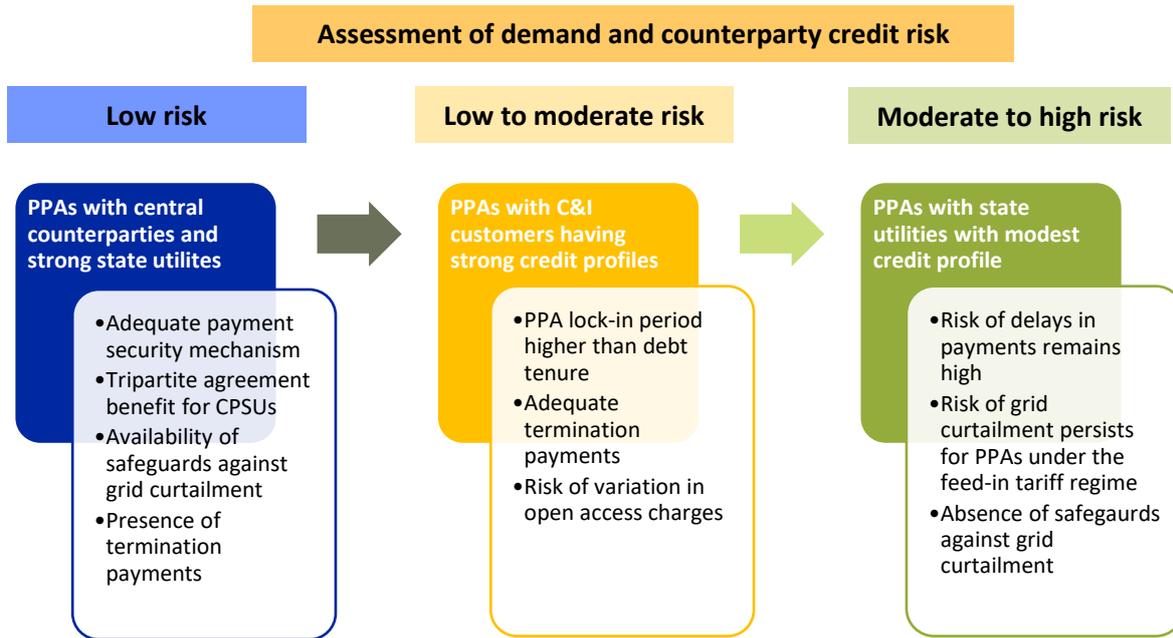
In assessing counterparty credit risk, ICRA evaluates the financial position of the counterparty, the track record of payments and the strength of the payment security mechanism (PSM). State-owned distribution utilities, being the key obligated entities to meet RPO norms, are offtakers for wind power producers in most cases. The PSM in PPAs with these utilities usually comprises revolving letter of credit (LC) for an amount equivalent to one month of billing. In addition to the PSM, ICRA examines the clauses in the PPAs in case of delays in payments by the offtaker, like the availability of right for sale of power to an alternative buyer if the delays in making payments exceed a certain limit. In case of PPAs with multiple utilities, the diversification in the counterparty risk is factored in the rating. While the credit quality of a state-owned distribution utility is linked to the intrinsic credit quality of the state government, ICRA assesses the distribution utility's financial position in terms of trends in cost coverage ratio, periodicity and adequacy of tariff revision with respect to the cost of supply as well as trends in operating efficiency metrics.

For projects where the PPA is signed with a central intermediary procurer such as NTPC Vidyut Vyapar Nigam (NVVN), NTPC NHPC and SECI, which in turn sign PSAs with the ultimate offtakers being state-owned distribution utilities, ICRA endeavours to examine the key clauses related to PSM under the PSA as well as in addition to the PPA. Further, ICRA evaluates the payment security benefits available for the PPAs with central procurers such as a) letter of credit, b) provision for payment security fund supported by budgetary allocation from MNRE under policy framework, and c) benefits available to the SECI/NTPC/NHPC which are covered under the tri-partite agreement<sup>2</sup> with the RBI, the state governments and the Government of India so as to ensure timely payments under power supply agreements between the SECI/NTPC/NHPC and the state discoms for supply of power. For PPAs with third-party C&I customers, ICRA also assesses the counterparty credit risk by evaluating the financial position of such offtakers.

