Open Access Curtailment Risk in India 2026: PPA Design, Charges and Mitigation

By Sudarshan Karweer · 02 September 2026 · growthifye.com

A practical 2026 guide to curtailment risk in Indian open access PPAs: causes, charges, contract design, and landed-cost mitigation.

Open access curtailment risk is now a boardroom issue for Indian C&I power buyers, developers and lenders. In 2026, many procurement discussions still focus on headline solar or wind tariffs, captive versus third-party structures, and visible charges such as wheeling, transmission, CSS and AS. But a cheaper quoted tariff can become a costlier delivered-power outcome when generation is backed down, schedules are cut, evacuation is constrained, or banking access is diluted by state rules and grid conditions.

For energy-intensive buyers, the key question is no longer only “what is the PPA tariff?” but “what quantum will actually flow, in what time block, with what settlement and replacement-power cost?” That is the practical landed-cost question. Curtailment sits at the centre of that answer.

This article looks at open access curtailment risk in India from a practitioner lens: what curtailment really means in 2026, why it matters to landed cost, how it differs across states and technologies, what lenders now test, and how contracts, scheduling discipline and portfolio design can reduce the impact.

What curtailment means in open access PPAs

In market conversations, curtailment is often used loosely. For practical analysis, corporate buyers should break it into at least five categories because each has a different cost and contractual treatment.

- Grid curtailment at the generating station due to transmission congestion, local evacuation limits, substation overload or system-security instructions
- Discom-side denial or restriction of open access drawal, including partial approval, revised schedules or practical barriers in energy accounting
- Must-run dilution, where renewable generators are backed down despite regulatory protection except for grid-security reasons
- Banking-linked effective curtailment, where surplus injection is commercially unusable because banking windows are restricted, monthly settlement applies, or peak-hour adjustment is not permitted
- Commercial curtailment through poor forecasting, scheduling deviation, or mismatch between generation shape and consumer load shape

From a CFO perspective, all five reduce effective renewable substitution. The user still needs energy. If contracted renewable units do not reach the meter when expected, replacement power is typically drawn from the discom at retail tariff or from market sources at short notice. In several industrial states in 2026, that replacement energy can cost Rs 7.0-10.5/kWh depending on voltage level, ToD slot and subsidy cross-subsidisation embedded in retail tariff.

That is why two projects with the same nominal PPA tariff can have materially different delivered economics.

Why curtailment risk has become sharper in 2026

Curtailment risk is not new, but three structural shifts have made it more important this year.

First, renewable penetration is higher. States with significant solar and wind capacity are seeing more midday surplus pockets, local transformer stress and substation bottlenecks. Even where total state demand is rising, evacuation is not always upgraded at the same pace as capacity additions.

Second, banking rules are tighter in many jurisdictions. Monthly banking settlement, restricted carry-forward, lower banking eligibility and unfavourable settlement rates mean that power not consumed in the right time block loses value faster than before. A unit curtailed physically or rendered unusable commercially through banking rules has a similar economic effect.

Third, more C&I buyers are using open access as a portfolio tool rather than a symbolic green purchase. That means larger contracted shares of load, greater dependence on renewable delivery, and higher sensitivity to under-supply during peak operations.

Lenders have also become more careful. Debt sizing for open access projects increasingly tests plant-load assumptions against historical curtailment patterns, state dispatch behaviour, substation headroom, deemed-generation enforceability and customer replacement-risk resilience. A developer offering an aggressive tariff without a credible evacuation and scheduling plan is less bankable in 2026 than it was three years ago.

How curtailment affects landed cost, not just generation volume

The direct impact of curtailment is lower delivered units. The indirect impact is often larger and is frequently missed in first-pass evaluations.

Consider a solar open access project quoted at Rs 3.20/kWh ex-bus. After transmission, wheeling, losses, SLDC charges, CSS where applicable and other state-specific items, the expected landed cost may be modelled at Rs 5.10/kWh. If annual delivered energy is assumed at 100 units and actual curtailment plus banking restrictions reduce usable delivery to 90 units, the buyer must replace 10 units from the discom or market.

