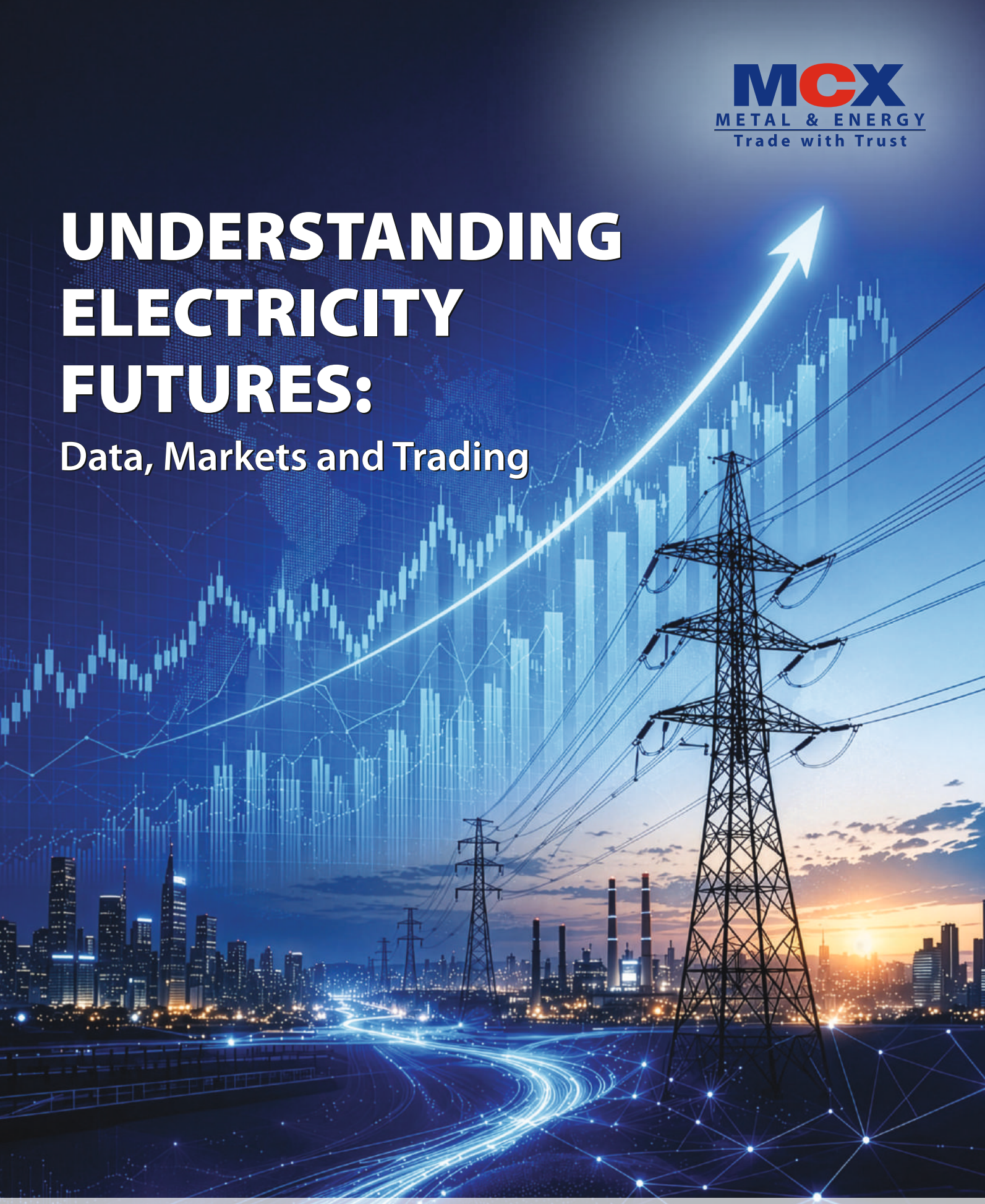
MCX
METAL & ENERGY
Trade with Trust

UNDERSTANDING ELECTRICITY FUTURES:

Data, Markets and Trading



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How to Read This Report

This report is written to be read from start to finish by someone new to the electricity market, and also to work as a reference that experienced participants can dip into. It moves in a deliberate order: first what the market is, then how prices are made, then what moves those prices, then how to read and anticipate price movements, and finally a plain-language ready reckoner. Each section builds on the one before it.

The report answers eight questions, which together form its scope:

Table 1: Scope of the Report

Section	The question it answers
1. Introduction to the Indian Electricity Market	What is this market, who is in it, and how is it organised?
2. How Electricity Prices Are Formed	How is a price actually discovered, and why does it change block to block?
3. Key Factors That Influence Prices	Which variables move electricity prices, and in which direction?
4. Data Analytics and Correlation	Which of those variables actually show a strong statistical link to prices?
5. Market Intelligence and Practical Insights	Which indicators should an investor watch to anticipate price moves?
6. Key Market Indicators for Electricity Futures	Which futures-market signals should participants track while analysing trends?
7. Publicly Available Data Sources	Where can reliable, timely data be obtained?
8. Investor Reference Guide	A simple, at-a-glance summary an investor can use every week.

Shift to keep in mind: In July 2025, cash-settled electricity futures were launched on MCX for the first time giving India a hedgeable forward price for power. Understanding the physical market is now the foundation for trading the financial one.

Executive Summary

India runs one of the largest and fastest-changing electricity systems in the world, and it is in the middle of structural shift that make understanding electricity prices more valuable than ever. As India transitions towards a cleaner, more competitive and market-oriented power sector, electricity prices are expected to become more dynamic and transparent. The introduction of electricity futures provides investors, generators and large consumers with an opportunity to manage price risk and participate in one of the world's fastest-growing energy markets. Understanding how this market functions is therefore essential for anyone seeking exposure to electricity as an asset class.

The shape of the market

Most electricity in India, roughly 85–88% by volume, is still sold under long-term Power Purchase Agreements (PPAs) at administered or contracted prices. The remaining 12–15% flows through a short-term market where prices are actually discovered on power exchanges, bilateral trades, and balancing mechanisms. Although this short-term slice is small, it is the transparent, price-setting, fastest-growing part of the market, and it is increasingly the reference for everything else including the futures.

How prices are made

On the exchanges, price is discovered through a daily auction. Every 15 minutes, the price is set by the most expensive generating unit needed to meet demand at that moment (the "marginal unit"), subject to a regulated price band. This is why the same day can see near-zero prices at midday, when cheap solar floods the grid, and sharp spikes in the evening, when the grid leans on coal, hydro and gas.

What moves prices

No single variable controls electricity prices. Demand-side drivers (weather, the daily and seasonal calendar, economic growth), supply-side drivers (renewables, coal stocks, hydro, gas, plant outages) and rule-based drivers (price caps, must-run status, policy directives) all act together on the marginal unit. The report's data analysis confirms this that neither temperature nor coal alone shows a stable, reliable correlation with prices across years. Price is a multi-variable outcome, and the practical skill is reading the balance of these forces, not chasing one number.

Reading the market

For that reason, the report gives investors a small set of indicators to monitor across daily, monthly and structural horizons, distilled into a simple weekly framework: is demand about to surprise, is cheap supply about to shrink or swell, and is the rulebook about to change? Market intelligence derived from these indicators enables better investment decisions and more effective management of market risk.

The bottom line

India's electricity market is transitioning from a system where price risk was passively endured to one where it can be actively managed. The physical spot market remains the anchor of price discovery, the futures market layered on top of it is where that price risk is now transferred and hedged. This report equips the reader to understand the first well enough to make sense of the second.





UNDERSTANDING ELECTRICITY FUTURES: DATA, MARKETS AND TRADING

01. Introduction to the Indian Electricity Market

1.1 WHY ELECTRICITY IS AN UNUSUAL COMMODITY

1.1.1 Electricity is not a commodity like gold or crude oil. Three features make it unique, and every peculiarity of its price flows from them. First, it cannot be economically stored at grid scale — it must be produced at the exact instant it is consumed, so supply and demand must balance second by second. Second, demand is highly weather-sensitive and time-sensitive — it swings sharply within a single day. Third, once generated, it flows on a shared network with physical limits. Put together, these make electricity the most volatile widely-traded commodity in the world, and they are the reason a market and, more recently, financial hedging tools exist for it at all.

> **In plain terms:** Because power cannot be stored, its price is really the price of balancing the grid at a given moment. When cheap supply is plentiful and demand is low, the price collapses; when demand is high and only expensive plants are left to run, the price spikes.

1.2 THE STRUCTURE: A TWO-LAYER MARKET

1.2.1 India's electricity market has two layers that sit on top of each other.

- **Layer 1 — Long-term contracts (the bulk).** Most power is sold by generators (such as NTPC or Adani Power) to distribution companies, or "DISCOMs" (such as MSEDCL in

Maharashtra), under Power Purchase Agreements lasting 15–25 years. These prices are either regulated cost-plus tariffs or competitively bid tariffs. They are administered or contracted — stable, but not discovered by a market. This layer is roughly 85–88% of all electricity.

- **Layer 2 — The short-term market (where price discovery happens)**. Anything a buyer needs beyond its long-term contracts, or any surplus a generator wants to sell, flows through the short-term market: power exchanges, bilateral trades through licensed traders, and the balancing mechanism. This is roughly 12–15% of volume, but it is where transparent prices are formed — and it has grown faster than overall demand for over a decade.