In case of operational projects, ICRA focuses on the timeliness in cash collections from the offtakers and the extent of compliance of PSM in line with the terms of the PPA. ICRA favourably views the realisation of payments within the PPA-stipulated timelines from the offtakers. For under-construction projects, ICRA analyses the track record of payments by the offtaking utility to other IPPs. If the SPV is dependent on a limited number of counterparties, the rating of the SPV is linked to the counterparties' credit profile, unless there are mitigating factors such as strong liquidity buffer and presence of a strong parent/promoter group which is expected to provide support to the SPV, in case the need arises.

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<sup>2</sup>NTPC/SECI is a beneficiary of the tripartite agreement (TPA) between Government of India, state governments and Reserve Bank of India (RBI) which ensures a payment security mechanism for supply agreements between Central PSUs such as SECI and state discoms.



## Financial Risk Drivers

### Adequacy of future cash flows

As the prime objective of the rating exercise is to assess the adequacy of the company’s debt servicing capability, ICRA draws up projections on the likely financial position of a company under various scenarios, in addition to reviewing the past financials. The future cash flows are projected considering the tariff under the PPA, the PLF (based on P-90 estimate in the base case scenario for under-construction projects and for projects with less than three years of track record; actual PLF for projects for more than three years of track record with suitable adjustments related to any one-off events), O&M cost as per the contractual terms with the O&M contractor, interest cost, debt repayment schedule, working capital requirements and other funding requirements related to expansion (if any). These cash flows are then used to determine the company’s future debt servicing capability. Further, ICRA evaluates the breakeven PLF for the project over the debt servicing period and compares it with the estimated PLF, as per the wind resource assessment study for a greenfield project and with the actual PLF in case of an operational project to determine the cushion available from a debt-servicing perspective.

The various financial metrics assessed by ICRA could be divided into four categories — profitability, leverage, coverage, and liquidity. This document provides a summary of why ICRA considers these ratios to be important. For a more detailed description, readers may refer to the note titled - Approach for Financial Ratio Analysis - published on ICRA’s website.

### Profitability

The revenue profile of a wind power project having a PPA remains sensitive to the level of energy generation, which in turn depends on the wind speed/weather pattern at the project location. Any adverse variation in wind pattern impacts the generation, which in turn impacts the company’s revenues and cash accruals. However, for projects without the PPA, the revenue profile remains sensitive to the level of power offtake, in addition to generation. Given the capital intensity of the project, low operational expenses and finite life, the rating methodology focuses on return indicators (IRR) instead of profitability indicators. ICRA assesses the project IRR in relation to the company’s weighted average cost of capital.

For projects based on regulated tariffs, the returns are dependent on their ability to ensure that the actual costs and PLFs are in line with or better than the normative benchmarks. For projects based on the REC route, the returns remain exposed to the

market risks associated with the REC demand and pricing. ICRA evaluates the extent of cash flow mismatches for such projects, if the RECs remain unsold. For projects based on competitively bid tariff or captive projects with mutually negotiated tariff, the returns remain dependent upon the project developers’ ability to ensure that the PLF level, the capital cost as well as other operating and financing costs are in line with the assumptions in quoted/mutually negotiated tariff.

**Leverage and coverage indicators**

The wind power projects are generally funded with a large proportion of external debt leading to high financial leverage. Nonetheless, availability of debt with a long maturity profile and competitive interest rate can partially offset the risk associated with a high financial leverage. In view of this, analysis of debt coverage indicators like cumulative debt service coverage ratio (DSCR) and minimum DSCR over the debt repayment tenure, hold primacy.

For projects having long-term PPAs, the financial assessment is primarily driven by debt coverage metrics like cumulative DSCR and minimum DSCR. However, for projects without long-term PPAs, the financial assessment is driven by a mix of leverage (total debt to operating profits) and coverage (DSCR) metrics, considering the vulnerability of revenues and cash flows for such projects to volume and tariff risks. ICRA evaluates multiple scenarios to assess the DSCR over the debt repayment period with the key sensitive variables, such as project cost, PLF and cost of debt. For projects adopting the REC route, additional sensitivity factors include the trends in APPC/bilateral/spot tariff rates and realisation of the REC. Further, in case of wind power projects selling power to third-party consumers, including under the captive mode, additional sensitivity factors include the variation in open access charges and its impact on tariff realisation.