If replacement power costs Rs 8.50/kWh, the weighted effective cost becomes:

- 90 units at Rs 5.10 = Rs 459
- 10 units at Rs 8.50 = Rs 85
- Total cost for 100 units = Rs 544
- Effective blended cost = Rs 5.44/kWh

The apparent savings versus retail supply can shrink quickly. If curtailment happens in expensive ToD slots, the penalty is even higher.

This is why advanced evaluation should not rely on a single annual CUF and a single annual landed-cost output. It should simulate:

- Time-block load versus generation coincidence

n- State banking rules and settlement hierarchy

- Historical curtailment probability by season and time of day
- Replacement-power tariff or market-cost assumption
- Loss of renewable attribute value where applicable
- Impact on demand charges if discom drawal profile becomes less smooth

For buyers with multi-site portfolios, this is exactly where [Demand & ToD analysis](/coreservices/greenenergyppa/demandandtodanalysis) and Landed-cost management become decision-critical rather than optional advisory services.

Where curtailment risk is highest: state, node, technology and profile

Not all open access projects carry the same curtailment risk. In 2026, buyers should test risk at four levels.

1) State and regulatory behaviour

Some states have stronger operational acceptance of open access and more predictable energy accounting. Others may be more contentious in implementation despite a nominally workable regulation. The same legal right on paper can produce different practical outcomes in scheduling, banking and settlement.

Questions to ask include:

- How often have generators or consumers faced backing down disputes in this state?
- Are must-run protections enforced in practice or only in petitions?
- How quickly are open access approvals, revisions and energy accounts processed?
- Are there recurring issues around banking denial, settlement haircut or delayed adjustments?

2) Evacuation node and substation loading

Project-level evacuation matters as much as state-level policy. A strong state framework will not save a weak interconnection point. Buyers and lenders should request:

- Bay availability and sanctioned evacuation capacity
- Historical loading at the pooling station and downstream substation
- Planned network augmentation timeline
- Seasonal congestion patterns
- Co-located generator density in the same corridor

A Rs 0.10-0.20/kWh tariff advantage is rarely worth choosing a constrained node if curtailment probability rises materially.

3) Technology and generation shape

Solar plants face well-known midday concentration risk. Wind may face seasonal evacuation constraints but often complements solar on an hourly basis. Solar-wind hybrid plants can lower effective curtailment risk by broadening the generation profile, though they do not eliminate network constraints.

For buyers with evening-heavy load, pure solar without flexible banking rights can create substantial commercial curtailment even if physical injection is not backed down. The problem is not only generation loss but poor usability.

4) Consumer load profile

A flat 24x7 industrial process, a two-shift engineering unit and a daytime commercial campus should not buy the same PPA product in the same way. Curtailment pain is highest when renewable output and load are poorly aligned and when the fallback tariff is steep.

A practical portfolio may include:

- Solar for daytime baseload substitution

- Wind or hybrid for shoulder and non-solar hours
- Residual discom supply for flexibility
- Short-term market procurement for opportunistic balancing

This is where [Sourcing strategy](/coreservices/greenenergyppa/sourcingstrategy) becomes more valuable than chasing a single cheapest tariff.

Contract design: the clauses that actually matter

Many buyers still spend disproportionate time negotiating headline tariff escalation and too little time on curtailment allocation. In 2026, a bankable open access PPA should address curtailment in operational and commercial terms with precision.

Key provisions to negotiate include:

- Definition of curtailment events: grid-security instruction, evacuation constraint, force majeure, discom restriction, deemed generation trigger
- Metering point and delivery point clarity: whether the seller's obligation ends at busbar, interconnection point or scheduled delivery framework
- Must-run and deemed generation treatment: whether backing down not attributable to grid security qualifies for compensation and how it is evidenced
- Scheduling and forecasting responsibility: seller obligation, DSM cost pass-through, revision rights and data transparency
- Availability guarantees or minimum delivery frameworks: especially for hybrid structures, while keeping realistic carve-outs
- Replacement-power compensation mechanism: whether seller bears any part of replacement cost beyond tariff refund in certain avoidable curtailment cases
- Change-in-law treatment for evacuation charges, scheduling rules, banking changes or state withdrawal of operational benefits
- Termination and rebalancing rights if persistent curtailment renders economics unviable

