India Data Centre 24/7 CFE Procurement 2026: Hourly Matching, BESS and RTC Design

By Sudarshan Karweer · 03 September 2026 · growthifye.com

How Indian data centres can procure 24/7 clean energy in 2026 using hourly matching, BESS, OA, firming and bankable RTC structures.

India's data-centre market is scaling fast, but the energy conversation is changing just as quickly. Annual renewable-energy accounting is no longer enough for hyperscalers, colocation operators, lenders, and global customers who want evidence that power consumption is being matched with clean supply closer to the hour. In 2026, the commercial challenge is not simply buying enough renewable megawatt-hours over a year. It is procuring a portfolio that can deliver reliable, auditable 24/7 carbon-free energy, or 24/7 CFE, within Indian grid, tariff and open-access constraints.

For Indian data centres, 24/7 CFE is not the same as a standard round-the-clock renewable product. RTC contracts can guarantee scheduled delivery blocks with balancing arrangements, but they do not automatically prove hourly carbon-free matching. Conversely, hourly matching targets can look strong on paper while leaving operators exposed to outage, curtailment, imbalance and tariff volatility. The right strategy combines contracting, scheduling, grid design, storage and demand shaping.

This article sets out a practical 2026 framework for Indian data centres evaluating 24/7 CFE procurement: what "good" looks like, which portfolio designs are viable, what numbers matter, and where lenders and counterparties will focus during diligence.

Why 24/7 CFE is becoming a procurement issue, not just a reporting issue

The first wave of corporate clean-energy procurement in India focused on annual offset-style matching through captive, group captive or third-party open-access solar and wind. That remains useful for cost reduction, particularly where landed open-access renewable tariffs sit around Rs 3.3-5.0/kWh depending on state, voltage level, banking treatment, scheduling cost and contract tenure. But data centres have a different load profile from many industrial consumers:

- high base load

n- limited ability to curtail core IT load

- uptime commitments that are measured in seconds, not hours
- strong night-time demand when solar is unavailable
- exposure to power quality and redundancy requirements in addition to cost

At the same time, customer scrutiny is increasing. Multinational tenants now ask for:

- hourly or sub-hourly emissions attribution
- evidence of local or regional clean-power sourcing
- treatment of curtailed renewable generation
- backup-power emissions accounting
- escalation pathways when grid outage or fuel-based backup compromises clean-power claims

This means 24/7 CFE is no longer just an ESG dashboard metric. It affects colocation pricing, enterprise sales, financing narratives, and the competitiveness of new campuses. A data centre that can demonstrate a

90-95% hourly clean match with credible backstops will increasingly be valued differently from one that only shows 100% annual renewable procurement while relying on fossil-heavy night supply.

Defining the target properly: annual RE, RTC supply and hourly CFE are different products

A recurring market problem is that buyers use annual renewable coverage, RTC supply and 24/7 CFE interchangeably. They are not interchangeable.

Annual renewable coverage means total annual renewable procurement equals or exceeds annual consumption. A 100 MW IT-load campus with PUE-adjusted annual consumption of roughly 960-1,050 GWh may meet this target with a mix of solar and wind PPAs, even if many night-time hours remain grid-dependent.

RTC contracting is a supply product. A seller commits to deliver a schedule, often through a hybrid portfolio with balancing power. In India, this may include wind, solar, storage, market purchases and thermal firming. Pricing may land in the Rs 4.8-7.5/kWh range depending on firmness, deviation terms, state charges, tenor and merchant exposure. RTC protects operations, but unless attributes are carefully defined, it may not satisfy hourly carbon-free criteria.

24/7 CFE is an accounting and operating target under which each hour of demand is matched, to the extent possible, with carbon-free generation from an eligible portfolio. This requires hourly load data, hourly generation data, robust attribute allocation and agreed treatment of imports from the grid.

In practice, most Indian data centres in 2026 should define three nested goals:

- cost-efficient annual renewable coverage as the base layer
- contractually reliable RTC or near-RTC power for operational continuity
- an improving hourly CFE score, measured monthly and annually, with an explicit pathway from, say, 65-75% to 85-95%

That progression is both more bankable and more realistic than announcing an immediate 100% hourly match target in a system with transmission congestion, curtailment episodes and patchy ancillary-market depth.

A workable 24/7 CFE portfolio architecture for Indian data centres

For most large Indian data centres, a single asset or a single PPA will not deliver cost-effective 24/7 CFE. The workable architecture is a portfolio with four layers.

First, daytime energy from open-access solar, often the cheapest marginal clean supply. Utility-scale solar under open access can still be compelling for campuses with strong day load, particularly in states where banking remains available in limited form or where same-day scheduling flexibility reduces spillage.