> **The inverted pyramid:** The part of the market that gets almost all the analytical attention — the exchange price — is the smallest slice by volume. But it is the transparent, price-setting, fastest-growing slice, and it is the reference against which the new electricity futures settle. That is why this report focuses on it.

1.3 THE PLAYERS

1.3.1 It helps to picture the market as three groups of participants connected by a grid and its operators.

Table 2: Role of Players

Group	Who they are	Their role
Generators (sellers)	Thermal (coal, gas), hydro, nuclear, and renewables (solar, wind), plus storage	Produce electricity and sell it, either under long-term PPAs or into the short-term market
Buyers	DISCOMs, large open-access industrial consumers, and traders	Procure power to serve demand; buy from PPAs first and top up (or sell surplus) in the market
System & market operators	Grid-India (NLDC/RLDCs), State Load Despatch Centres (SLDCs), and the power exchanges	Run the auctions, schedule and dispatch power, keep the grid secure, and settle transactions

1.3.2 A trade is only meaningful if it can be physically delivered. So, every market transaction is only the first step, the second is physical integration into the grid including scheduling and dispatch managed by the system operators. This is also why a financial hedge does not remove physical risks such as scheduling, congestion or curtailment.

1.4 THE EXCHANGES AND THEIR MARKET SEGMENTS

1.4.1 India has three power exchanges, all licensed and regulated by the Central Electricity Regulatory Commission (CERC):

- **Indian Energy Exchange (IEX)** — launched in 2008, the dominant platform with around 90% of exchange volume and the deepest liquidity. For a new participant, IEX is effectively the reference market.
- **Power Exchange India Limited (PXIL)** — also launched in 2008; a smaller but persistent share.
- **Hindustan Power Exchange (HPX)** — the newest, operating since 2022, still building scale.

1.4.2 Each exchange offers several segments, and each produces its own price signal. Understanding them prevents the common mistake of comparing prices that are not comparable:

Table 3: Price Segment and its signal

Segment	What it is	Their role
Day-Ahead Market (DAM)	Next-day power auctioned in 96 fifteen-minute blocks	The main benchmark; electricity futures settle against the DAM price
Real-Time Market (RTM)	Auctions close to delivery (every 30 minutes)	Lets participants fine-tune positions as demand and renewables actually unfold; fastest-growing
Term-Ahead Market (TAM)	Contracts from intra-day out to about three months	Modest forward visibility for buyers; usually priced above DAM
Green DAM / Green TAM	Dedicated windows for renewable power	Corporate green demand; Green DAM prices comparable to conventional DAM
High-Price DAM (HP-DAM)	A separate window above the ₹10 cap for costly plants	Keeps expensive gas/imported-coal capacity available during scarcity without distorting the main price
RECs	Renewable Energy Certificates	Compliance with renewable purchase obligation

1.5 THE REGULATORY FRAMEWORK

1.5.1 The market rests on the Electricity Act, 2003, which opened generation to competition, made "open access" to the network a statutory right, and created the legal space for power exchanges. Two sets of regulators share authority, and the split is the single most important feature of Indian market design:

- **CERC** governs the central and inter-state layer — inter-state transmission and trading, the power exchanges, market monitoring, ancillary services, and market coupling.
- **State Electricity Regulatory Commissions (SERCs)** govern the state and retail layer — retail tariffs, wheeling and cross-subsidy charges, distribution open access, and approval of DISCOM procurement.

> **Why this matters to a trader:** CERC can build the national market, but the SERCs largely decide whether market power is actually cheap for the end-consumer in a given state. A megawatt may clear at a single national exchange price, yet what a buyer finally pays depends on state charges, open-access approvals and network availability. India's power market is a commodity market and a federal-sector market at the same time.

1.5.2 The operating rulebook for the market is the CERC Power Market Regulations, 2021, which govern the exchanges, market participants and the over-the-counter market, and cover price discovery, contract approval, risk management, settlement, surveillance against manipulation, and market coupling. A crucial institutional milestone was resolving a long-running jurisdiction dispute between CERC and the securities regulator, SEBI: it was clarified that CERC regulates physical delivery-based contracts, while SEBI regulates cash-settled financial derivatives in electricity. That clarity is what finally opened the door to electricity futures.

1.6 THE SHIFTS RESHAPING THE MARKET

1.6.1 Two concurrent reforms frame everything in this report:

1. **Electricity futures (from July 2025).** MCX launched cash-settled, monthly base-load futures that settle against the DAM price. For the first time, India has a visible, hedgeable forward curve for power, a market-derived view of what electricity will cost one, two and three months ahead.
2. **Market coupling (near future).** Bids across exchanges are progressively pooled to discover a single national price, with Grid-India as the market coupling operator. Coupling unifies price discovery and strengthens the settlement reference that futures rely on.

1.6.2 Together these move India from a spot-dominated system towards one where price risk can be actively transferred and managed. The rest of this report explains the physical market in enough depth to make sense of that financial layer.



02. How Electricity Prices Are Formed and Discovered

This section explains, step by step, how a wholesale electricity price is actually produced in India, and why it changes so much from one 15-minute block to the next. The single idea to hold on to is: in each block, the price is set by the cost of the most expensive generating unit needed to meet demand at that moment, within the physical limits of the grid and a regulated price band.

2.1 THE CORE IDEA: MERIT ORDER AND MARGINAL PRICING

2.1.1 Generators are switched on cheapest-first. This ordering is called the merit order. At the bottom of the stack sit near-zero-cost renewables and must-run hydro; in the middle, domestic-coal plants; at the top, expensive imported-coal, gas and liquid-fuel plants. Demand is met by climbing this stack until the last unit needed i.e., the "marginal unit" is reached. The cost of that marginal unit sets the price for everyone in that block.

> **An everyday analogy:** Think of filling a stadium by selling the cheapest seats first. The price of the last seat you must sell to fit everyone sets the going rate for the whole row. On a quiet day you only sell cheap seats and the price is low; on a packed day you are selling the expensive seats at the back, and the price for that block is high.

2.1.2 Two consequences follow directly. Adding cheap renewable supply pushes the whole stack rightward and lowers the price during generation hours (the merit-order effect). And when demand is high and cheap supply is exhausted, the marginal unit is an expensive plant, so prices rise sharply. This is why the same market can clear near zero at midday and near the cap in the evening on the same day.

2.2 THE DAY-AHEAD AUCTION, STEP BY STEP

2.2.1 Price discovery is anchored by the Day-Ahead Market. The mechanism is a closed, double-sided, uniform-price auction:

1. Between about 10:00 a.m. and 12:00 noon, buyers and sellers submit price-quantity bids for each of the 96 fifteen-minute blocks of the next day. Nobody sees anyone else's bids.
2. The exchange stacks all sell bids from cheapest to most expensive (the supply curve) and all buy bids from highest to lowest willingness-to-pay (the demand curve).
3. Where the two curves cross, the Market Clearing Price (MCP) and the cleared volume are set for that block.
4. Everyone pays or receives the same MCP — a "uniform price." A generator who bid ₹2.50 still receives the full clearing price of, say, ₹4.00. This rewards sellers for bidding their true cost.
5. Grid-India checks whether the network can physically carry the cleared trades. If it can, one national price prevails and if not, the market splits (see para 2.3).

2.2.2 Repeated 96 times a day, every day, this is the purest, most transparent price signal in the Indian power sector and it is the settlement reference for the electricity futures on MCX.

2.3 WHEN THE GRID IS CONGESTED: MARKET SPLITTING

2.3.1 The single national price holds only when the transmission network can deliver every cleared trade. When an inter-regional corridor saturates, the market splits into bid areas, each with its own Area Clearing Price: surplus regions clear lower, deficit regions clear higher, and the gap between them is the congestion premium. Historically, southern India paid persistent premiums before the grid was strengthened. Congestion is now infrequent but not extinct.

> **Constrained vs. unconstrained price:** The price that would prevail if there were no transmission bottlenecks is the **unconstrained price** — this is the reference used for benchmarks and for futures settlement. The price actually realised at a specific location is the **area** price. The gap between them is "locational basis," and in mature markets it is itself a hedgeable risk.

