



Round-the-Clock Renewable Power in India 2026: Contract Design, Tariffs and Bankability

By Sudarshan Karweer · 04 September 2026 · growthifye.com

A practitioner guide to RTC renewable power in India 2026: portfolio design, tariffs, scheduling, risks and lender considerations.

India's round-the-clock renewable power market is entering a more practical phase in 2026. The early debate focused on whether hybrid portfolios of solar, wind and storage could technically supply near-firm clean power. That question is largely settled. The harder issue now is commercial design: what contract structure can deliver bankable RTC power, what level of storage is actually needed, how should deviations and curtailment be allocated, and what tariff range can survive lender scrutiny?

For Indian utilities, C&I buyers, developers and lenders, RTC is no longer just a policy headline. It is becoming a procurement format that sits between plain vanilla renewable PPAs and fully dispatchable conventional supply. Yet many counterparties still underestimate the complexity. A project can look attractive on an annual CUF basis and still fail on monthly shape, seasonal deficits, state-wise transmission constraints, or mismatch between scheduling obligations and storage duration.

In 2026, the central challenge is not whether RTC can be built. It is whether it can be contracted in a way that balances affordability, delivery certainty and financing discipline.

Why RTC procurement is gaining traction in 2026

Several market shifts are pushing RTC back to the centre of procurement strategy.

First, distribution companies and large power buyers need cleaner power that better matches load shape. Midday solar alone does not solve evening ramp or monsoon variability. Wind improves the profile, but seasonal swings remain. Storage fills part of that gap, especially for intra-day balancing.

Second, buyers are becoming more sensitive to effective delivered power rather than headline installed capacity. A 100 MW solar contract with a low landed tariff may still require costly balancing power. By contrast, RTC-style procurement makes the firmness obligation explicit.

Third, central and state agencies are increasingly evaluating hybrid and firm renewable structures for capacity adequacy, not only energy procurement. As India's renewable penetration rises, flexibility has monetary value even where market mechanisms are still evolving.

Fourth, lenders are now more comfortable with hybrid structures than they were two or three years ago, but only when the energy profile, dispatch assumptions and contract backstops are clearly modelled. That is creating a sharper distinction between projects that are technically feasible and projects that are financeable.

For policymakers, RTC also addresses a strategic concern: how to increase renewable share without transferring all balancing risk to the grid. For developers, it opens access to offtakers willing to pay a premium over standalone solar or wind if the supply shape is useful. For C&I buyers, it offers a route toward higher renewable consumption without relying entirely on market purchases for balancing.

What RTC actually means in Indian contracts

One reason RTC discussions often become confused is that the term is used loosely. In practice, Indian contracts can define RTC in several ways:



- Fixed hourly or block-wise delivery commitment across all 24 hours
- Assured annual or monthly availability percentage, such as 80%, 90% or 95%
- Contracted capacity with permitted deviation bands
- Peak-hour firmness requirement combined with lower off-peak obligation
- Renewable-heavy supply backed by storage and market purchases as secondary balancing

These structures are not economically equivalent.

A true 24x7 flat delivery obligation requires much more balancing depth than a shaped contract that allows seasonal flex or pre-defined low-generation windows. The storage need for meeting evening ramps is fundamentally different from the storage need for covering multi-day wind lulls or monsoon shortfalls. That difference drives capex, auxiliary consumption, degradation assumptions and reserve margins.

In many tenders and bilateral negotiations, the central commercial question is this: is the seller only required to provide a renewable portfolio that statistically approximates firm power, or is the seller exposed to hard penalties for every hourly shortfall?

That answer changes bankability.

If the seller bears strict shortfall risk without sufficient curtailment protection, change-in-law pass-through, scheduling flexibility or market-purchase rights, the tariff must rise materially. If the buyer insists on low tariff and hard firmness simultaneously, the developer may compensate by using aggressive generation assumptions that lenders later reject.