Typically, developers infuse the required promoter contribution for a project SPV through a mix of equity and unsecured debt. As per the terms of the loan agreement, such promoter debt typically remains subordinated to the project debt from lenders and the payments on the promoter debt is allowed by lenders, subject to meeting the stipulated restricted payment conditions. Also, the sub-debt holders do not typically have a right to call an event of default, leading to either acceleration of the debt payment or initiation of bankruptcy proceedings. In such instances, with the presence of an escrow/cash flow waterfall mechanism monitored by the lenders/trustee, the leverage and coverage metrics for the project SPV are assessed on the external project debt.

The ratios typically used to analyse a company’s coverage metrics are:

Ratio	Computation
<b>Debt Service Coverage Ratio</b>	$(\text{Net Profit After Tax} + \text{Interest} + \text{Depreciation}) / (\text{Interest} + \text{Repayment} + \text{Dividend on Preference Shares})$

In addition, ICRA compares the debt repayment tenure in relation to the tenure of the PPA tied up by the wind power producer. If the repayment tenure is longer than the PPA tenure, the coverage metrics are evaluated for any revision in tariff post the expiry of the PPA, based on the prevailing tariff trends for similar projects in the sector.

**Assessment of Profitability, Leverage and Coverage metrics**

[Indicative Metrics]

Salient Parameters	Key Ratios	Strongest	Weakest
<b>Leverage</b>	Total debt/ OPBITDA	$\leq 1.5$	$> 6.0$
<b>Coverage</b>	Cumulative DSCR over the debt tenure	$\geq 1.6$	$< 1.1$
	Minimum DSCR over the debt tenure	$\geq 1.45$	$< 1.0$

<b>Profitability</b>	Internal rate of return (IRR)	$\geq 12\%$	$< 4\%$
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**Liquidity**

Liquidity is the measure of an entity’s ability to meet its short-term cash obligations from various internal or external resources. For a wind power project, internal resources include cash flows from sale of power, the debt service reserve account (DSRA) and free cash balances. External resources include undrawn lines of credit or equity capital. The short-term obligations include operating costs, debt servicing obligations, working capital requirements and capital expenditure (if any). The higher the cushion available between the resources available (especially internal resources) and the obligations, better is the liquidity profile of an entity. ICRA also notes that the liquidity available with an entity may be for a temporary period and hence an entity’s overall policy towards maintaining adequate liquidity in the form of DSRA, undrawn working capital lines and free cash balances is accorded due importance in the analytical approach. ICRA evaluates the transaction documents to ascertain the availability of DSRA prior to default to ensure timely debt servicing. If DSRA is available for use only post default or is contingent on meeting certain conditions, ICRA does not consider DSRA for the liquidity assessment.

Further, ICRA evaluates the debt amortisation structure in relation to the seasonality in cash flows, as 60-70% of wind energy generation is during the peak wind season of about 4-5 months in a year. For a wind power SPV, surplus cash flows, post meeting the financial covenants stipulated by the lenders, and after maintaining liquidity reserves as per the cash flow waterfall mechanism, are assumed to be paid out to the sponsor and/or used for debt prepayment under the cash sweep mechanism of the loan agreement.

**Other Elements of Credit Risk Assessment**

**Financial flexibility**

An entity’s financial flexibility (or the lack thereof) is reflected in its ability to access the capital or the money markets at short notice, attract diverse and marquee investors and enjoy the confidence of banks, financial institutions and intermediaries. A strong financial flexibility allows an entity to raise fresh borrowings, or refinance existing ones in quick time and whenever required. For a wind power project, financial flexibility could arise from factors such as the tail period<sup>3</sup> available in the PPA and/or strong parentage or linkages with a strong group.

In case of entities having bullet debt repayment, ICRA examines the refinancing ability of such projects by assessing the expected cash flows from the balance tenure of the project life. Herein, ICRA considers ratios such as project life coverage ratio (PLCR) for assessing the debt servicing capability.

