IntelliSmart

INTELLISMART INFRASTRUCTURE

Grid Resilience, Energy Transition & Digital Power Twins

Reimagining the Grid as an Intelligent System

The Signal, Not the Symptom

Extreme price volatility is not a market glitch. It is a structural signal that our grids were designed for a world that no longer exists.

Germany & Australia

Negative pricing driven by excess renewable generation during low-demand periods, a growing occurrence, not an exception.

California Duck Curve

Solar peaks midday, then disappears at sunset, triggering a 13–15 GW evening ramp that strains the grid daily.

UK Wind Curtailment

Excess generation wasted because the grid cannot absorb it

India

Daytime solar overproduction crashed prices to INR 0.1/unit. By evening, high demand pushed rates as high as INR 12/unit in the same day.

"We are not short of energy. We are short of flexibility."

A Grid Under Continuous Stress

This is not an isolated issue. Multiple forces are acting on the grid simultaneously, reshaping its behaviour from the ground up.

Variable Generation

Renewables replace predictable output with intermittent supply, fundamentally changing how the grid must balance itself.

Accelerating Electrification

EVs, shift from fuels to electricity, industrial loads; not just more demand, but demand that shifts when and where it appears.

Concentrated Loads

Data centres represent step-change demands which are high-density, high-reliability, concentrated, and uncompromising.

Distributed Energy

Rooftop solar and storage make the grid dynamic and decentralized, no longer a one-way system by any measure.

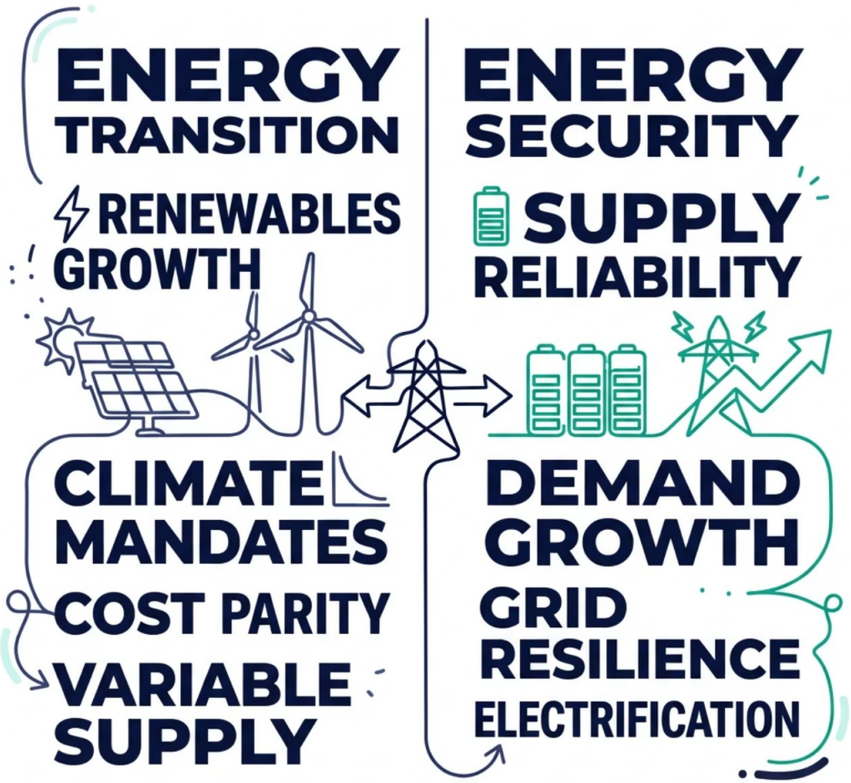
"We have engineered variability into a system that was designed for stability."

Energy Transition Under Tension

The growth of renewables is both necessary and inevitable — driven by climate imperatives and, increasingly, by economics. In many markets, renewables are already at cost parity or below conventional sources.

Yet global disruptions have reinforced the primacy of **energy security**, accelerating electrification across sectors. The challenge is no longer choosing between transition and security — it is managing both simultaneously, under rising demand.

**"We are no longer optimising for one objective;
we are managing competing priorities."**



From Commodity to Service

For decades, electricity was a commodity, measured in units, delivered uniformly. In a volatile, dynamic grid, **power must evolve into a service** defined by reliability, quality, and predictability.

Quality Over Quantity

Instability and interruptions carry real economic cost. Power quality will matter as much as power availability.