2.4 THE REGULATED PRICE BAND: CAPS, FLOORS AND SEGMENTS

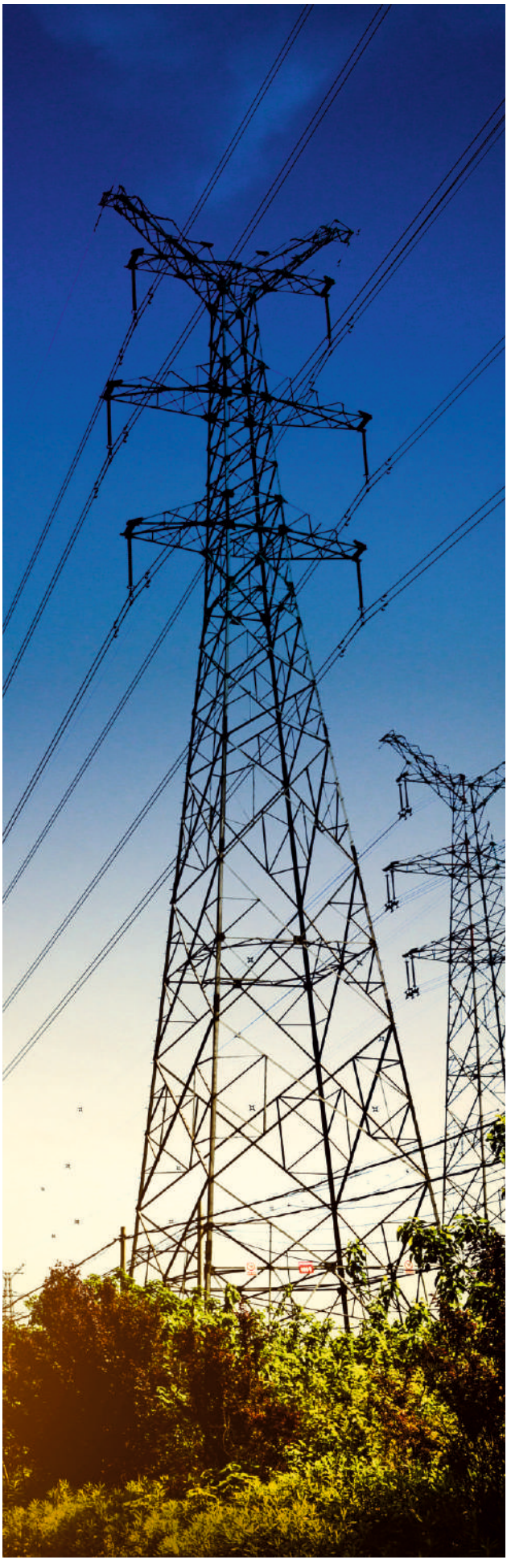
2.4.1 Indian spot prices form inside a regulated band that trims both extremes. A ceiling of ₹10 per unit applies to the regular DAM and RTM (reduced over time from ₹12, and earlier ₹20), which caps scarcity

pricing. There is no explicit floor above zero, so in surplus blocks prices can fall to a few paise. To keep expensive-but-needed capacity available during scarcity without contaminating the main price signal, costlier plants bid into the separate High-Price DAM window above the ₹10 cap. Green, ancillary and REC segments each produce their own prices. The practical lesson: always know which segment a price comes from before comparing it across time or products.

2.5 FROM TODAY'S PRICE TO TOMORROW'S: THE FORWARD CURVE

2.5.1 Because electricity cannot be stored, its forward price is not built up from a storage cost the way it is for oil or metals. Instead, the futures price reflects the market's best expectation of the average spot (DAM) price over the delivery period, plus a premium for bearing volatility. The monthly futures on MCX are cash-settled against the average DAM price over the contract month. Line up successive months and you get the forward curve — the market's collective forecast one, two and three months out. Because the curve embodies expectations, it becomes a leading indicator for the spot itself: a summer premium in the curve signals expected scarcity; a discount signals expected surplus.

> **The link that now exists:** The physical market (exchange DAM) and the financial market (MCX futures) are now joined at the settlement price. Signals flow between them, and a physical position can be hedged with a financial instrument. Before July 2025, that link did not exist in India.



03. Key Factors That Influence Electricity Prices

Every price driver works through one of three channels: it shifts demand, it shifts supply, or it changes the rules. The table below is the quick map and the notes that follow explain the most important drivers. They are listed roughly in order of day-to-day influence.

Table 4: Drivers affecting Prices

Factor	Channel	Effect when it rises	Time horizon
Temperature / heatwave	Demand	Prices up (cooling + irrigation load surge)	Hours–days
Monsoon / rainfall	Demand + Supply	Prices down (less cooling, more hydro)	Weeks–months
Solar & wind output	Supply	Prices down in generation hours	Hours–seasonal
Coal stocks at plants	Supply	Prices down when stocks are ample; up when scarce	Weeks–months
Hydro & reservoir levels	Supply	Prices down (cheap, flexible peaking)	Seasonal
Gas / LNG prices	Supply	Prices up (raises top-of-stack cost)	Weeks–months
Demand growth / economy	Demand	Prices up (structural)	Years
Transmission congestion	Network	Prices up in deficit regions	Hours–days
Plant outages	Supply	Prices up (less tradable supply)	Days–weeks
Regulatory interventions	Rules	Direction depends on the change	Varies

3.1 DEMAND-SIDE DRIVERS

Weather and temperature — the biggest short-term driver

3.1.1 India's power demand is extraordinarily weather-sensitive, dominated by air-conditioning and irrigation pumping. A heatwave can add tens of gigawatts within days; peak demand touched a record of about 270 GW in May 2026 during widespread heat. Conversely, an early or strong monsoon cuts cooling demand and lifts hydro at the same time, pushing prices down from both sides. Unseasonal rain in April–June is one of the most reliable bearish signals for spot prices.

Seasonality and the daily "duck curve"

3.1.2 Prices follow predictable calendars. Across the year, they typically peak in April–June (pre-monsoon heat, low hydro) and again around September–October (post-monsoon and festival demand), and soften during the monsoon and mild winter. Across the day, massive solar capacity now floods midday hours (roughly 9 a.m.–4 p.m.) with near-zero-cost power, driving prices very low — sometimes near zero. As solar fades in the evening (6–10 p.m.), the grid leans on coal, hydro and storage, and prices spike. This evening-peak-over-solar-trough shape is now the defining signature of Indian power prices.

Demand growth and economic activity

3.1.3 Underneath the daily noise is steady structural growth — electricity demand has compounded at roughly 5% a year. Industrial activity, electrification of transport and cooking, the data-centre build-out, and the deepening of the exchange market itself all raise the demand curve year after year.

3.2 SUPPLY-SIDE DRIVERS

Renewables — the structural transformer

3.2.1 India crossed 50% non-fossil installed capacity in early 2026, with renewables making up the overwhelming majority of new additions. Because renewables have near-zero marginal cost, every new gigawatt pushes the supply stack rightward and structurally lowers midday prices. But renewables are variable: a cloudy week or weak wind season removes cheap supply instantly. So rising renewable penetration does two things at once i.e., it lowers average prices and raises volatility. This is precisely the environment in which storage, flexible demand and hedging become valuable.

Coal — stocks, supply and logistics

3.2.2 **Coal still sets the marginal price in most non-solar hours. Three coal variables matter:** plant coal

stocks (published daily by the CEA) when they fall below critical days-of-cover, scarcity fear enters bids; domestic production and railway rake availability; and imported-coal prices plus blending mandates, which feed into offers in the High-Price DAM. The exchange price crises of 2021–2022 were, at root, coal-stock crises.

Hydro, gas and plant availability

3.2.3 **Hydro and reservoirs:** Hydropower is India's great seasonal balancer — flexible, storable as water, and cheap. Reservoir levels (published weekly by the Central Water Commission) and monsoon performance decide how much hydro can shave the evening peak.

3.2.4 **Gas/LNG:** gas plants are the swing capacity at the expensive end of the stack. Because many depend on imported LNG, global LNG prices decide whether they can run below the cap — which is exactly why the High-Price DAM exists.

3.2.5 **Plant outages:** forced outages, bunched maintenance before summer, and directives requiring surplus power to be offered on exchanges all shift the tradable supply curve.

3.3 NETWORK AND RULE-BASED DRIVERS

3.3.1 **Transmission congestion:** when corridors saturate, the market splits and area prices diverge (see Section 2.3). The transmission network is the physical constraint on "one nation, one price."

3.3.2 **Regulatory and policy interventions:** price ceilings, deviation-settlement charges, must-run status for renewables, RPO/RCO targets, and directives to imported-coal plants each reallocate volumes and reshape prices. Market-design changes such as coupling will change how scarcity is priced in the coming years.

3.3.3 **DISCOM financial health:** financially stressed DISCOMs sometimes under-procure and resort to load-shedding rather than buying costly power, which suppresses expressed demand on exchanges. Improvements in DISCOM liquidity release genuine demand back into the market.



04. Data Analytics: Which Variables Actually Move Prices

It is one thing to list the factors that should influence prices; it is another to test which of them actually show a strong statistical link in the data. This section summarises an analysis of IEX Day-Ahead Market prices from April 2022 onward, tested against published weather and coal series. The headline finding is important and, at first, counter-intuitive: no single variable reliably predicts prices. Price is a multi-variable outcome.