Second, evening and monsoon support from wind or wind-solar hybrid. Wind output complements solar better than buyers often assume, particularly during monsoon months and at night. A portfolio with 1.0x solar and 0.6-0.9x wind relative to average load can materially improve hourly match rates before any battery is added.

Third, on-site or near-site BESS for shape correction and reliability. Four-hour batteries are often discussed, but not every site needs four hours for economic 24/7 CFE improvement. For many campuses, a one- to two-hour battery sized at 10-25% of peak demand is enough to reduce evening deficits, improve ramp control and protect against short-duration outages. By contrast, if the goal includes diesel displacement, contingency

support and meaningful peak-shaving under time-of-day tariffs, two- to four-hour BESS becomes more compelling.

Indicative 2026 BESS economics for front-of-meter or behind-the-meter projects in India remain site- and duty-cycle-specific, but turnkey system costs for lithium-ion installations commonly sit around:

- Rs 4.5-5.5 crore/MW for one-hour systems
- Rs 7-9 crore/MW for two-hour systems
- Rs 11-14 crore/MW for four-hour systems

Actual project IRRs depend on stacked value: demand-charge management, ToD arbitrage, outage mitigation, diesel avoidance, ancillary participation where feasible, and improvement in hourly CFE performance.

Fourth, a residual firming layer. This can come from market purchases, utility supply, bilateral balancing, or a tightly governed firming arrangement within a [24/7 clean power contracting](/coreservices/datacentersenergymanagement/247cleanpowercontracting) strategy. The mistake many buyers make is overpaying for complete firmness when only a relatively small number of annual hours drive the deficit. It is usually better to identify the “hard hours” first: late evening in summer, low-wind nights in shoulder months, or transmission-constrained hours with curtailment risk.

This is where disciplined load analytics matter. Growthifye’s work in [Load & reliability engineering](/coreservices/datacentersenergymanagement/loadandreliabilityengineering) and 24/7 clean power contracting is especially relevant because the battery and contracting problem should start with interval-load shape, uptime class, UPS topology, DG operating philosophy and tariff structure, not with a generic developer proposal.

The numbers that actually determine success in 2026

A 24/7 CFE strategy should be tested against seven operational and commercial metrics.

First, hourly CFE score. This is the percentage of annual hours for which carbon-free supply fully covers load. A decent starting target for an Indian data centre entering this journey in 2026 may be 70-80%, improving to 85%+ as storage and portfolio diversity improve.

Second, clean energy fraction by volume. This measures what share of total annual megawatt-hours came from carbon-free sources, even if not perfectly hour-matched. Many projects will achieve 90-110% annual clean coverage while still sitting at 70-85% hourly match.

Third, unserved clean hours. These are deficit hours where the site remained powered but had to rely on residual grid or fossil-backed supply. This metric matters for customer reporting.

Fourth, firmness premium. This is the incremental landed cost of converting a low-cost annual RE portfolio into a shaped or RTC-like product. In many cases, the key decision is whether paying an additional Rs 1.2-2.5/kWh on the residual hard hours is cheaper than oversizing renewable capacity or battery duration.

Fifth, open-access friction costs. These include wheeling, transmission, SLDC charges, deviation settlement, banking charges where applicable, cross-subsidy surcharge and additional surcharge. These costs can move project economics materially by state and by consumer qualification route.

Sixth, curtailment-adjusted delivered energy. A nominally cheap PPA that suffers high evacuation constraints or backing-down risk may underperform a slightly higher-priced but better-located asset.

Seventh, backup emissions intensity. If the site still runs diesel gensets for testing, outages or N+1 assurance, then the 24/7 CFE story is incomplete unless backup runtime is tracked and minimised.

For lenders and IC committees, one practical requirement is a downside case showing what happens if:

- banking rules tighten further
- merchant balancing prices spike during summer peaks
- battery throughput degrades faster than base case
- curtailment rises in a renewable-rich evacuation corridor
- the data-centre load ramps in phases rather than immediately reaching contracted baseload

Contract design: where most 24/7 CFE programmes succeed or fail

The quality of contract architecture matters more than headline tariff.

A robust Indian 24/7 CFE procurement stack in 2026 should clearly define:

- contract shape: flat block, seasonal block, peak block, or dynamic schedule
- renewable source mix and substitution rights
- treatment of curtailed generation
- imbalance responsibility and caps
- market purchase pass-through rules
- outage and force majeure treatment
- settlement granularity: 15-minute and hourly roll-up logic
- attribute ownership for clean-energy claims
- battery dispatch rights and priorities
- change-in-law treatment for open-access charges and scheduling rules

For data centres, the central commercial question is usually whether to buy a fully bundled shaped product or to contract renewable energy and balancing separately. Bundled products simplify accountability but can conceal risk premia and limit transparency. Unbundled structures may save money, but they require a more sophisticated internal or outsourced scheduling, reconciliation and risk-management function.