Flexible Demand

Consumers cannot remain passive in an active grid. Through pricing signals and digital interfaces, they become participants in stability.

Behaviour Matters

Whether EVs, distributed generation, or industrial loads — when and how energy is used will matter as much as how much.

"The future grid will not just supply energy; it will orchestrate behaviour."

Intelligence Defines Resilience & Responsive Grid

The energy transition is not just an energy challenge — it is a **systems challenge**. And systems of this scale and complexity cannot be managed without intelligence and responsive grid.

The Shift Underway

From stable to dynamic systems. From predictable flows to variable, decentralised behaviour. From passive consumption to active participation.

In fast-growing markets like India, this is a defining opportunity — to **leapfrog into a more intelligent, resilient energy system.**

The Core Insight

When visibility improves, decision-making improves and resilience follows. The future grid will be defined not by how much energy it carries, but by how intelligently it can see, predict, and respond.

Resilience is not built by adding more infrastructure. It is built by adding more intelligence.

From Grid to Intelligent System: India in Action

If resilience requires intelligence, the question is **how do we build it at scale?** India is executing one of the largest digital grid transformation programmes globally, creating real-time visibility from the household to the feeder to the distribution network.

250M+

Consumer Connections

Targeted for smart metering rollout nationwide

65M

Smart Meters Deployed

Already operational across India

10M+

Managed by IntelliSmart

Across multiple states and DISCOMs

Utilities Are Shifting to Data-Driven Operations

Load Profiling & Demand Forecasting

Replacing estimation with precision intelligence

Faster Outage Detection & Response

Cutting restoration times across distribution networks

Reduction in AT&C Losses

Real-time visibility detecting theft and inefficiency

Improved Billing & Cash Flow

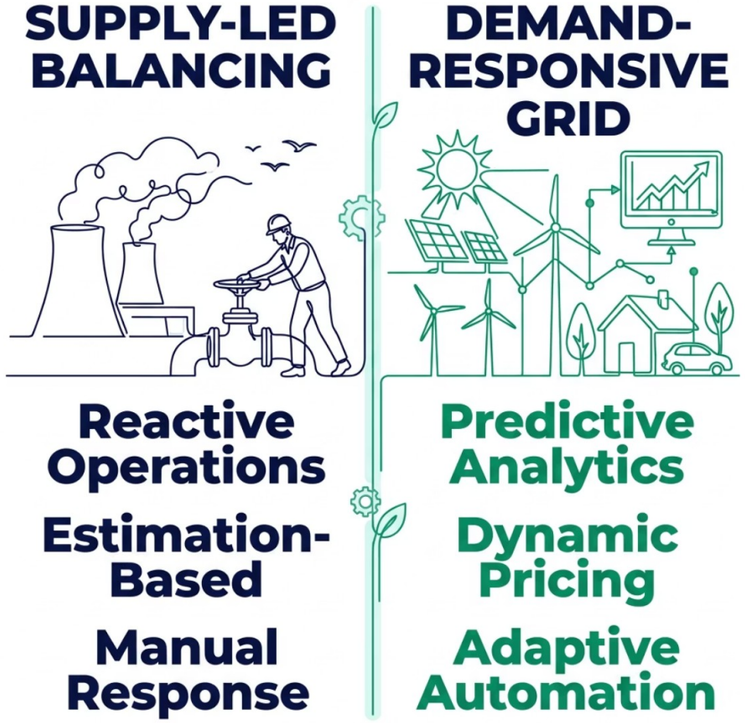
Accurate metering driving revenue assurance

"India is building the digital foundation of an intelligent grid at large scale."

Reaching the Responsive Grid to ensure Resilience

Intelligence alone is not enough; it must translate into **action**.

Smart metering is enabling demand-side management at scale, shifting the grid from a passive carrier of energy to an active, adaptive system that shapes consumption in real time.



Demand-Side Management in Action

Dynamic & Time-of-Day Pricing

Shifting peak demand by aligning cost signals with consumption behaviour

Consumer Visibility & Behavioural Change

Empowering consumers with data to make smarter energy choices

Smart EV Charging & Appliance Scheduling

Coordinating flexible loads to flatten demand curves

Peak Optimisation Across the Network

Load shifting reducing stress on infrastructure at scale

"The future grid will not be defined by how much energy it carries — but by how intelligently it can see, predict, and respond."

Thank You