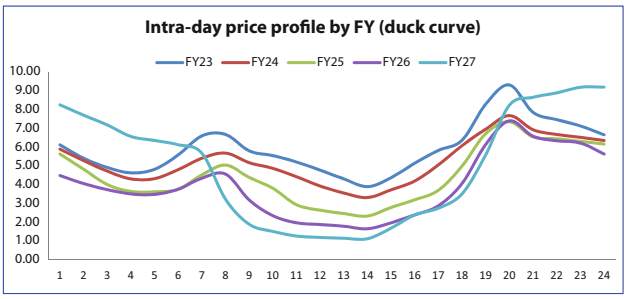
4.1 WHAT THE PRICE DATA SHOWS

4.1.1 Three trends stand out across recent financial years, summarised below:

Table 5: Price Trend in past 4 years

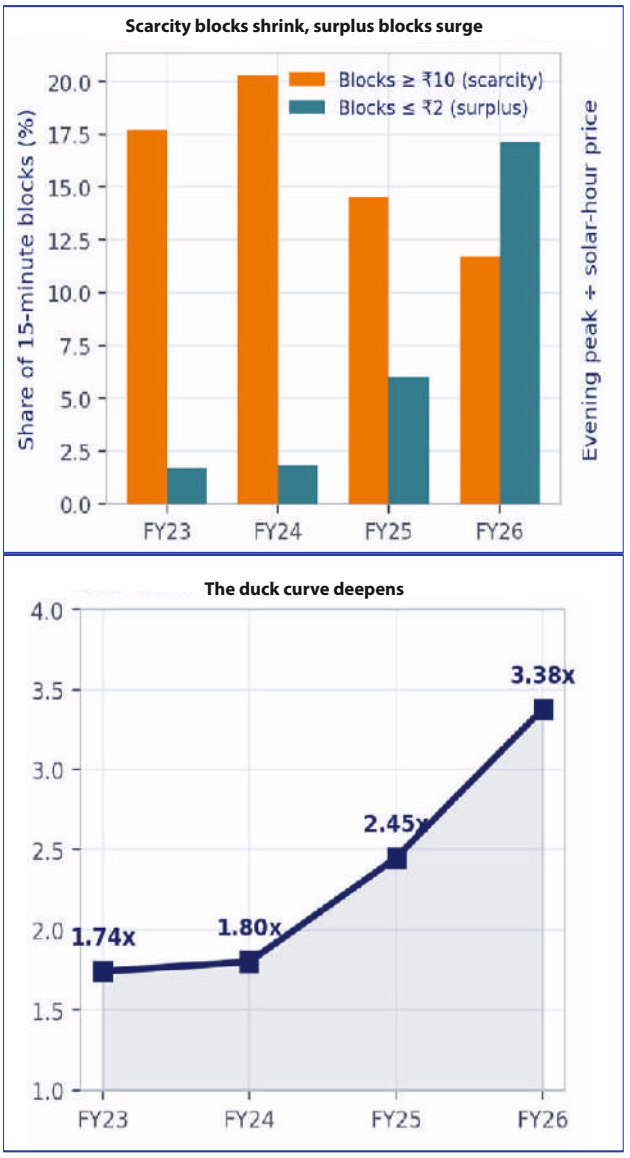
Indicator	FY23	FY24	FY25	FY26
Average DAM price (₹/unit)	5.94	5.24	4.49	3.93
Lowest block price (₹/unit)	1.00	1.00	0.40	0.05
Blocks at/above ₹10 (scarcity)	17.7%	20.3%	14.5%	11.7%
Blocks at/below ₹2 (surplus)	1.7%	1.8%	6.0%	17.1%
Evening-peak ÷ solar-hour price ratio	1.74	1.80	2.45	3.38
Block-level volatility (coeff. of variation)	53.7%	51.8%	57.8%	66.3%

Figure 1: Hourly DAM Pricing across financial years



4.1.2 Read together, the data tells a clear story: average prices have fallen year after year as cheap renewable and hydro supply has grown; the price floor has collapsed as surplus blocks have multiplied; and yet volatility has risen. In other words, the market is cheaper on average but more variable — the swing is now driven by the surplus tail (midday solar) as much as by scarcity. The widening evening-to-solar ratio is the numeric fingerprint of the duck curve deepening. This can be justified based on the following graphs also:

Figure 2: Scarcity and surplus blocks, and the deepening duck curve



4.2 WEATHER CORRELATION — WHAT THE TESTS FOUND

4.2.1 Weather–price relationship is tested at the level at which authentic IMD data are published: seasonal and monthly rainfall as a percentage of the long-period average (LPA), and documented heatwave and peak-demand episodes. Table herein below captures the weather correlation with available weather data.

Table 6: Weather Correlation of DAM Prices

Monsoon year	SW monsoon rainfall (% LPA, IMD)	Jun–Sep mean MCP	Notable weather
2022	106% (above normal)	Rs 5.67/kWh	Record-hot March 2022; early summer onset; heatwaves Apr–May
2023	94.4% (lower end of normal; El Niño)	Rs 5.76/kWh	Aug 2023: 64% LPA - driest August since 1901; MCP spiked to Rs 6.89/kWh
2024	108% (above normal)	Rs 4.85/kWh	Severe pre-monsoon heat; peak demand records ~250 GW (May 2024), 243 GW (Sep 2023)
2025	108% (above normal)	Rs 3.92/kWh	Earliest Kerala onset since 2009 (24 May, 8 days early); covered India by 27 Jun

Further a detailed correlation analysis was conducted on the available weather data from IMD and IEX DAM Prices for the previous three financial years i.e. FY 2023-25, FY 2024-25 and FY 2025-26 and the results are as per table herein below:

Table 7: Weather correlation and IEX DAM price interpretation for each FY

Financial Year	Valid Months	Temperature Pearson r	p-value	Rainfall Pearson r	p-value	Key interpretation
FY 2023–24	12	0.076	0.814	0.092	0.775	No meaningful correlation with raw temperature or rainfall
FY 2024–25	11	0.641	0.034	0.418	0.201	Nominal positive temperature correlation, but not robust after seasonality/multiple-testing controls
FY 2025–26	11	0.128	0.707	0.036	0.917	No statistically persuasive raw weather–MCP relationship

4.2.2 Testing monthly DAM prices against India Meteorological Department temperature and rainfall data across three financial years produced a consistent conclusion: there is no stable weather-to-price correlation that repeats across years. One year (FY25) showed a nominal positive temperature correlation, but it disappeared once temperature was expressed as deviation from the seasonal normal and once multiple-testing was accounted for — pointing to seasonal co-movement rather than a persistent temperature effect. One year showed a noteworthy inverse rainfall-anomaly signal, but it too failed to replicate in other years. The practical takeaway is that raw weather alone is not a reliable same-month predictor of price.

4.3 COAL CORRELATION — WHAT THE TESTS FOUND

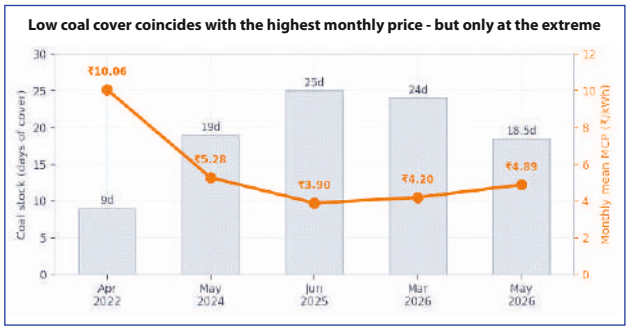
4.3.1 Coal was the second fundamental tested, using the international HBA coal index against volume-weighted DAM prices.

4.3.2 Coal still sets the marginal price in most non-solar blocks, so plant-level stock adequacy is the second fundamental tested. Coal Stock details from CEA are analysed and correlation uses the five anchors for which a days-of-cover figure was itself published by a government source, spanning the full range of stock conditions in the sample period.

Table 8: Coal Stock Correlation of Dam Price

Period	Coal stock (days of cover — published figure)	Monthly mean MCP	Source and status
Apr 2022	~9 days — lowest since 2014; >100 of 173 plants below 25% of normative stock; Sec. 11 of Electricity Act invoked	Rs 10.06/kWh	CEA daily coal reports as carried by Business Today (22-Apr-22)
May 2024	19 days (45 MT, +30% YoY); CEA 3-May report: 47.78 MT vs 70.55 MT normative	Rs 5.28/kWh	Ministry of Power
Jun 2025	25 days (58.25 MT) — all-time high	Rs 3.90/kWh	Ministry of Coal & Railways statement, 24-Jun-25
Mar 2026	~24 days (54.05 MT at plants as on 9-Mar-26); ~210 MT nationally (~88 days)	Rs 4.20/kWh	Ministry of Coal statement via Outlook Business (12-Mar-26)
May 2026	~18–19 days (53 MT)	Rs 4.89/kWh	Coal Ministry

Figure 3: Coal stock cover against monthly mean MCP



Further a detailed correlation analysis was conducted on the available HBA Coal Index to understand the correlation between Imported coal prices and IEX DAM prices, the statistical outcomes are as per table herein below:

Table 9: Statistical correlation between Imported Coal prices and IEX DAM Prices

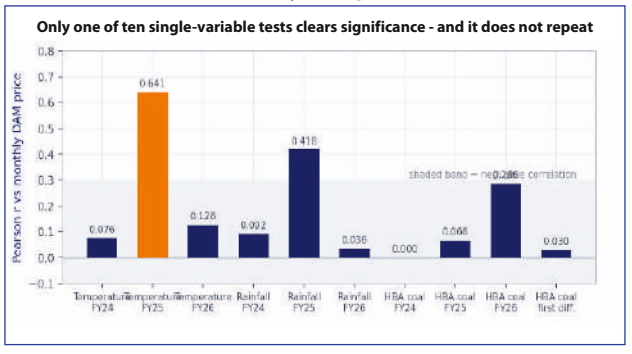
Financial Year	Valid Months	Average VW MCP (₹/kWh)	Average HBA (US$/t)	Pearson r	p-value	R^2	Spearman rho	Time-weighted r	Conclusion
FY2023-24	12	5.18	159.09	0.000	0.999	0.000	0.098	0.105	Weak positive; not statistically significant
FY2024-25	12	4.32	122.81	0.066	0.838	0.004	(0.154)	0.080	Weak positive; not statistically significant
FY2025-26	12	3.66	105.83	0.286	0.367	0.082	(0.168)	0.465	Weak positive; not statistically significant
Pooled valid months	33	4.44	131.52	0.450	**0.009**	0.202	0.671		Pooled positive correlation; de-trending tests below govern interpretation.

