



Hybrid Open Access PPAs in India 2026: RTC Cost, Storage, Risk and Contract Design

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A 2026 practitioner guide to hybrid open access PPAs in India: solar-wind-storage structuring, RTC economics, charges, risk and contracts.

India's open-access market in 2026 is entering a more mature phase. The easy conversation around plain-vanilla daytime solar savings has already happened. What many commercial and industrial buyers are asking now is more specific: can a hybrid open access PPA combining solar, wind and, in some cases, battery storage deliver a better commercial outcome than a standalone solar contract?

For developers and lenders, the same question appears in another form: what hybrid shape is actually financeable once scheduling discipline, state charges, curtailment, banking limits and contract performance guarantees are taken seriously?

This article focuses on that next-step topic: hybrid open access PPAs for Indian C&I consumers in 2026. The emphasis is practical rather than promotional. We look at how hybrid structures are being designed, where landed-cost economics work, what charges still matter, how firm or near-RTC products are priced, and what should go into the contract.

Why hybrid open access matters in 2026

Standalone open access solar remains attractive where the consumer has a strong daytime load, a supportive state framework and enough annual consumption to absorb generation. But many larger C&I buyers have moved beyond the first layer of savings analysis.

Their real procurement problem is usually one of the following:

- day-heavy solar covers only 20% to 35% of annual consumption at the meter after hourly matching constraints
- evening and night loads remain exposed to DISCOM tariffs of Rs 7 to Rs 11 per kWh depending on state, voltage and consumer category
- banking has tightened or become expensive, reducing the value of excess solar in low-load hours
- sustainability teams want higher annual renewable coverage, but CFOs want cost discipline and lower imbalance risk
- internal production lines cannot tolerate shape mismatch if it creates dependence on high-cost market purchases

A hybrid PPA addresses these issues by combining complementary generation profiles. In India, the most common structure in 2026 is solar plus wind, with battery storage added selectively for peak shaping, firming or contract compliance.

The reason is simple. Solar and wind are not perfectly negatively correlated, but they are different enough to improve hourly match. Solar produces through the day. Wind output in many resource locations is stronger in monsoon months and often extends into evening or night hours. Storage then becomes the fine-tuning layer rather than the primary energy source.



For a buyer, this can raise the renewable share of actual hourly consumption materially above a standalone solar deal, while reducing the dependence on banking and lowering the effective balancing burden.

What products are actually being sold

Not every hybrid PPA is an RTC PPA. That distinction matters because the market often uses terms loosely.

In practice, C&I buyers in 2026 are seeing four product types:

- Solar-wind energy-shaped PPA: developer supplies from a portfolio of solar and wind assets, without a strict hourly firmness commitment
- Time-block supply PPA: defined delivery expectation for specific blocks such as 8 AM to 10 PM or peak hours only
- Assured CUF hybrid PPA: seller commits to a monthly or annual delivery band, often with deviation thresholds
- Near-RTC or RTC-like PPA: seller commits to high availability or specified hourly coverage using generation plus storage plus market procurement backstop

Typical pricing varies sharply by product quality and state.

As of 2026, indicative ex-busbar ranges seen in market discussions are broadly as follows:

- standalone open access solar: around Rs 2.60 to Rs 3.40 per kWh depending on state, location, scale and counterparty
- solar-wind hybrid energy-shaped: around Rs 3.20 to Rs 4.30 per kWh
- hybrid with stronger time-block commitments: around Rs 3.80 to Rs 5.20 per kWh
- near-RTC hybrid including storage or market firming: around Rs 4.80 to Rs 6.80 per kWh, sometimes higher for stricter performance bands

These are not landed costs. Open access charges, losses, scheduling overheads and balancing costs must be added. In some states, landed cost for a hybrid product may still be lower than the weighted grid alternative for evening-heavy consumers. In others, the premium for firmness can erase the economic advantage.

That is why portfolio design matters more than headline tariff.

The real economics: when hybrid beats plain solar

The right comparison is not solar tariff versus hybrid tariff. The right comparison is avoided power procurement cost by time block versus hybrid landed supply cost by time block.