Ratio	Computation
<b>Project Life Coverage Ratio</b>	(Net present value of the projected cash flows from the project over the balance life discounted at the cost of debt) / (Outstanding debt)

**Tenure mismatches and risks relating to interest rates and refinancing**

Given the capital-intensive nature of the operations for wind power projects, ICRA views a longer debt maturity profile and a ballooning repayment structure positively. Dependence on short-term borrowings to fund long-term investments can expose a company to significant refinancing risks, especially during periods of tight systemic liquidity. One source of mitigation could be the existence of adequate buffers of liquid assets/ committed bank lines to meet short-term obligations. Another source of mitigation could be the entity’s strong financial flexibility to be able to garner fresh funds at a short notice, or a potent ability to refinance. ICRA also evaluates the impact of movement in interest rates on the debt coverage indicators of the issuer.

<sup>3</sup> Residual PPA tenure post completion of scheduled debt repayment

### Foreign currency-related risks

The foreign currency risk can arise from unhedged foreign currency liabilities pertaining to funding of capital expenditure and/or working capital. The focus here is on assessing the hedging policy of the issuer concerned in the context of the company's entire cash flows being denominated in domestic currency. Firm hedging, if not for the entire tenure of debt, then at least for the near-term foreign exchange repayment commitments, is viewed positively.

### Debt transaction structure

ICRA reviews the debt transaction structure to evaluate features available to provide additional protection to the lenders/bondholders through the escrow mechanism and the ring fencing of cash flows. This would include the cash flow waterfall mechanism, creation of reserve funds for debt servicing and stipulation on minimum coverage ratios that must be met before payment to subordinate debtholders (mainly sponsor debt) or declaration of dividends. This apart, availability of completion guarantees by sponsors, guarantee for debt servicing by other external entities, restriction on the ability of the project company to take on additional debt and/or capital expansion, without the approval of the lenders/bondholders, and implementation of the cash sweep mechanism to use surplus cash flows for debt prepayment by the lenders are viewed positively by ICRA.

### Accounting quality

ICRA reviews the accounting policies, notes to accounts and auditors' comments that are part of the annual report of the rated entity. Any deviation from the accounting standards is noted and the financial statements of the entity are adjusted to reflect the impact of such deviations. In case of wind power projects adopting the REC sale route, the accounting policy related to unsold RECs is evaluated and suitable adjustments are made in the financial statements.

### Contingent liabilities/off-balance sheet exposures

For this, the likelihood of devolvement of contingent liabilities/off-balance sheet exposures and the financial implications of the same are evaluated.

### Force majeure risk

Like any infrastructure project, wind power projects are also vulnerable to force majeure events. While this risk relates to the expected loss in the event of a default rather than the probability of default, the presence of force majeure clauses in the PPAs limits the company's liability arising from non-performance or underperformance. ICRA examines if, and the extent to which, the force majeure risks are mitigated through insurance contracts or by specific provisions in the PPA that cover such eventualities. The strength of these mitigating factors influences the overall financial flexibility of a company.

### Event risks

ICRA recognises the possibility of events such as mergers and acquisitions, asset sales and litigations, which could have a material impact on the credit profile of an entity. Incorporating the impact of such discrete events in the credit rating, from the beginning, is often difficult. Depending on whether and when such events occur, the rating opinion could be substantially different. To take rating decisions in such cases, ICRA applies its analytical judgement based on the rated entity's track record, the credibility of the management and the experience of having seen similar situations play out in other entities. However, given the nature of such events, it is possible that the rating may undergo a material change later, upon the occurrence of the event.

### Parentage

Despite the non-recourse nature of the debt availed by the issuers in the wind power sector, the financial strength of the parent/sponsor is a credit factor, given that apart from contributing the equity capital and/or subordinated debt, a stronger sponsor has greater wherewithal to meet any funding shortfalls faced by the SPV, while ensuring timely financial closure of the project. Further, during the pre-COD stage, most of the projects take recourse of the sponsor for cost overrun support.

If the parent's or promoter group credit profile is relatively stronger than the rated entity, ICRA assesses the ability and the likelihood of the parent extending extraordinary support to the entity. Support here means financial support from the parent

expected to be available to the entity in the form of loans, equity, extended credit period, advances etc in times of credit or liquidity stress on the entity. Support here does not mean operational support. It may be noted that promoters in their individual capacity, or private equity firms/ other financial investors are generally not treated as parents for assessing the likelihood of extraordinary financial support coming in.