In practice, sellers resist broad replacement-power liability, and buyers resist fully taking grid risk. The middle ground often lies in carefully distinguishing:

- System-wide grid-security events, generally a buyer/shared risk
- Seller-side evacuation negligence or avoidable scheduling failure, generally a seller risk
- Change in state policy affecting OA usability, typically addressed through renegotiation, pass-through or termination triggers

[PPA structuring & negotiation](/coreservices/greenenergyppa/ppastructuringandnegotiation) should therefore be anchored in real operating scenarios, not only legal template mark-ups.

Mitigation strategies buyers and developers should adopt now

Curtailment risk cannot be eliminated, but it can be reduced substantially with disciplined project selection and portfolio design.

Choose the right node, not just the right tariff

A project with slightly higher ex-bus tariff but stronger evacuation often delivers lower effective landed cost. Buyers should insist on grid studies, substation details and empirical operating history before signing.

Model delivered energy by time block

Annual CUF is too coarse. Evaluate 15-minute or at least hourly generation against actual load, state banking rules and ToD retail fallback. This often changes the preferred mix between solar, wind and hybrid.

Diversify across assets or states where practical

A single-asset strategy concentrates curtailment and counterparty risk. Larger buyers can reduce volatility by splitting procurement across more than one project, technology or commissioning window.

Build curtailment-adjusted savings cases

Internal approvals should compare:

- Base case landed cost
- Moderate curtailment case
- Stress case with banking haircut and high replacement tariff

If the investment committee sees only the base case, the decision framework is incomplete.

Tighten operating governance after commissioning

Many losses arise not from regulation but from weak post-signing execution. Monthly reviews should track:

- Schedule versus actual injection
- Curtailment hours and causes
- SLDC or discom instructions
- Banking utilisation and lapse
- DSM penalties
- Replacement power cost

Open-access approvals and operating follow-through are not administrative side issues; they drive realised savings.

What lenders, utilities and policymakers should watch

For lenders, curtailment risk is now a core DSCR variable. Conservative underwriting should reflect state-specific OA implementation, not just generic renewable resource estimates. Projects dependent on optimistic banking assumptions or weak substations deserve sharper scrutiny.

For utilities and system operators, persistent uncertainty around curtailment raises procurement friction and litigation. Transparent curtailment logs, consistent must-run application, time-bound energy accounting and clear scheduling protocols would lower disputes and improve market confidence.

For policymakers, the objective should not be simply to announce open access eligibility while allowing operational frictions to erode deliverability. The real reform agenda in 2026 is quality of access: predictable approval, usable banking where permitted, stronger evacuation planning, and enforceable operating discipline across all stakeholders.

The practical takeaway for C&I buyers

The next wave of corporate renewable procurement in India will be won or lost on delivered economics, not brochure tariffs. Curtailment is one of the biggest reasons a seemingly attractive open access PPA underperforms after signing. Buyers should therefore evaluate projects on curtailment-adjusted landed cost, node quality, scheduling capability, banking usability and replacement-power exposure.

In many cases, the best answer is not to avoid open access, but to design it better: align technology with load shape, select stronger evacuation points, negotiate sharper operational clauses and monitor performance monthly. A rigorous pre-signing assessment typically creates more value than trying to fix a structurally weak PPA after commissioning.

If your team is evaluating a new open access procurement, refinancing an operating asset, or stress-testing existing corporate PPAs for 2026 savings, contact Growthifye's advisory desk. We can help with Demand & ToD analysis, PPA structuring & negotiation, and practical landed-cost review before commercial decisions are locked in.

Explore Growthifye's related capabilities

This analysis connects directly to our advisory practice: [Demand & ToD analysis](/coreservices/greenenergyppa/demandandtodanalysis) · [Sourcing strategy](/coreservices/greenenergyppa/sourcingstrategy) · [Competitive developer selection](/coreservices/greenenergyppa/competitivedeveloperselection) · [PPA structuring & negotiation](/coreservices/greenenergyppa/ppastructuringandnegotiation).

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