

From Energy Assets to Energy Advantage: The Case for an Intelligence Layer

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Large energy consumers are investing heavily in distributed generation and storage. Without an intelligence layer to orchestrate them in real time, they capture only a fraction of their full value.

When energy becomes a strategic asset

IDC Energy Insights has long maintained that sustainability is good business. What has changed is that energy security has now become a matter of national security, fundamentally rewriting the calculus for large energy consumers across every sector. At the Handelsblatt Energy Summit in Berlin in January 2026, International Energy Agency (IEA) Executive Director Fatih Birol stated that Europe's sovereignty, competitiveness, and security will critically depend on the energy-related decisions its institutions and enterprises take, adding that he has never seen geopolitics being so dominant across the entire energy sector. The energy transition is now driven as much by strategic vulnerability to volatile fossil fuel supply chains as by emissions reduction targets (see Figure 1).

At a glance

Key stats

- 84% of large energy consumers plan to increase energy transition investment over the next 24 months; nearly one-third expect increases above 10%.
- Solar PV costs have fallen 90% since 2010; battery storage pack prices dropped 45% in 2025 alone, to \$70/kWh.
- 60% of organizations are already implementing, scaling, or realizing value from AI in energy optimization.

Key takeaways

- Energy security is now a matter of national security — not just a sustainability goal.
- Owning distributed assets isn't enough: value comes from orchestrating them in real time.
- Without an intelligence layer, organizations have assets. With an intelligence layer, they have a strategy.

FIGURE 1**Top drivers of energy transition initiatives among large energy consumers**

Q. What are the main drivers of your organization's energy transition initiatives? (Select up to top 3)



n = 1,135

Source: IDC's *Energy Transition Survey*, 2026

This convergence of sustainability ambition and security necessity is accelerating two structural shifts. On the supply side, organizations across sectors are investing at scale in their own distributed energy resources (DERs): solar photovoltaic (PV), onshore wind, cogeneration, heat pumps, and battery energy storage systems (BESS). The economics are compelling: International Renewable Energy Agency (IRENA) reports a 90% decline in solar PV levelized cost of energy (LCOE) from 2010 to 2024, while BloombergNEF's 2025 survey shows stationary battery storage pack prices dropping 45% year on year to \$70/kWh. Critically, the convergence of falling generation and storage costs is creating a new class of dispatchable clean energy, enabling enterprises to deploy integrated generation-and-storage systems that can be dispatched on demand, stored for later use, or sold back to the grid, provided they have the intelligence layer to manage them.

On the demand side, electrification is accelerating at a pace that continues to outrun projections. The IEA has projected that electricity demand will grow six times faster than overall energy demand by 2035, and Birol has described the current era as the "Age of Electricity." The demand side is being reshaped by multiple converging forces. Electric vehicle adoption is accelerating globally, building electrification is being driven by regulatory incentives and heat pump deployment, and rising cooling demand, particularly air conditioning in developing economies and in historically temperate regions now experiencing sustained warming, is adding structural load that did not exist a decade ago. The expansion of datacenters to support artificial intelligence workloads, while highly visible in media coverage, remains one of several contributors to demand growth rather than the dominant driver. According to IDC's 2026 *Energy Transition Survey* (n = 1,135), 84% of large energy consumers plan to increase their energy transition investment over the next 24 months. Nearly one-third of these large energy consumers expect to increase energy transition investments by over 10%. This isn't just routine budget growth. It reflects the scale of the security, resilience, and electrification pressures described previously, and signals a much larger reallocation of capital still to come.

The challenge for large energy consumers is clear. Their energy assets are becoming more complex, spread across many locations and producing power that varies hour to hour. Organizations need the ability to manage them in real time, responding as market conditions change. Managing these assets in isolation means leaving significant value on the table and remaining exposed to the price volatility and supply uncertainty their investments were intended to mitigate. An energy intelligence platform that integrates real-time asset data with external market signals and applies advanced analytics to optimize decision-making across the entire energy portfolio represents the missing orchestration capability.