While the weak financial health of the sponsor constrains its ability to support the project SPVs in a time of need, the presence of a financially strong sponsor need not necessarily mean assured support to fund SPVs in case of any funding shortfall. In the absence of explicit support (guarantees/letters of comfort/ shortfall undertakings), the sponsors' willingness to support the operational projects is determined by the long-term project attractiveness, which is a function of the strength of the project cash flows and duration of the tail period. Also, ICRA considers the past track record of the sponsor in extending timely support to any of its other SPVs and gauges the intent of the sponsor to extend extraordinary support to the rated SPV, based on interactions with the sponsor.

## Management Quality Assessment

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In addition to the industry, business and financial risk analysis, all credit ratings incorporate an assessment of the quality of the rated entity's management, the financial policies and the governance practices.

### Quality of management and financial policies

As a part of its process, ICRA undertakes discussions with the rated entity's management to understand its views on past performance as well as its future plans and strategies, besides the outlook on the industry. Some of the points assessed are:

- Experience of the promoter/management in the line of business concerned
- Commitment of the promoter/management to the rated entity
- Risk appetite of the promoter/management and risk mitigation plans
- Policies on leveraging, managing interest rates and currency risks
- Management's past success in introducing new projects and managing changes in the external environment
- Management's plans on new projects, acquisitions, expansion, etc.

Periodic interactions with the management help in ascertaining the shifts, if any, in the issuer's financial policies.

## Assessment of Environmental, Social and Governance (ESG) Risks

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The assessment of ESG risks by ICRA involves a broad range of considerations that pertain to the sustainability of an entity with focus on aspects that can have a material impact on its credit quality. While the E&S risks tend to be both sector-related as well as entity-specific and could be driven by external factors such as regulations or demographic changes, the G risks are largely entity driven. The impact of the E&S risks on an entity's credit profile tends to be asymmetric. If the ESG risks are material but unmitigated, these generally translate into pulling down the rating, but generally the ratings are not pushed up even when the ESG context is favourable.

### Environment (E) and Social (S) risks

As this methodology highlights, while undertaking credit assessment of entities, ICRA seeks to incorporate all relevant credit considerations into its rating decisions, while taking a forward-looking view on the risks and the mitigating elements. The relevant credit considerations include (sometimes overtly, sometimes covertly) the E&S factors that could affect the rated entity/transaction. While ICRA's analytical approach does not explicitly disaggregate these risks to assess their impact on the rating, these risks are often assessed broadly. Further, it is not always feasible to fully or precisely disaggregate the sub-components of E&S risks in credit analysis as these considerations often tend to overlap.

That said, the materiality of the E&S risks and the time horizon over which they are expected to crystallise differs widely across sectors and entities. In some cases, while the E&S risks could be material, but their effect on the credit profile may be muted because of other fundamental strengths of the entity. In other cases, the adverse impact of the E&S risks is expected to play out in the distant future, and hence, these considerations do not necessarily weigh on the rating today—with the expectation that when these risks manifest in the distant future, the rated entity by then would possibly adapt itself by realigning its business model.

While evaluating the E&S risks, ICRA's objective is only to assess the direct and indirect risks that an entity faces and how it already is or is intending to mitigate the impact of such risks on its credit profile. As an example, ICRA only assesses whether an entity is exposed to physical climate risks or carbon transition risks such as those arising from changes in regulations or other environmental and social risks; and seeks to understand the various mitigation and adaptation approaches that the entity is implementing to mollify these risks.

Wind power producers contribute to the reduction in greenhouse gas emissions by being an alternative to power generation from fossil fuel-based sources. The policy, demographic and societal trends in favour of clean energy support the business profile of wind power producers. At the same time, wind power producers are exposed to the risk of natural disasters and extreme weather conditions, which could damage the equipment – WTGs or transmission lines. Nonetheless, the issuers avail insurance against such risks, including against loss of profits due to business interruption. The wind power producers would also remain exposed to the variation in weather patterns which could adversely impact the generation performance.