Portfolio design: why RTC is not just solar plus four-hour BESS

A common misconception in the market is that RTC can be built by simply pairing solar with a four-hour battery. In most Indian conditions, that is inadequate for economically delivering year-round firm supply unless the contract is narrowly shaped around specific peak periods.

RTC portfolios need to be designed around four interacting variables:

- Solar generation profile by site and season
- Wind complementarity, especially monsoon and evening contribution
- Storage duration and cycling strategy
- Contracted delivery shape and penalty framework

In 2026, many viable RTC designs still rely on geographically diversified solar and wind, with BESS used more for intra-day shaping than for long-duration seasonal balancing. Batteries are efficient for time-shifting and ramp management, but they are not a low-cost substitute for multi-day energy deficits.

For example, a solar-heavy hybrid intended to support a flatter day-night output may require significant DC oversizing and careful clipping recovery logic. But if the same project must maintain high nighttime firmness during weak-wind months, the battery alone may become prohibitively expensive. The economic answer is often a better wind-solar mix, a more flexible delivery schedule, or explicit provisions for external power procurement.

Indicatively, developers evaluating RTC structures in India in 2026 often model:

- Solar CUF around 24% to 30% depending on irradiation, technology and DC/AC ratio
- Wind CUF around 30% to 40% for stronger sites, with much wider seasonal variability than annual CUF suggests



- BESS round-trip efficiency in the high 80s to low 90s range, depending on AC/DC architecture and operating conditions
- Useful battery cycling assumptions typically aligned to one to two cycles per day for shaping use cases, with more constrained economics when overused for deficit filling

The key is that annual CUF averages can hide hourly risk. A lender or utility assessing RTC must look at 8,760-hour modelling, not just annual energy balance.

Tariffs in 2026: what drives the premium over standard RE PPAs

RTC tariffs in India naturally sit above standalone solar and wind tariffs because the product being purchased is different. The buyer is paying for firmness, shaping and risk transfer, not just renewable energy volume.

Tariff outcomes in 2026 depend on at least six major variables:

- The strictness of the delivery profile
- Wind-solar complementarity in the selected portfolio
- Battery duration and annual throughput requirement
- ISTS or state transmission cost and congestion exposure
- Curtailment treatment and deemed-generation provisions
- Shortfall penalty, market purchase rights and settlement rules

Where a project can lean on strong wind complementarity and a reasonably flexible delivery shape, the RTC premium over plain renewable supply may remain manageable. Where a contract requires close-to-flat hourly output with punitive shortfall settlement, tariff escalates quickly.

For practical evaluation, buyers should stop comparing RTC tariff only against the lowest discovered solar tariff. The correct comparison is the all-in cost of energy plus balancing and reliability. For a discom or C&I consumer, that includes:

- Renewable PPA tariff
- Balancing power purchases during deficit hours
- Deviation-related costs
- Demand charges or contract demand implications where relevant
- Curtailment and non-delivery risk costs
- Administrative complexity of managing multiple contracts

An RTC tariff that appears 80 to 150 paise per kWh above plain solar may still be rational if it displaces more expensive balancing purchases during evening and high-price periods. But that only holds if the contract actually delivers the promised shape and if the storage dispatch assumptions are realistic.

The contract issues that decide bankability

From a financing perspective, the most important issue is not the concept of RTC itself. It is the allocation of uncontrollable risk.

Lenders in 2026 are generally focused on a familiar set of questions:

- Is the generation portfolio sufficiently diversified by technology and location?
- Is the storage duty cycle technically and economically credible over the debt tenor?



- Are performance guarantees tied to measurable, controllable parameters?
- Does the PPA distinguish between seller default and grid or system constraints?
- Are transmission unavailability and curtailment addressed clearly?
- Can shortfalls be cured through market purchases, and on what terms?
- Is change in law, including storage-related taxation or market rule changes, pass-through eligible?

These questions matter because RTC transactions tend to blend generation risk with operating-performance risk. A standalone solar PPA is comparatively simple: irradiance drives output, and the offtaker typically absorbs some scheduling variability. In RTC, the seller may be promising a service level. That means battery availability, forecasting quality, dispatch discipline and grid-interface performance become part of the credit story.

