



Wind's Second Act

From Selling Turbines to Selling Superabundant Firm Power



WIND HYBRID STORAGE FIRMNESS SUPERPOWER

Wind's next competitive advantage may not come from selling a cheaper turbine. As solar, storage and digital control improve, electricity buyers increasingly value a contracted power shape rather than an isolated generating asset. Firstgreen therefore asks a different question: which combination of wind, solar, storage and balancing can deliver the required electricity profile at the lowest lifecycle cost? The disruption begins when firm renewable power approaches the cost of variable renewable electricity - and when deliberate overbuilding creates valuable surplus energy rather than simply curtailment.

*“The product is no longer the turbine.
The product is the power shape.”*

Firstgreen analytical framing

FOUR STRUCTURAL SHIFTS

COST CURVES

Solar, wind and storage improve through compounding cost decline.

PRODUCT SHIFT

Energy → hybrid → peak → RTC → FDRE.

SYSTEM OPTIMISATION

Generation overbuild and storage substitute for one another.

SUPERPOWER

Firm systems can create surplus low-marginal-cost electricity.

WHAT THIS REPORT TESTS

01 Portfolio economics

Which renewable portfolio gives the lowest cost of contracted power today?

02 Disruption point

When does firm renewable power become as cheap as unfirmed power?

03 New demand

When does surplus renewable electricity become a resource rather than curtailment?

The disruption is the transition from selling generation equipment to selling optimised electricity services.

Sources: SECI market data; Firstgreen modelling; RethinkX Clean Energy U-Curve and Superpower as conceptual references.

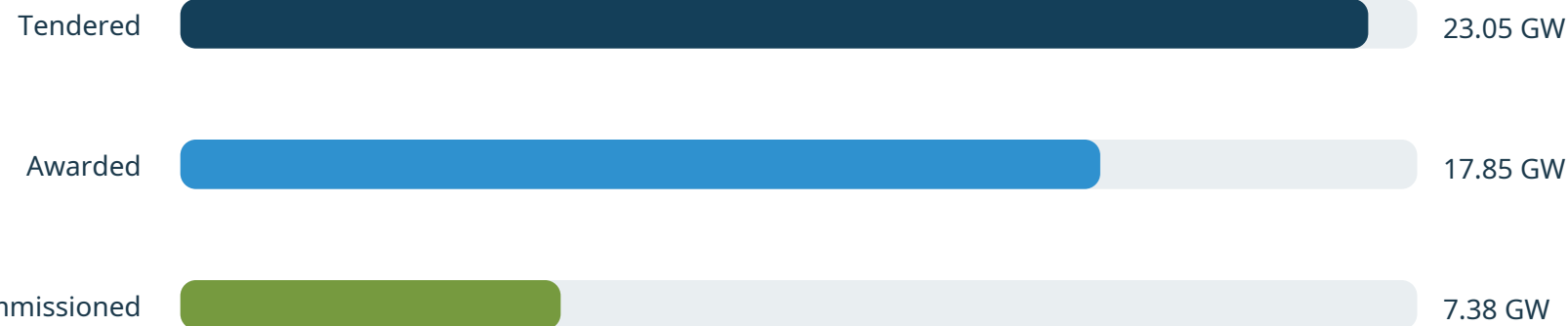
The Market Is Moving Up the Power-Product Ladder

The buyer increasingly wants a power service - not simply renewable MWh.