Given the large capacity targets set by the Government for the renewable energy sector, there is a large requirement of land for setting up such projects. There have been challenges in completing land acquisition, and social risks manifest when there are disagreements over compensation between the developers and the land owners. Further, there are competing claims that renewable power projects adversely impact the ecosystem, such as the possible impact of transmission lines of these projects on the extinction of the Great Indian Bustard (GIB) in Gujarat and Rajasthan. Thus, the wind power producers remain exposed to E&S risks arising from such considerations.

### Governance practices

A sound corporate governance structure attempts to make clear the distinction of power and responsibilities between the board of directors and the management. The constitution of an entity's board and the board of directors' participation in strategy formulation, besides the entity's adherence to legal and statutory compliance requirements, are factored in during credit assessments. ICRA seeks to gain a qualitative understanding of an entity's commitment to following transparent and credible practices by the way its financial statements are reported, their level of disclosures, consistency in communication and the openness about sharing information during the credit rating exercise. Besides, the corporate group structure (whether simple or complex), the rated entity's related party transactions and instances of supporting Group entities at the expense of debt holders are assessed.

### Summing Up

ICRA's credit ratings are a symbolic representation of its opinion on the relative credit risk associated with the instrument being rated. This opinion is arrived at following a detailed evaluation of the company's business and financial risks, likely cash flows over the life of the instrument being rated and the adequacy of such cash flows vis-à-vis its debt servicing obligations.

As this note highlights, for wind power projects, project risks assume importance during the implementation phase, while post-COD, it is the operating performance which determines the adequacy of cash flow generation vis-à-vis the debt servicing commitments that primarily influence the rating. As cash flows for a wind power project remain sensitive to the level of electricity generation and tariff tied up under the PPA, along with the timeliness of collections from the counterparty, various scenarios are drawn up to assess the impact of key variables on the debt-servicing metrics. ICRA's rating approach also involves an assessment of the entity's management quality and governance practices. In addition to these considerations, an entity's credit rating may also be influenced by its ownership, the nature of linkages with its parent or Group entities, degree of

financial flexibility, the corporate legal structure, track record of operations and that of debt servicing, and vulnerability (if any) to discrete event risks. Further, ICRA draws comfort from strong coverage ratios and the presence of structural features like adequately funded DSRA and restrictive covenants on additional debt and adequate dividend lock-up/restricted payment triggers.

ANNEXURE

Summary of rating factors and an example to illustrate the key building blocks of a credit rating

		Strong			Comfortable			Adequate			Moderate			Weak		
Industry Risk	Industry Position															
	Execution and Funding Risk															
Business Risk	Availability of LT PPA and Cost competitiveness of Tariff															
	Counterparty Credit Risk															
	Generation Risk															
	Asset Diversification															
Financial Risk	Coverage															
		Enhance						Support/ Neutral						Hinder		
Do these factors enhance or hinder the credit profile?	Diversification															
	Liquidity and Financial Flexibility															
	Currency Risk															
	Financial Policy															
	Management, Governance & Reporting															
		Very High				High				Moderate				Low		
Parent Support	Likelihood of Parent Support															
	Rating of Parent	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B/ C category	
	Final Rating	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B/ C category	

The above graphic is only for illustration purpose and does not represent a rating output from a formulaic model. The ratings assigned by ICRA are determined by Rating Committees based on both quantitative and qualitative considerations.

Glossary

Key Terms	Definition
Average Pooled Purchase Cost (APPC)	The weighted average pooled price at which the distribution utility has purchased the electricity including cost of self-generation, if any, in the previous year from all the energy suppliers (long term and short term), excluding those based on renewable energy
Cost Coverage Ratio for a discom	Annual Revenue Realisation (ARR) / Average Cost of Supply (ACS)  ARR = Cash Collection inclusive of subsidy receipts / Units Sold ACS = Total expenditure / Units Sold
IPP	An IPP is a non-state utility, which owns and operates a power generation project for sale of power to discoms
Plant Availability Factor (PAF)	PAF for a generating station means the average daily declared capacity of the power plant as a percentage of the installed capacity less auxiliary consumption
Preferential or Feed-in Tariff	Tariff determined by the SERC for sale of electricity generation from a renewable energy project to the state distribution utility
P90 PLF	The P90 estimate of generation is the generation which a wind plant is 90% likely to produce over an average year
Renewable Purchase Obligation	Obligation of an entity (distribution utility, open access consumers and captive power consumers) to purchase a proportion of their electricity consumption from renewable sources of energy as per the notified regulations by respective SERCs
Renewable Energy Certificates	RECs have been designed to address the mismatch between the availability of renewable energy sources and the requirement of obligated entities to meet their RPO, given that renewable energy sources are concentrated in a few states; one REC is equivalent to 1 MWh of electricity; renewable energy-generating companies shall be eligible for issuing and trading RECs, subject to conditions notified by CERC; the obligated entities can purchase RECs on the energy exchange towards meeting their RPO target