Table 10: Statistical Conclusion

Test	Result	Meaning	Current-data conclusion
Pooled same-month levels	0.450	Co-movement across complete matched period.	No individual financial year hasa statistically significant same-month relationship between HBAand volume-weighted MCP (all p-values exceed 5%).
Within-FY demeaned levels	(0.493)	Removes FY average shifts.	The pooled correlation is positive, but it collapses after FY demeaning and first differencing. It is mainly a common downward time trend, not stable short-term transmission from HBA to MCP.
First differences	0.030	Month-to-month changes only.	HBA should not be used as a standalone MCP forecast variable. A multivariate model should add demand, weather, renewable generation, hydro, domestic coalavailability, gas, congestion, market caps and seasonality.

4.3.3 As seen from the aforesaid tables, within any single financial year, the correlation was weak and not statistically significant. Pooled across years it looked positive, but that mostly reflected a common downward trend in both series over time rather than a stable month-to-month transmission from coal prices to power prices. Once the shared trend was removed, the relationship collapsed.

Figure 4: Single-variable correlation coefficients against monthly DAM price.



**- Only the FY25 temperature result clears the 5 percent significance threshold, and it does not repeat.*

The key insight: Neither temperature nor coal, taken alone, is a dependable price predictor. Each matters, but only as part of a bigger picture that also includes demand, renewable generation, hydro, gas, congestion, price caps and seasonality. Anyone forecasting Indian power prices needs a multi-variable view — and should be sceptical of any single-number "signal."

4.4 WHAT THIS MEANS FOR FORECASTING

4.4.1 Price formation in the DAM has two sides. Demand-side participation is shaped by climate drivers (temperature, humidity, precipitation) but also by industrial load and events such as elections and festivals that push states into the short-term market. Supply-side participation is shaped by coal stocks, hydro levels, renewable output and transmission constraints — and by the strategic choice of states to preserve coal stocks by buying their residual demand from the market. Because these forces interact, the sensible approach is a multi-variable model, not a search for the one variable that "explains" prices. Demand participation from certain large states has repeatedly proved the most dominant single driver of upward moves.



05. Market Intelligence: Practical Indicators to Monitor

If no single number predicts prices, how should an investor watch the market? The answer is to monitor a small, structured set of indicators across three horizons — daily/weekly, monthly/quarterly, and structural — and to combine them into a simple weekly judgement. This section sets out that toolkit.

5.1 DAILY AND WEEKLY INDICATORS (SHORT-TERM DIRECTION)

Table 11: Daily / Weekly Indicators

Watch this	Where it points
Temperature forecast / heatwave alerts	Above-normal heat = higher demand, firmer prices
All-India and state peak-demand trend	Rising peaks tighten the balance
Daily coal stock (days of cover)	Falling cover = scarcity risk, firmer prices
Solar & wind generation rate	Strong output = softer midday run-prices
RTM sell-vs-buy bid balance	Surplus sell bids = collapsing prices
Congestion notices from Grid- India	Congestion = higher prices in deficit areas

5.2 MONTHLY AND QUARTERLY INDICATORS (MEDIUM-TERM POSITIONING)

Table 12: Monthly / Quarterly Indicators

Watch this	Where it points
Monsoon forecast and progress vs. normal	Strong monsoon = softer prices for months
Reservoir storage (weekly CWC bulletin)	Full reservoirs = cheaper evening peaking
Coal stock build ahead of summer	Healthy build = calmer summer prices
Imported coal / LNG price trend	Higher fuel cost = firmer top-of-stack prices
Renewable capacity additions	More RE = lower average, higher volatility
Exchange volume and segment mix	Rising short-term share = deeper price discovery

5.3 STRUCTURAL AND REGULATORY INDICATORS (LONG-TERM)

- **The CERC and SEBI pipeline** — changes to price caps, deviation-settlement rules, new contract types, and the roll-out of market coupling.
- **Policy directives** — must-run status, RPO/RCO targets, and Section 11 directions to imported-coal plants.
- **DISCOM financial health** — payment-security and liquidity reforms that release genuine demand into the market.

5.4 THE WEEKLY THREE-QUESTION FRAMEWORK

All of the above collapses into three questions an investor can ask every week:

1. **Is demand about to surprise?** Check the weather anomaly, the peak-demand trend, and the broad economic pulse.
2. **Is cheap supply about to shrink or swell?** Check coal stocks, hydro reservoirs, the renewable run-rate, and plant outages.
3. **Is the rulebook about to change?** Check the CERC/SEBI pipeline.

> **Putting it together:** If demand is surprising upward while cheap supply is shrinking, spot and near-month futures tend to rise — and vice versa. The forward curve on MCX then tells you how much of that view is already priced in. That comparison — your view versus the curve — is the heart of market intelligence.

5.5 TWO FURTHER PUBLIC REFERENCES FOR FUTURES TRADERS

Beyond the exchange and futures screens, two references as mentioned below give a futures participant extra colour on where the physical market is heading — one from the bilateral side of the market, one from inside the exchange auction itself. Neither is a trading screen; both are read as intelligence, and both complement the indicators above.

5.6 BILATERAL SHORT-TERM PRICES ON THE DEEP PORTAL

5.6.1 Not all short-term power trades on the exchanges; a large volume is contracted bilaterally. Since 2016 the Ministry of Power has required DISCOMs to procure this short-term power (more than a day and up to a year) through a single transparent platform

called DEEP — Discovery of Efficient Electricity Price — an e-bidding and e-reverse-auction portal operated through MSTC. Its scope now also covers medium-term procurement (one to five years). Every tender on DEEP discovers a price through competitive reverse auction: a genuine, contracted price for firm power — round-the-clock or slot-of-day — over a defined future delivery period.

5.6.2 For a futures trader this is valuable precisely because it is different from the exchange. The DAM and RTM show today's spot; DEEP shows the price at which utilities are locking in firm power weeks and months ahead. In effect it is a parallel, contract-based forward signal. Three things are worth reading from it:

- **Price level**. DEEP round-the-clock prices, set against the exchange average, reveal the premium buyers will pay for firmness and tenure — a gauge of how tight the market feels beyond the spot.
- **Tender volume and frequency**. A surge in DISCOM short-term tenders signals demand not being met by existing contracts, which usually precedes firmer spot and futures prices.
- **Direction across auctions**. Successive auctions clearing at rising prices are an early tightening signal; falling clears point the other way.

5.6.3 One caveat: DEEP prices are contract prices for firm delivery and are not directly comparable, unit for unit, with volatile exchange spot. Use them for level and direction, not as a settlement benchmark.

5.7 THE DAY-AHEAD DEMAND–SUPPLY CURVES ON IEX

5.7.1 The second reference sits inside the exchange auction itself. For every 15-minute block of the Day-Ahead Market, IEX publishes the aggregated purchase (demand) and sell (supply) bid curves, together with the resulting clearing price and cleared volume, in its public Market Snapshot (block-level data is available from April 2022 onward). These two curves are the raw material of price discovery — the price is simply the point where they cross.

5.7.2 What makes them useful is their shape around the clearing point, which shows how fragile or cushioned the price is:

- A steep supply curve near the clearing price means a small rise in demand — a heatwave, a weak-wind evening — will push the price up sharply: a bullish-tail signal for near-month futures.
- A flat supply curve near the clearing price means the price is well-cushioned and will absorb demand surprises with little movement.
- A large demand overhang (buy bids stacked just above the clearing price) shows latent buying pressure that can firm prices; a deep sell cushion below shows surplus that caps the upside.

5.7.3 Because monthly futures settle against the average DAM, reading this elasticity is really reading how sensitive your settlement price is to the next fundamental surprise. Watching how the curves shift from one day to the next also separates demand-led moves from supply-led ones — turning a vague sense that "the market looks tight" into a quantified view of how tight, and how sensitive.

> **Using the two together:** DEEP shows what buyers will pay for firm power ahead of time — the contract-based forward signal. The IEX demand–supply curve shows how sensitive the spot price is to the next surprise — the elasticity signal. Both are public and free, and together they help a participant judge whether the forward curve quoted on MCX is priced conservatively or aggressively.

5.8 FINANCIAL LAYER- ELECTRICITY FUTURES

5.8.1 Electricity futures enable market participants to manage price uncertainty, improve procurement planning, and strengthen market efficiency. As India's electricity markets become increasingly competitive and dynamic, electricity futures will play an important role in supporting transparent price discovery and effective risk management.

5.8.2 As discussed in the report, electricity prices are among the most volatile of all commodity prices due to the unique characteristics of electricity, including the need for continuous balancing of demand and supply, weather dependence, renewable energy variability, fuel price movements, and transmission constraints. Electricity futures allow market participants to lock in prices today for transactions that will occur in the future, thereby reducing exposure to price volatility.

5.8.3 Why derivatives matter for price discovery:

- Futures create a visible forward curve — the market's collective forecast of prices one, two, three months out.
- Because electricity cannot be stored, the futures market is the primary hedging tool available, and forward prices become a leading indicator for the spot market itself.
- The financial market (MCX) and physical market (exchanges' DAM) are now linked: signals flow between them, and participants can hedge physical positions with financial instruments.