EXHIBIT 01 | SECI wind programme - pipeline vs operating assets

57.44 GW

INDIA INSTALLED WIND CAPACITY - 30 JUN 2026



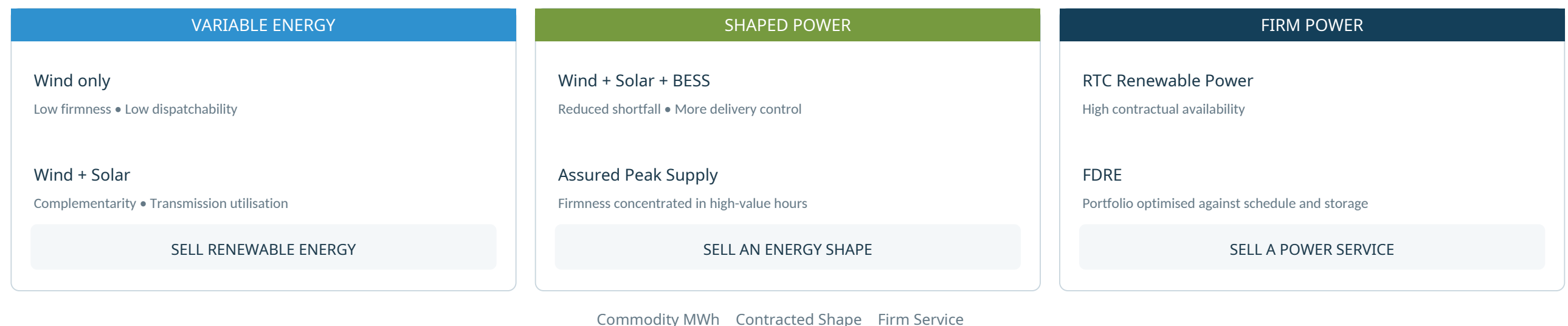
Tranches are at different development stages; the chart distinguishes market pipeline from operating assets and should not be read as a cancellation rate.

What does the buyer actually want?

- Low-cost renewable energy
- Non-solar-hour generation
- Peak-hour availability
- Predictable contracted shape
- Reduced balancing exposure

Wind becomes more valuable when it reduces the system cost of delivering electricity at the buyer's required hour - not simply when it produces the lowest standalone LCOE.

EXHIBIT 02 | The power-product ladder



The competitive unit is moving from ₹/MW of turbine to ₹/kWh of contracted electricity delivered when the buyer needs it.

The Cheapest kWh Is Not the Cheapest Contract

Firstgreen models five ways to supply a flat 100 MW electricity requirement.

FIRSTGREEN SCREENING MODEL

Four representative seasonal days • synthetic wind/solar profiles • 100 MW flat demand • shortfall purchases • surplus sales • lifecycle CAPEX and O&M. Not a project forecast.

EXHIBIT 03 | Levelised Cost of Contracted Power - not standalone generation LCOE



THREE DIFFERENT PRODUCTS - THREE DIFFERENT ECONOMICS

VARIABLE ENERGY	SHAPED POWER	FIRM POWER
₹3.13/kWh Headline result Wind only 83.3% RE • 92.6% peak Wind + Solar 81.8% RE • 71.8% peak Lowest annual cost does not necessarily produce the most valuable delivery profile. Hybrid generation creates substantial surplus while still leaving non-solar-hour gaps.	₹3.17/kWh Headline result 2h BESS 89.8% RE • 95.4% peak 4h BESS ₹3.38/kWh • 94.3% RE • 100% peak Storage purchases firmness. The economic question is whether the additional contract value exceeds the incremental lifecycle storage cost.	98.2% Headline result FDRE LCCP ₹3.71/kWh Peak coverage 100% • CAPEX ~₹2,500 Cr The most firm portfolio is not yet the cheapest in the 2026 base case. Its strategic value depends on reliability premiums and future cost decline.

Once the buyer purchases a delivery obligation rather than unconstrained renewable generation, the portfolio must be evaluated through the cost of shortfalls, surplus, storage and capital required to achieve the contracted shape.

The winning renewable portfolio is not the one with the cheapest generation - it is the one with the cheapest acceptable delivery profile.