A factory paying an average blended DISCOM tariff of Rs 8.20 per kWh may still have very different time-of-day economics:

- solar hours effective tariff offset: Rs 6.20 to Rs 7.00 per kWh after considering lower grid energy charges in some blocks
- evening peak offset value: Rs 8.50 to Rs 10.50 per kWh in states with ToD surcharges or high marginal procurement cost
- night block offset value: Rs 6.50 to Rs 8.00 per kWh

In such cases, a plain solar PPA at landed cost of Rs 4.80 may look excellent on average but only addresses a narrow slice of load. A hybrid supply at landed cost of Rs 5.60 to Rs 6.20 can produce a better portfolio



outcome if it displaces more expensive evening and shoulder-hour power.

This is where [Demand & ToD analysis](/coreservices/greenenergyppa/demandandtodanalysis) becomes central. Without hourly load data for at least 12 months, preferably 15-minute interval data, buyers often understate the value of shape-matched renewable procurement or overpay for an unnecessary firmness product.

A practical rule for buyers in 2026 is this:

- if daytime load is high and relatively stable, start with standalone solar economics
- if annual renewable coverage target exceeds roughly 35% to 40% of consumption, test solar-wind hybrid scenarios
- if evening consumption is material and DISCOM ToD tariffs are punitive, evaluate shaped hybrid blocks before considering full RTC
- if process reliability requires contracted hourly supply confidence, assess the premium for storage-backed commitments versus market purchase flexibility

Storage is often oversold in generic presentations. For many C&I users, battery economics still work better for 2 to 4 hour peak shaving, ramp smoothing or contract compliance than for true round-the-clock energy shifting. Unless there is a strong peak differential, ancillary benefit or outage-management value, using batteries to convert large volumes of daytime solar into night supply can raise delivered cost significantly.

Charges, losses and regulatory frictions that still decide viability

Even the best generation shape can be undermined by state-level open access friction. Hybrid does not escape the core regulatory architecture.

The main cost components buyers must model in 2026 include:

- transmission charges, including whether state or inter-state networks are used
- wheeling charges on the relevant voltage level
- wheeling and transmission losses
- cross-subsidy surcharge for third-party structures where applicable
- additional surcharge depending on state treatment and consumer eligibility
- standby or balancing charges where imposed
- SLDC fees, scheduling charges and system operation costs
- banking charges and banking loss, if banking is permitted
- deviation settlement and imbalance pass-through
- electricity duty and other state-specific levies where relevant

For hybrid projects, one complexity is that supply may be pooled from different locations and technologies. That improves energy shape but can create a more complicated scheduling and accounting framework.

Key 2026 realities to note:

- Banking is increasingly restricted in many states by time block, quantum cap or settlement rules. Hybrid design should reduce dependence on banking rather than assume generous carry-forward.
- Additional surcharge remains a swing factor for third-party deals in several states and can materially affect landed cost.



- Group captive structures may still be attractive where shareholding and consumption compliance can be maintained, but hybrid portfolios with multiple consumers need tighter governance to preserve captive status.
- For cross-state hybrids, ISTS benefit assumptions must be tested carefully against current eligibility, commissioning status and applicable notifications.

A common error in board papers is to compare a hybrid quote against current average grid tariff without adjusting for losses and open access layers. Another common error is the opposite: overloading every scenario with worst-case charges even where project routing and transaction design can legally optimize the cost stack.

That is why [Sourcing strategy](/coreservices/greenenergyppa/sourcingstrategy) and Landed-cost management are not clerical exercises. They determine whether a hybrid procurement concept survives investment committee scrutiny.

Contract design: the clauses that matter most

Hybrid PPAs fail commercially not only because of tariff, but because delivery obligations are poorly defined.

The contract must answer five questions clearly.

First, what exactly is being sold?

Is the seller committing only to available generation from a hybrid portfolio, or to scheduled energy in defined time blocks, or to a minimum monthly delivery quantity, or to near-RTC hourly supply? Each product implies different pricing and remedy structures.

Second, how is shortfall treated?

If the seller misses the contracted delivery band, the PPA should define whether compensation is based on replacement power cost, a pre-agreed rebate, liquidated damages cap, or simply best-efforts scheduling without firmness recourse. Many disputes emerge because buyers assume a firm product while the paper reflects only generation sale.

Third, who carries balancing and market procurement risk?