5.8.4 MCX launched monthly base-load electricity futures on July 10, 2025. It confers no right to physical delivery and creates no scheduling obligation. At expiry it settles in cash against the average Day-Ahead Market price over the contract month, as published by the designated exchange - IEX.

5.8.5 Key features are as herein below:

Feature	Position
Instrument	Cash-settled monthly base-load electricity futures
Underlying	Indian electricity, base load, delivered across the contract month
Settlement basis	Volume weighted average Day-Ahead Market clearing price over the contract month of IEX
Settlement type	Cash-settled; no physical delivery and no scheduling obligation
Contract Duration	Four months Contracts are available for all 12 calendar months in a year. These contracts are listed for current month and next 3 months.
Trading Unit	50 Mwh
Tick Size	Rs 1 per Mwh
Expiry Date	Business day immediately preceding the last calendar day of the contract expiry month. In case, it falls on a holiday, then the preceding business day.

The sample MCX Contract is attached herewith as **Annexure 1** of this report.



06. Publicly Available Data Sources

A participant is only as informed as the data it monitors. The tables below compile the main public websites and portals for Indian electricity prices, fundamentals and the regulatory pipeline. All are freely accessible; several publish downloadable histories suitable for the kind of analysis in Section 4.

6.1 MARKET AND PRICE DATA

Table 13: Key Data Source

Source / Portal	Key data	Frequency	Access
Indian Energy Exchange (IEX)	DAM/RTM/TAM/Green/HP-DAM prices & volumes; Market Snapshot incl. aggregate demand–supply curves	Daily / session	iexindia.com
DEEP portal (MoP / MSTC)	Bilateral short- & medium-term DISCOM procurement prices discovered by e-reverse auction	Per tender	mstcecommerce.com
Power Exchange India (PXIL)	Exchange prices & volumes;	Daily / session	powerexindia.in
Hindustan Power Exchange (HPX)	Exchange prices & volumes	Daily / session	hpxindia.com
MCX	Electricity futures price, open interest, volume, contract specs	Daily / live	mcxindia.com
CERC Market Monitoring	Monthly short-term market report: prices, volumes, congestion	Monthly	cercind.gov.in
Grid-India / NLDC	Demand, dispatch, scheduling, DSM and congestion data	Daily / monthly	grid-india.in
Vidyut PRAVAH	Real-time all-India & state demand, price and availability	Real-time	vidyutpravah.in
National Power Portal	Consolidated generation, capacity and sector dashboards	Daily / monthly	npp.gov.in

6.2 FUNDAMENTAL DRIVERS AND REGULATORY SOURCES

Table 14: Key Regulatory Source

Source / Portal	Key data	Frequency	Access
Central Electricity Authority (CEA)	Daily coal stock at plants; generation, capacity, PLF; monthly reports	Daily / monthly	cea.nic.in
India Meteorological Dept. (IMD)	Temperature & rainfall vs normal; monsoon; heatwave bulletins	Daily / monthly	mausam.imd.gov.in
Central Water Commission (CWC)	Weekly live reservoir-storage bulletins (hydro proxy)	Weekly	cwc.gov.in
Ministry of Coal / Coal India	Coal production, dispatch, rake availability, stock	Monthly / episodic	coal.nic.in
PPAC	Petroleum, natural gas and LNG price & availability data	Monthly	ppac.gov.in
MERIT (Merit-order dispatch)	State-wise dispatch, source-wise generation, marginal cost	Daily	meritindia.in
CERC	Power Market Regulations, orders, coupling & VPPA documents	As issued	cercind.gov.in
State ERCs / SLDCs	Retail tariffs, wheeling/open-access charges, state data	As issued	state websites
SEBI	Circulars & framework on electricity derivatives	As issued	sebi.gov.in
Ministry of Power / PIB	Policy, Section 11 directives, reform announcements	As issued	powermin.gov.in

The most useful starter kit: For the correlation and forecasting work in Section 4, four public series aligned on a common calendar reproduce most of the picture that moves the DAM: the IEX Market Snapshot (price and volume), the CEA daily coal-stock series, the CWC weekly reservoir bulletins, and the IMD monthly temperature and rainfall anomalies.

07. Investor Reference Guide

This concluding section distils the whole report into an at-a-glance ready reckoner. A reader who has time only for this page should still come away able to reason about which way prices are likely to move, when seasonal highs and lows occur, what to check each week, and what the key terms mean.

7.1 QUICK PRICE-DRIVER READY RECKONER

7.1.1 Read the table in one direction: what usually happens to spot prices when each factor rises. Reverse the arrow for a fall.

Table 15: Relation of Factors to Prices

If this rises…	…prices usually	Because
Temperature / heatwave	Rise ↑	Cooling and irrigation load surge; the marginal unit turns expensive
Monsoon / rainfall	Fall ↓	Cooling demand drops and cheap hydro rises together
Solar / wind output	Fall ↓ (in daytime)	Near-zero-cost supply pushes the merit-order stack rightward
Coal stock at plants	Fall ↓	Ample stock calms scarcity fear (low stock does the opposite)
Hydro reservoir levels	Fall ↓	Cheap, flexible hydro shaves the evening peak
Gas / imported-coal price	Rise ↑	Expensive top-of-stack plants set a higher marginal price
Demand growth / economy	Rise ↑	The demand curve shifts up against a given supply stack
Transmission congestion	Rise ↑ (deficit areas)	Market splits; constrained regions clear higher
Plant outages	Rise ↑	Tradable supply curve shifts left

7.2 FACTORS ATTRIBUTION MATRIX

We attempted to understand the whether and how the factors identified above affects the DAM pricing at IEX. For the same we have identified three distinct dates and interpreting the high and low prices in FY 2025 and FY 2026.

7.2.1 2nd October 2025

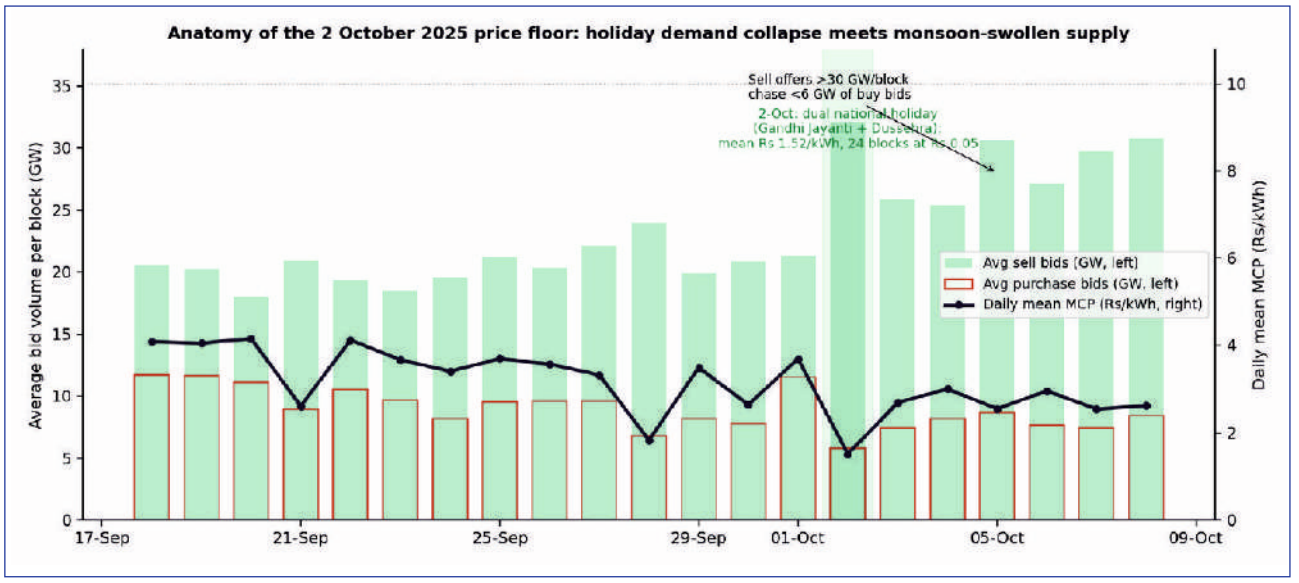
The basis for selection of this date is as herein below:

- Date with single lowest-priced delivery day among all 1,503 days in the dataset (daily mean Rs 1.52/kWh),
- Date of cleanest natural experiment on the demand side, because a verifiable exogenous shock - a dual national holiday - collapsed consumption on a single day inside an already-weak month.

The microstructure is the ceiling event inverted in every metric:

- Purchase bids averaged just 5,771 MW per block against sell bids of 32,118 MW - a ratio of 0.18 against the FY26 full-year figure of 0.60 and against 7.56 on 1-Sep-23.
- Only 15.0% of offered supply cleared, leaving roughly 27,300 MW per block of sell-side volume unsold.
- The collapse was concentrated in the solar window: the 11:00-16:00 blocks averaged Rs 0.16/kWh, 24 blocks cleared at exactly Rs 0.05/kWh, and even the evening peak (19:00-23:00) managed only Rs 2.40/kWh - on the ceiling day every one of those same blocks had printed Rs 10.00.
- The surrounding fortnight confirms the day as an exogenous notch rather than a trend break: the daily mean was Rs 3.70 on 1 October and Rs 2.70 on 3 October, with 2 October punched down to Rs 1.52 by the holiday, before prices resumed their monsoon-depressed band.