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**About ICRA Limited:**

ICRA Limited was set up in 1991 by leading financial/investment institutions, commercial banks and financial services companies as an independent and professional investment Information and Credit Rating Agency.

Today, ICRA and its subsidiaries together form the ICRA Group of Companies (Group ICRA). ICRA is a Public Limited Company, with its shares listed on the Bombay Stock Exchange and the National Stock Exchange. The international Credit Rating Agency Moody's Investors Service is ICRA's largest shareholder.

For more information, visit [www.icra.in](http://www.icra.in) and [www.icresearch.in](http://www.icresearch.in)

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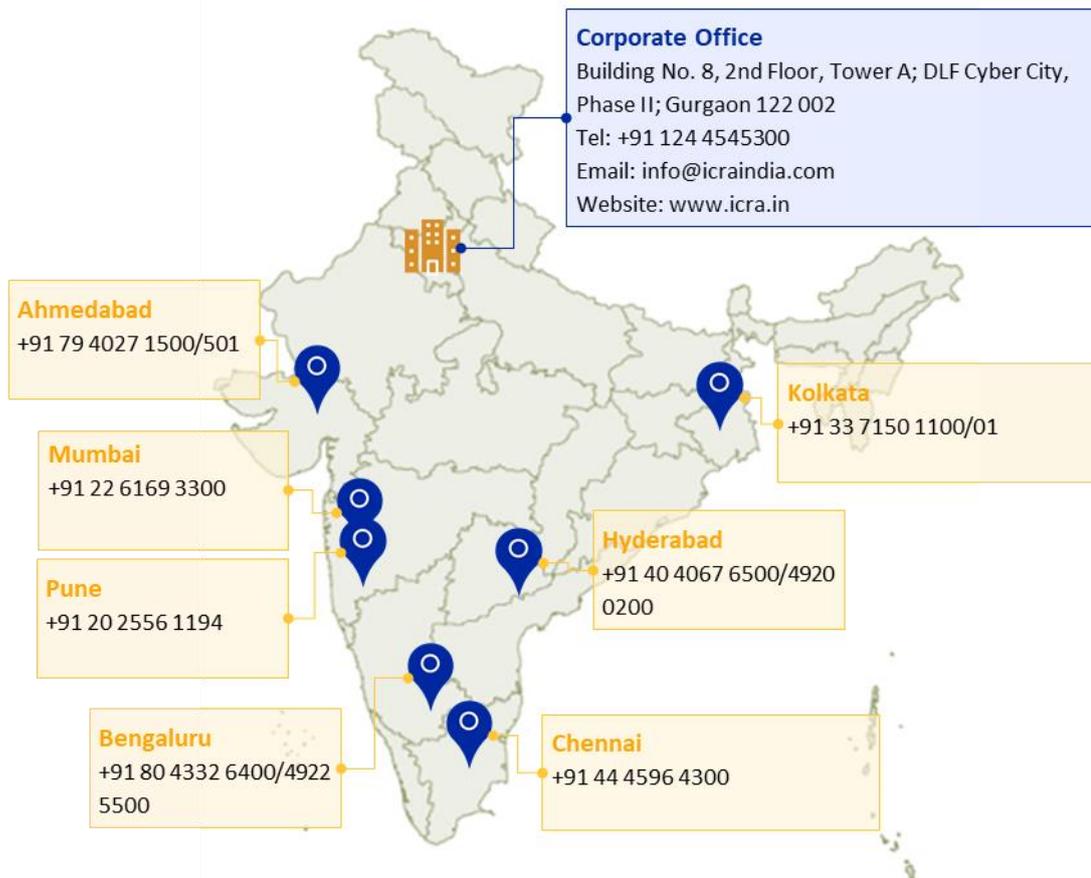
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