For stronger firmness commitments, the developer may need to buy from the exchange or bilateral market to fill gaps. If that risk is fully with the seller, tariff will be higher. If it is shared, the formula must be transparent.

Fourth, how are curtailment and grid unavailability allocated?

Hybrid assets can reduce intermittency but cannot eliminate transmission congestion or state curtailment risk. The PPA should distinguish:

- grid unavailability at project evacuation point
- transmission corridor congestion
- SLDC or DISCOM curtailment
- buyer-side drawal constraints

Fifth, what is the change-in-law framework?

Hybrid deals are exposed to future changes in open access charges, banking rules, scheduling regulations and taxation. A viable change-in-law clause should specify which components are pass-through, whether there is a sharing threshold, and if tariff reopener or termination rights arise after material cost movement.



For lenders, contract bankability improves when performance metrics are measurable, settlement formulas are objective and force-majeure definitions do not become a backdoor for routine variability.

How developers and lenders are underwriting hybrid C&I deals

From a project-finance perspective, hybrid open access assets are more data-intensive than plain solar. Underwriters are examining not just plant-level generation forecasts but portfolio dispatch capability.

Typical focus areas include:

- complementarity of solar and wind resource profiles across chosen sites
- hourly generation simulation rather than annual PLF alone
- storage degradation assumptions and augmentation plan, where batteries are included
- open access route stability in the relevant state
- consumer credit quality and replacement offtake options
- DSM exposure and scheduling competency
- curtailment history on the relevant evacuation network

For developers, there is a strong temptation to oversell annual CUF rather than hourly deliverability. Lenders are increasingly discounting that approach. A 45% to 55% combined annual CUF story is not enough if the offtaker is paying for evening reliability and the project has no robust shape-management plan.

Battery sizing is another frequent issue. A battery that is too small relative to contract obligations may help optics but not performance. A battery that is oversized may render tariffs uncompetitive. The right answer depends on contract design, not technology enthusiasm.

In several live discussions, buyers are finding that a portfolio hybrid without storage can capture much of the benefit they actually need, especially where some grid drawal during late-night blocks is acceptable. That solution can be commercially superior to a nominal RTC contract with expensive firmness.

A practical decision framework for C&I buyers

For procurement teams evaluating hybrid open access in 2026, a workable sequence is:

- map 15-minute demand for at least the last 12 months, including seasonal and shift-wise variation
- segment load into must-run, flexible and peak-sensitive categories
- model current landed grid cost by time block, not only average tariff
- evaluate three alternatives: standalone solar, solar-wind hybrid, and shaped hybrid with limited storage
- test third-party and group captive structures separately if both are feasible
- assess state-specific open access restrictions on banking, CSS, additional surcharge and scheduling
- align product type with business need: savings, renewable share, peak management or supply confidence
- negotiate contract performance definitions before focusing only on tariff headline

In many cases, the optimal strategy is not a single omnibus PPA. A layered approach may work better:

- base daytime requirement through lower-cost solar open access
- evening or shoulder-hour risk covered through hybrid blocks
- residual exposure managed through DISCOM supply or market purchase



This avoids paying RTC premium for hours where the buyer does not need strict contracted renewable coverage.

The procurement objective should be portfolio efficiency, not technology symbolism.

The 2026 takeaway

Hybrid open access PPAs are becoming relevant because Indian C&I buyers are asking more mature questions about hour-by-hour cost, not just annual tariff savings. Solar-wind combinations can materially improve renewable matching. Storage can add value, but only where its use case is specific and commercially justified.

The winning structures in 2026 are likely to be those that do three things well:

- match buyer load shape rather than sell generic annual energy
- minimize dependence on uncertain banking benefits
- allocate balancing, curtailment and change-in-law risks transparently in the PPA

For boards, the decision should not be framed as whether hybrid is fashionable. It should be framed as whether a hybrid procurement design lowers total power cost, improves renewable coverage and remains resilient under state-level regulatory realities.

If you are evaluating hybrid open access procurement, contact Growthifye's advisory desk. We help buyers and developers with Demand & ToD analysis, Sourcing strategy, [PPA structuring & negotiation](/coreservices/greenenergyppa/ppastructuringandnegotiation), open-access approvals and bankable landed-cost assessment.

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