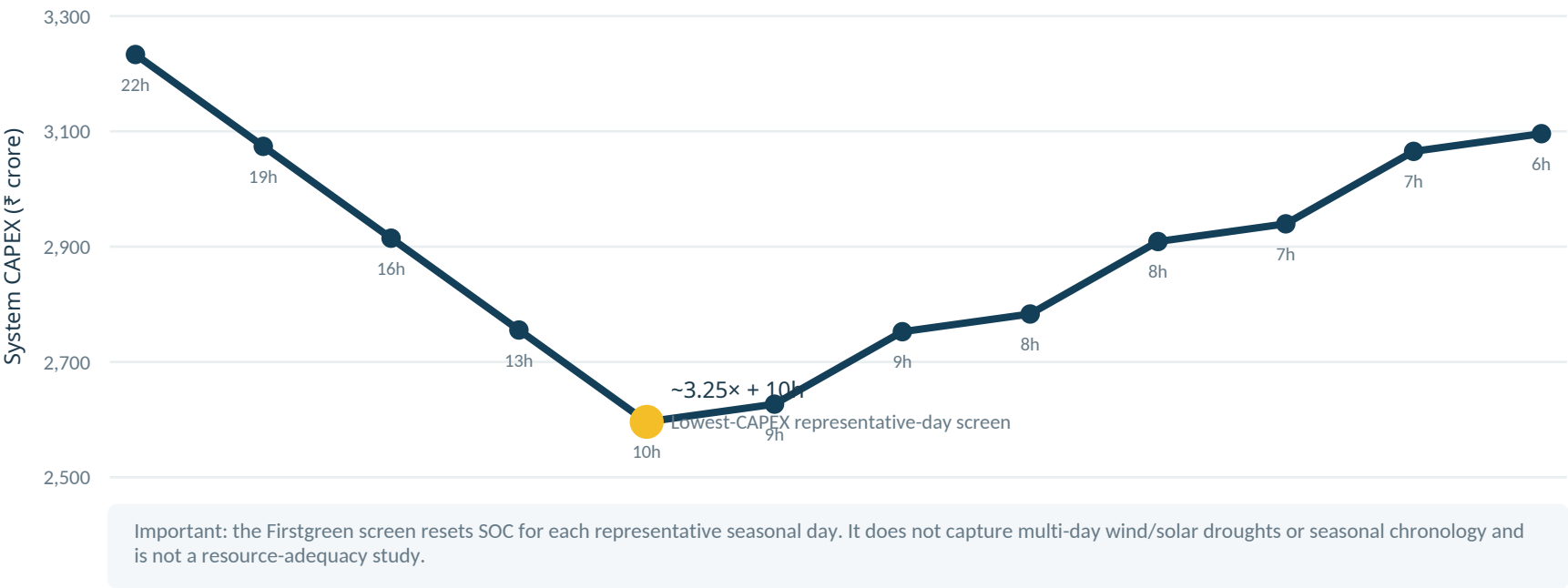


The U-Curve Changes the Question

Overbuilding generation can substitute for storage - and surplus energy can become a new product.

RethinkX-inspired system lens / independent Firstgreen simulation

EXHIBIT 04 | Representative-day full-coverage frontier



Curtailment or superpower?

~99 GWh/year

SURPLUS IN FIRSTGREEN 4.0x + 8h SCREEN

Once a portfolio is built for high reliability, it naturally produces electricity beyond the contracted requirement. The strategic question shifts from minimising curtailment to creating flexible demand for low-marginal-cost surplus hours.

- Green hydrogen
- EV charging
- Flexible industrial heat
- Data-centre workloads
- Water / desalination