Figure 5: Daily mean MCP (line, right axis) against average purchase and sell bids per block (bars, left axis), 18 Sep - 8 Oct 2025



Onto this surplus fell the demand shock: 2 October 2025 was a dual national holiday, with Gandhi Jayanti and Vijayadashami (Dussehra) falling on the same date and closing banks, government offices and much industrial activity nationwide (News on AIR and national press, 2 October 2025). The month as a whole saw national energy consumption fall 6% year-on-year to 132 BU, and IEX attributed October's DAM average of Rs 2.67/kWh - down 32% year-on-year to weak demand seen since the monsoons (IEX via Saur Energy, 4 November 2025). With coal stocks at or near record cover (~25 days through FY26 as per the Ministry of Coal) and reservoirs replenished, every supply-side backstop was fully available and unpriced, while the holiday removed the demand that might have absorbed it - and the day-ahead auction for 2 October cleared 24 of its 96 blocks within Rs 0.05 of zero.

Table below attributes the event across the nine requested variables. "Direction" is the driver's effect on DAM prices on the event date. "DOWN (price)" marks supply-side abundance depressing price.

Table 16: Factors Attribution matrix for 2nd October 2025

Variable	Direction on 2-Oct-25	Verified evidence	Source (named)
1. Temperature / heatwave	DOWN (strong)	Post-monsoon mild temperatures; IEX described the month's demand as "weak… seen since the monsoons". No cooling-load spike; the driver that lifted 1-Sep-23 was absent	IEX October-2025 Power Market Update
2. Monsoon / rainfall	DOWN (strong)	2025 SW monsoon ended at 108% of LPA - second consecutive above-normal year; rains persisted into October, suppressing demand and swelling hydro/RE supply. (The wet-year mirror of Aug-2023's 64%-of-LPA drought)	IMD Monsoon 2025 report; IEX October-2025
3. Solar / wind output	DOWN(price) (strong)	IEX Q2 FY26 commentary: increased hydro and wind alongside sustained coal generation produced record supply liquidity and drove DAM/RTM prices down. On the event day, midday solar flooded a holiday-emptied market - solar-hour (11-16 h) MCP averaged Rs 0.16/kWh, with 24 blocks at Rs 0.05	IEX block data

Variable	Direction on 2-Oct-25	Verified evidence	Source (named)
4. Coal stock at plants	DOWN(price) (moderate)	Coal inventories at/near record through FY26; ~25 days of plant cover sustained, keeping thermal fully available as marginal backstop with no scarcity premium. (Contrast the 12 MT receipt-consumption gap that opened on 1-Sep-23)	Ministry of Coal statements (FY26); March-2026 position of ~24 days at plants
5. Hydro reservoir levels	DOWN(price) (strong)	Reservoirs replenished by the second consecutive 108% monsoon; strong hydro injection added to sell-side liquidity - the inverse of the 31-Aug-23 storage deficit (63% of capacity, -23% YoY)	IMD Monsoon 2025 report; IEX Q2 FY26 supply-liquidity data
6. Gas / imported-coal price & availability	NEUTRAL	No scarcity measures active in the surplus regime; no Section 11 full-capacity directive was in force for this post-monsoon window. No spot fuel-price figure is quoted here because none was verified to source	Absence of directive per contemporaneous MoP/coal-ministry record; (no priced source retrieved)
7. Demand growth / economy	DOWN (strong)	2-Oct-2025 was a dual national holiday - Gandhi Jayanti and Vijayadashami (Dussehra) fell on the same date, closing banks, government offices and much industry nationwide. National energy consumption in October 2025 fell 6% YoY to 132 BU, an outright contraction. On the day, purchase bids averaged only 5,771 MW/block	News on AIR (2-Oct-25) and national press on the dual holiday; government consumption data cited in IEX October-2025; IEX block data
8. Transmission congestion	NEUTRAL (verified from data)	The Market Snapshot shows a single national clearing price in all 96 blocks on 2-Oct-25 - no market splitting. Surplus prevailed everywhere; congestion did not set the price. (For settlement: MCX futures settle on the UNCONSTRAINED MCP, excluding congestion by construction)	IEX DAM Market Snapshot (uploaded files); MCX contract specification (8-Jul-25)
9. Plant outages	DOWN (price) / NEUTRAL	Post-monsoon is the planned-maintenance season; no forced-outage scarcity event is documented for 2-Oct-25. With demand collapsed and supply abundant, any capacity offline was immaterial to price - the binding condition was surplus, not shortage	MoP planned-maintenance practice (monsoon-season scheduling); absence of any documented outage shock

Aforementioned table highlights that the event was a compound abundance in which one variable - the second consecutive above-normal (108% LPA) monsoon - simultaneously moved four others in the price-depressing direction (hydro output, reservoir energy, suppressed cooling demand, and suppressed irrigation demand), onto which a calendar shock (the dual national holiday) removed the residual industrial and commercial load that might otherwise have cleared the surplus.

7.2.2 25th April 2026

The basis for selection of this date is as herein below:

- Day India's all-time peak demand record was breached - 256.1 GW at 15:38 hrs, exceeding the FY25 record of 249.86 GW (May 2024);
- First FY27 date to satisfy the record-breach criterion (24 April had already crossed the old record at ~252 GW per Grid-India PSP data, and 25 April set the clean new high); and

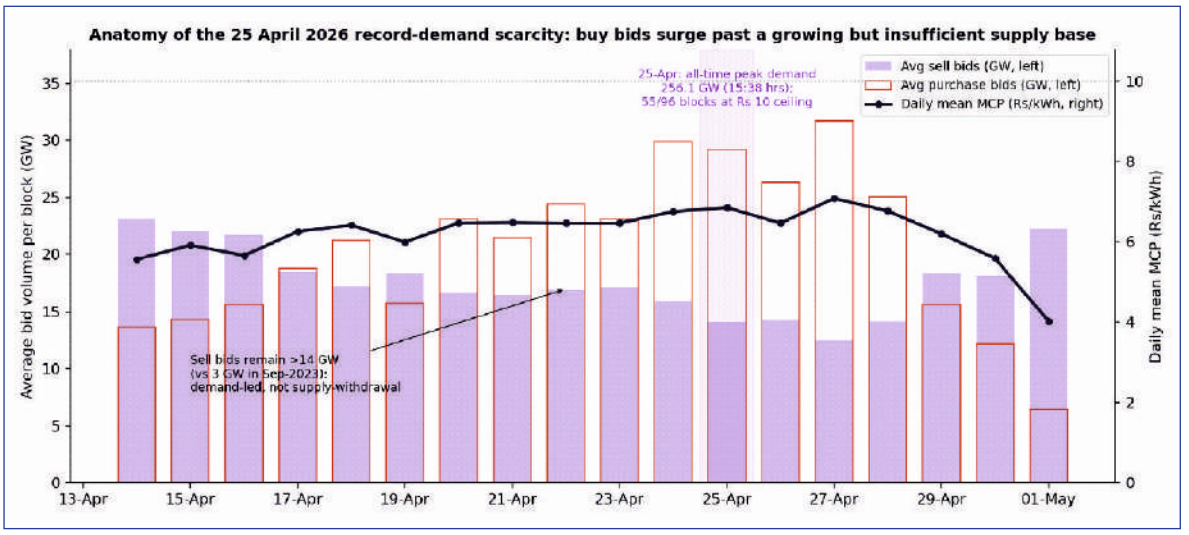
The microstructure is unlike either predecessor event.

- 55 of the 96 blocks cleared at the Rs 10/kWh ceiling, yet the daily mean was only Rs 6.85/kWh, because the solar window (11:00-16:00) cleared at just Rs 2.04/kWh while every evening (19:00-23:00) and night (22:00-06:00) block printed exactly Rs 10.00.
- Purchase bids averaged 29,199 MW per block - the highest demand-side pressure of the three events, exceeding even the September 2023 panic - but sell bids stood at 14,119 MW, nearly five times the 1-Sep-23 level.
- This was demand-led scarcity against a growing supply base, not supply withdrawal: at the ceiling, roughly 37,600 MW per block of purchase-bid volume went unserved.

April 2026 brought a record heatwave during which, at its peak, all fifty of the world's hottest cities were in India[1]. National energy consumption reached 154 BU, up 4% year-on-year, and the day-ahead market's buy bids rose 31% year-on-year[2]. Demand climbed to the all-time record of 256.1 GW on 25 April at 15:38 hrs.[3] The supply side was materially stronger than in the 2023 crisis: coal stocks were adequate at roughly 53 MT, about 18-19 days of cover, in early May 2026[4]; the Section 11 imported-coal full-capacity mandate had been re-invoked for the summer and gas-based plants activated[5]; and DAM sell bids rose 35% year-on-year on IEX. Two structural weaknesses nonetheless bit in the non-solar hours: hydro entered 2026 weak under a redeveloping El Nino, with June-2026 hydro generation down 6.3 GW year-on-year, removing flexible ramping capacity for the evening; and solar, having met a large share of afternoon demand, contributed nothing after sunset. The result was a ceiling that held only in the hours the sun was down - a duck curve rendered as a price surface. Unseasonal rain in the first days of April had kept several days below Rs 3.5/kWh on IEX, so the month contained both tails, which is the FY27 regime in miniature.