A robust RTC contract in India should normally address the following with precision:

- Delivery metric: hourly, 15-minute, block-wise, monthly or annual
- Permitted deviation band before penalty applies
- Treatment of state load despatch and regional despatch instructions
- Curtailment classification: grid security, transmission congestion, backing down, force majeure
- Deemed generation or compensation for eligible curtailment
- Storage replacement and augmentation obligations over time
- Metering hierarchy and settlement data source
- Rights to substitute with market purchases or third-party supply
- Liquidated damages cap and termination thresholds

The less clarity there is on these items, the more contingency lenders will build into their base case. That lowers leverage and pushes up equity return requirements.

RTC for C&I buyers: when it works and when it does not

For large C&I consumers, RTC can be attractive, but it is not automatically the best decarbonisation structure.

It works best where the buyer has:

- A relatively stable 24-hour or extended-shift load profile
- High exposure to evening power costs or volatile market purchases
- Sustainability targets that favour higher temporal matching of renewable supply
- The ability to contract medium-to-long tenure supply with clear settlement terms

It may be less suitable where the load is strongly daytime-weighted, seasonal or already supported by flexible grid supply at acceptable tariffs. In those cases, a simpler open-access solar or wind portfolio, optionally paired with limited storage, may deliver better economics than a full RTC product.

C&I buyers should also be realistic about what they are purchasing. If the contract is labelled RTC but allows broad monthly balancing without hourly firmness, it may be a shaped renewable contract rather than true round-the-clock supply. That is not necessarily bad, but it should be priced accordingly.

A disciplined procurement process should test at least three alternatives:

- Plain open-access renewable supply with market balancing



- Hybrid wind-solar supply with limited storage for peak shaping
- Near-firm or RTC supply with specified hourly obligations

In many cases, the middle option provides the best value. The right answer depends on load shape, state charges, banking limits, imbalance exposure and the buyer's appetite for contract complexity.

Policy and market implications for 2026 and beyond

India's RTC market is still being defined by procurement design rather than by a fully mature flexibility market. That means policy choices will materially affect outcomes.

Three developments are especially important.

First, scheduling and settlement rules need continued refinement for hybrid and storage-backed projects. A seller cannot efficiently provide firmness if metering, dispatch rights and imbalance accounting remain ambiguous.

Second, transmission planning matters as much as generation planning. An elegantly designed RTC portfolio can still underperform if evacuation and corridor availability are weak during critical hours.

Third, the long-term value of storage needs clearer monetisation. If a battery is used solely to support one contracted output profile, part of its system value remains unrecognised. As ancillary and flexibility markets deepen, RTC structures may become more efficient because assets can stack value across capacity support, ramping and reliability services, subject to contractual limits.

For developers, the message is straightforward: avoid selling RTC as a generic premium renewable product. It is a precision product. The commercial edge will come from better data, better shape design, stronger scheduling capability and more disciplined contract structuring.

For utilities and policymakers, the lesson is equally clear: the cheapest discovered tariff is not always the lowest-cost system outcome. Contract design that is too rigid can force uneconomic overbuilding. Contract design that is too loose can transfer balancing risk back to the grid. The optimal middle path is a product definition that is firm where the system values firmness most and flexible where variability can be efficiently managed.

India does not need RTC contracts that look perfect on paper but fail under real operating conditions. It needs procurement structures that can be financed, scheduled and settled without recurring disputes.

That is where serious advisory work matters: hourly resource modelling, storage dispatch optimisation, curtailment and transmission assessment, PPA risk allocation, and lender-grade revenue stress testing. In 2026, RTC winners will not be decided by ambition alone. They will be decided by who can translate renewable variability into a contract that the grid, the buyer and the bank can all accept.

If your organisation is evaluating RTC procurement, hybrid renewable portfolios or storage-backed power supply, contact Growthifye's advisory desk for project-specific support on sizing, economics, contract strategy and bankability.

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