DISRUPTION INDICATORS FROM THE FIRSTGREEN SCREEN

3.25x

Generation overbuild

at lowest-CAPEX representative-day full-coverage point

10 h

Storage duration

at that same modelled point

2030

4h crossover

illustrative firmed-hybrid parity vs unfirmed hybrid

2032

FDRE crossover

illustrative FDRE parity vs unfirmed hybrid

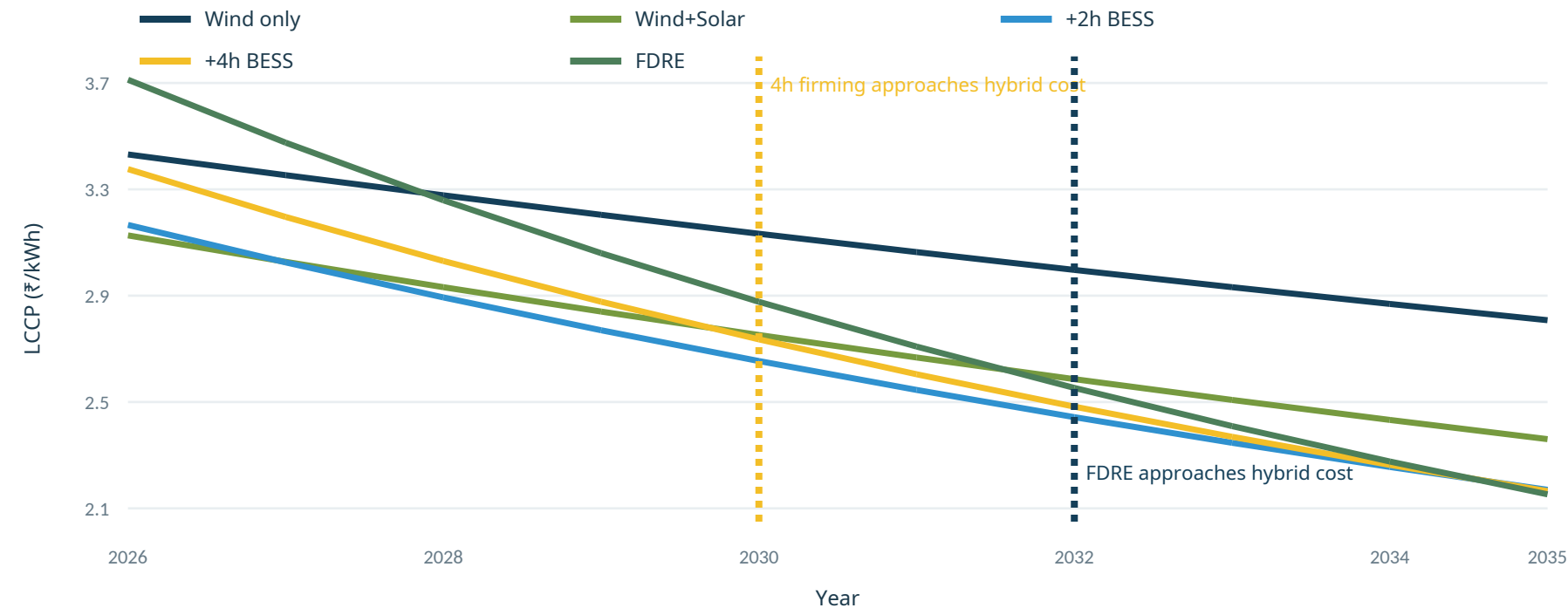
2030 / 2032 ARE FIRSTGREEN COST-DECLINE SCENARIO OUTPUTS - NOT FORECASTS

The future system may optimise abundance rather than scarcity: overbuild enough renewable generation to reduce storage dependence, then create markets for surplus.

When Firm Power Becomes as Cheap as Variable Power

That is the strategic rupture point for the wind business model.

EXHIBIT 05 | Illustrative LCCP cost curves, 2026-2035



What happens to the wind company?

Turbine seller	System integrator
Wind EPC	Hybrid power designer
Turbine O&M	Portfolio performance service
Forecasting	Dispatch optimisation
Energy PPA	Contracted power product
Value migrates from hardware toward integrated, digital and recurring power-service margins.	

FIRSTGREEN SCENARIO: WIND -3% • SOLAR -5% • BESS -12% p.a.

WHERE DOES THE MARGIN MIGRATE?

HARDWARE

Turbine and equipment margin

Increasingly commoditised

INTEGRATION

Wind + solar + BESS + grid

System-design margin

SOFTWARE

Forecasting + EMS + optimiser

Digital recurring margin

POWER SERVICES

Availability + scheduling + settlement

Long-duration recurring revenue

One-time equipment margin recurring optimisation and service margin

“The disruption is not that wind turbines disappear. It is that the turbine becomes only one component of a much more valuable power product.”

The next competitive benchmark for wind may be the cost of firm electricity - not the cost of the turbine.