This is also where many counterparties need to be careful with the phrase “RTC renewable”. If firming is partly met with exchange purchases from the residual grid, then the buyer should not assume that every delivered megawatt-hour is carbon-free. Claims language must be precise.

An effective middle path is often a layered contract stack:

- long-tenor solar and wind PPAs for the bulk clean-energy backbone
- medium-tenor battery tolling or energy-storage service agreement
- short-tenor or rolling balancing arrangements for hard hours
- utility supply retained as a reliability and transition buffer

This structure gives buyers room to improve hourly matching over time rather than locking into an expensive one-shot product.

Grid, battery and EMS integration: the physical layer behind the claim

Even the best contract fails if the site cannot physically absorb, monitor and optimise the portfolio. The operational backbone of 24/7 CFE is an integrated metering, controls and dispatch setup.

At minimum, a serious programme should include:

- 15-minute interval metering at incomers, UPS blocks and major cooling loads
- renewable source data integration by plant and delivery point
- battery SCADA and state-of-charge visibility
- outage and transfer-event logs from utility, UPS and DG systems
- reconciliation engine for scheduled versus actual supply
- emissions accounting logic aligned to hourly consumption

Without this stack, hourly matching becomes an annual spreadsheet exercise rather than a controllable operating discipline.

For campuses with on-site PV, BESS and multiple utility incomers, [Energy management systems](/coreservices/datacentersenergymanagement/energymanagementsystems) become the enabling layer that turns contracted megawatt-hours into measurable performance. They help prioritise battery dispatch, maintain reserve margins, coordinate diesel lockout where feasible, and optimise imports during expensive peak periods. For many operators, the first 5-10 percentage points of hourly CFE improvement will come from better controls and forecasting rather than from buying more generation.

There is also a PUE interaction that procurement teams should not ignore. Lowering cooling and auxiliary load during evening peak windows reduces the amount of expensive firming power required. In other words, procurement and efficiency should be co-optimised.

What utilities, developers, lenders and policymakers should watch

Utilities should recognise that large data centres are not simply high-paying HT consumers. They are potential anchor loads for cleaner, more predictable demand growth if tariff design and reliability commitments evolve constructively. Time-of-day tariffs, clearer standby rules, and transparent treatment of storage can improve system efficiency.

Developers should stop pitching generic “100% renewable” solutions to data centres without hour-by-hour deficit analysis. Winning mandates in 2026 requires credible shape modelling, curtailment assumptions, battery dispatch logic and settlement transparency.

Lenders should examine whether projected revenue depends on optimistic assumptions around banking, ancillary monetisation or merchant peak spreads. A financeable 24/7 CFE model needs conservative downside treatment and clarity on performance guarantees.

Policymakers should note that hourly clean-power procurement will scale faster if three frictions are reduced:

- open-access uncertainty across states
- uneven treatment of storage charging and discharge under tariff frameworks
- insufficient clarity on clean-attribute accounting for hybrid and firmed products

A cleaner and more liquid framework for hybrid procurement, storage participation and hourly accounting would help India attract data-centre investment while reducing dependence on diesel backup and carbon-intensive peak supply.

A practical roadmap for buyers starting in 2026

If you operate or are developing a data-centre campus in India, the sensible sequence is not to begin with a marketing target. Begin with engineering and settlement reality.

A practical roadmap is:

- build an 8760 load baseline with IT, cooling and auxiliary components
- identify uptime-critical versus flexible sub-loads
- map current utility tariff, OA eligibility and redundancy configuration
- simulate hourly renewable matching with solar-only, wind-only and hybrid portfolios
- size BESS against reliability events and hard-hour deficits separately
- compare bundled RTC procurement with layered contracting
- define clean-claim rules before signing commercial terms
- implement interval metering and EMS-led reconciliation from day one

The winners in this space will not be the operators with the loudest annual renewable percentage. They will be the ones that can show customers, lenders and boards a defensible answer to a harder question: in which hours was our demand actually met by clean power, at what cost, and with what reliability margin?

In 2026, that is the standard Indian data centres should be designing for.

If your team is evaluating hourly clean-energy procurement, storage sizing or a bankable firm-power strategy, contact Growthifye's advisory desk. We help data-centre clients structure practical 24/7 CFE portfolios across contracting, analytics, storage and delivery risk.

Explore Growthifye's related capabilities

This analysis connects directly to our advisory practice: [Load & reliability engineering](/coreservices/datacentersenergymanagement/loadandreliabilityengineering) · [24/7 clean power contracting](/coreservices/datacentersenergymanagement/247cleanpowercontracting) · [Grid connectivity & redundancy](/coreservices/datacentersenergymanagement/gridconnectivityandredundancy) · [On-site generation & BESS](/coreservices/datacentersenergymanagement/onsitegenerationandbess).

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