Table below attributes the event across the nine requested variables. "Direction" is the driver's effect on DAM prices on the event date. "MIXED" marks a driver that lifted some hours while depressing others (the defining feature of this event)..

Figure 6: Daily mean MCP (line, right axis) against average purchase and sell bids per block (bars, left axis), 14 Apr - 1 May 2026



1 https://www.carboncopy.info/all-50-hottest-cities-in-the-world-were-in-india-in-april-report
2 https://www.business-standard.com/industry/news/high-power-demand-but-spot-prices-rise-only-1-to-5-26-unit-in-april-iex-126050501485_1.html
3 https://www.pib.gov.in/newsite/erelcontent.aspx?relid=288347&reg=48&lang=2
4 https://www.cnbctv18.com/india/power-ministry-says-no-coal-shortage-for-thermal-plants-stocks-sufficient-for-19-days-of-demand-ws-l-19897645.htm
5 https://www.pib.gov.in/PressReleaseframePage.aspx?PRID=2017826&reg=48&lang=2

Table 17: Factors Attribution matrix for 25th April 2026

Variable	Direction on 25-Apr-26	Verified evidence	Source (named)
1. Temperature / heatwave	UP (strong)	Record April heatwave; at its peak all fifty of the world's hottest cities were in India. Heat drove cooling load to an all-time high and concentrated scarcity in non-solar hours	Down To Earth demand tracker citing Grid-India (Apr-May 2026); IEX April-2026 update
2. Monsoon / rainfall	UP / MIXED	IMD 2026 forecast 92% of LPA (April), lowered to 90% (May) - a below-normal, El Nino-developing dry-year state raising summer demand. But unseasonal rain in the first days of April moderated demand and kept several days below Rs 3.5/kWh - the month held both tails	IMD forecasts (Apr & May 2026); IEX April-2026 update via Business Standard (5-May-26)
3. Solar / wind output	MIXED (defining)	Solar met a large share of afternoon demand, holding the 11-16 h MCP to Rs 2.04/kWh on the event day, but contributed nothing after sunset, so every 19:00-23:00 and 22:00-06:00 block cleared at the Rs 10 ceiling. Wind at seasonal pre-monsoon low. This split - Rs 2 midday, Rs 10 night - is the duck curve rendered as a price surface	IEX block data (uploaded files); IEX April-2026 update via Business Standard
4. Coal stock at plants	NEUTRAL-to-UP	Coal stocks adequate at ~53 MT / 18-19 days as of early May 2026 (Coal Ministry). Adequacy capped the DURATION of scarcity - preventinga 24-hour ceiling like 1-Sep-23 - but coal cannot ramp after sunset, so it did not prevent the non-solar-hour ceiling	Coal Ministry via CNBC-TV18 (2-May-26) reporting 256 GW year-high context
5. Hydro reservoir levels	UP (moderate)	El Nino redeveloping; hydro entered 2026 weak. S&P Global: June-2026 hydro generation down 6.3 GW YoY, nearly half the 13 GW decline across key Asian markets. Reduced flexible hydro tightened the evening/night ramp when solar dropped off	S&P Global via Business Standard (14-Jul-26)
6. Gas / imported-coal price & availability	UP (supportive supply)	Section 11 imported-coal full-capacity mandate re-invoked for summer 2026 and gas-based plants activated to meet record demand - measures that ADDED supply (sell bids rose35% YoY). The price	Power Line (summer-2026 measures); IEX April-2026 update via Business Standard

Variable	Direction on 25-Apr-26	Verified evidence	Source (named)
		effect on 25-Apr is that even with them active, non-solar demand exhausted offers at the ceiling. No spot fuel-price figure is quoted because none was verified to source	
7. Demand growth / economy	UP (strong)	All-time-high peak demand of 256.1 GW recorded on 25-Apr-2026 at 15:38 hrs - breaching the FY25 record of 249.86 GW (May-2024). April-2026 national consumption 154 BU, up 4% YoY; DAM buy bids up 31% YoY. On the day, purchase bids averaged 29,199 MW/block	Ministry of Power / PIB (256.1 GW, 25-Apr-26) as compiled in the April-2026 market note (Vyqon) and Down To Earth; Power Line for the FY25 record; IEX April-2026 update; IEX block data
8. Transmission congestion	NEUTRAL (verified from data)	The Market Snapshot shows a single national clearing price in all 96 blocks on 25-Apr-26 - no market splitting; congestion did not set the price. (For settlement: MCX futures settle on the UNCONSTRAINED MCP, excluding congestion by construction)	IEX DAM Market Snapshot (uploaded files); MCX contract specification via Business Standard (8-Jul-25)
9. Plant outages	NEUTRAL	No major forced-outage event is documented for 25-Apr-26; planned thermal maintenance is deferred to the monsoon season by standing MoP practice, keeping capacity available for the summer peak. The binding constraint was demand vs available capacity in non-solar hours, not a discrete outage	MoP maintenance-scheduling practice (monsoon deferral); absence of any documented outage shock

Aforementioned table highlights that the aforesaid event was demand-led scarcity gated by the clock. Record heat and economic growth pushed demand to an all-time high (drivers 1 and 7), but the price outcome was split in two by the interaction of solar and hydro (drivers 3 and 5): abundant midday solar collapsed the solar-hour price to Rs 2, while its post-sunset disappearance - unbacked by weakened hydro and not able to ramp by otherwise-adequate coal (driver 4) - handed every night block to the ceiling.

7.3 THE SEASONAL PRICE CALENDAR

- **April–June (pre-monsoon):** usually the highest-price window — peak heat, low hydro, stretched coal. Expect scarcity and sharp evening peaks.
- **July–September (monsoon):** usually the softest window — cooling demand falls and hydro rises; a strong or early monsoon can tip the market into surplus.
- **September–October (post-monsoon / festival):** a secondary firming as demand recovers.
- **November–February (winter):** generally mild and lower, with the solar-trough and evening-peak shape most visible.
- **Every day (the duck curve):** midday solar hours clear cheapest; the 6–10 p.m. evening peak clears dearest.

7.4 THE WEEKLY CHECKLIST

1. **Is demand about** to surprise? Weather anomaly, peak-demand trend, economic pulse.
2. **Is cheap supply about to shrink or swell?** Coal stocks, reservoirs, renewable run-rate, outages.
3. **Is the rulebook about to change?** CERC / SEBI pipeline — caps, coupling, new contracts.

7.5 COMMON PITFALLS: DO'S AND DON'TS

- **Do** distinguish the unconstrained reference price (used for settlement) from the price actually realised at your location (which carries congestion and state charges).
- **Don't** compare prices across segments or years without accounting for the changing cap and segment design (regular DAM vs HP-DAM).
- **Don't** rely on any single variable to forecast prices — the data shows price is a multi-variable outcome.
- **Don't** assume a financial hedge removes physical delivery risk — scheduling, congestion, curtailment and imbalance exposure remain.

7.6 FINAL WORD

7.6.1 India's electricity sector is entering a new era characterised by competitive markets, increasing renewable energy integration, digital technologies, and expanding financial participation. Electricity futures represent an important step in this evolution by providing transparent price signals and effective mechanisms for managing price risk. As India's electricity markets continue to mature, informed participation by investors, generators, consumers, and financial institutions will contribute to deeper liquidity, improved price discovery, and more efficient allocation of resources. Understanding how electricity prices are formed, the factors that influence them, and the role of electricity futures will therefore become increasingly important for all market participants.

7.6.2 India's electricity market is moving from a world where price risk was passively endured to one where it can be actively managed. The physical spot market remains the anchor of price discovery; the futures market on MCX is where that risk is now transferred and hedged. Used together, the ready reckoner, the seasonal calendar, the weekly checklist and the futures watchlist give an investor a disciplined, repeatable way to read this market as its forward curve deepens into genuine, institutional maturity.

Glossary of Key Terms

Table 18: Glossary of Key Term

Term	Plain-language meaning
DAM	Day-Ahead Market — next-day power auctioned in 15-minute blocks; the main price benchmark.
RTM	Real-Time Market — auctions close to delivery for last-minute adjustment.
TAM	Term-Ahead Market — contracts from intra-day out to about three months.
MCP / UMCP	Market Clearing Price / Unconstrained MCP — the price where supply meets demand; the unconstrained version ignores congestion and is the futures settlement reference.
Area Clearing Price	The price in a specific zone when the market splits because of congestion.
Merit order	Dispatching generators cheapest first; the last unit needed sets the price.
Marginal unit	The most expensive plant needed in a given block — it sets that block's price.
DISCOM	Distribution company — the utility that buys power and supplies end-consumers.
DSM	Deviation Settlement Mechanism — charges for differing from schedule.
HP-DAM	High-Price DAM — a separate window above the ₹10 cap for costly plants.
IEX	Indian Energy Exchange
REC	Renewable Energy Certificate — tradable proof of one unit of green power for compliance.
PPA	Power Purchase Agreement — a long-term contract to buy power at a set price.
PSP	Pumped Storage Plant
Open access	The statutory right to use the network to buy power from a supplier of choice.
Futures	A cash-settled contract on the average monthly DAM price; used to hedge or take a view.
Market coupling	Pooling bids across exchanges to discover one national price (phased from 2026).

This report is educational and does not constitute investment, legal or financial advice. Figures are indicative and drawn from public sources.

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