It is imperative that organizations approach this not as a retrofit but as intelligence by design, embedding orchestration capabilities into their electrification strategies from the outset. The next frontier of value creation lies not in further optimizing individual assets but in operational innovation: tapping into the data streams produced by increasingly smart equipment to modulate operations, balance loads, and orchestrate entire energy portfolios in real time. In this sense, energy system intelligence is not a technology product to be procured but a new business capability to be developed, one that sits alongside supply chain management, financial planning, and operational excellence as a core competency of the energy-intensive enterprise. Without it, organizations have assets. With it, they have a strategy. Competitive differentiation in this new landscape comes not from owning generation, storage, and flexibility assets but from the ability to orchestrate them intelligently in real time.

"The energy transition is increasingly an orchestration challenge. While continued investment in grid expansion remains essential, infrastructure alone will not be enough to facilitate the transition. Energy Intelligence helps energy consumers, grid operators, and other ecosystem partners make optimal use of available assets and flexibility in a safe and reliable way. This is critical to unlock more value from the energy system while improving affordability, resilience, and sustainability."

— Pieter Gockel, Alliander NV

The compounding value of energy intelligence

The value of an energy intelligence and orchestration layer is best understood not as a single benefit but as a compounding set of capabilities that build upon one another, each reinforcing the next. IDC Energy Insights identifies three interconnected dimensions of value:

- Operational resilience
- Strategic advantage
- Cost optimization

Energy intelligence connects an organization's operational energy data (asset telemetry, consumption, and generation, storage) with market and pricing signals, then applies AI-driven forecasting and analytics to optimize energy decisions in real time. These sources are typically siloed today, for example, across building management systems, energy management systems and, for organizations in demand response programs, customer-side DER orchestration platforms ("edge DERMS"), which is exactly why an energy intelligence layer is needed to turn them into one decision layer serving cost, resilience, and compliance together.

Operational resilience: From vulnerability to continuity

For energy-intensive organizations operating across sectors such as steel, chemicals, glass, semiconductors, and datacenters, energy supply disruption is not merely a cost inconvenience; it is a direct threat to production continuity and business viability. An energy intelligence layer strengthens resilience by providing real-time visibility across all generation, storage, and consumption assets, enabling the organization to detect anomalies, anticipate shortfalls, and dynamically rebalance its energy mix in response to changing conditions. This is not theoretical; it is the foundational requirement for any organization whose operations depend on uninterrupted energy supply in an era of increasing grid stress and geopolitical volatility.

An intelligence layer that aggregates and harmonizes data across a multisite estate enables centralized oversight with localized execution. The competitive dimension of resilience becomes even more pronounced as grid congestion intensifies and electrification growth outpaces the expansion of clean generation capacity, creating periods in which available electrons are scarce and expensive. Organizations with an intelligence layer that can anticipate these imbalances and dynamically adjust their energy sourcing are not merely resilient; they are structurally positioned for superior commercial performance relative to competitors still dependent on passive grid consumption.

Strategic advantage: From consumer to prosumer

The second dimension of value is strategic, and it represents a fundamental shift in how organizations relate to the energy system. It is worth noting that battery storage delivers strategic value well beyond the prosumer model. Even organizations that never sell a kilowatt-hour back to the grid can leverage storage to procure energy when rates are low and discharge during peak periods, to displace expensive and carbon-intensive backup options such as diesel generators and gas turbines, and to guarantee availability for mission-critical operations, such as maintaining network operations center uptime on a cloudy day when onsite solar generation drops, without compromising on cost or emissions targets. Historically, large energy consumers were precisely that: consumers, purchasing electricity and gas from the grid at whatever price the market dictated. The proliferation of distributed generation and storage assets has opened a new possibility: that of the enterprise as prosumer, an entity that not only consumes energy but also generates, stores, and potentially sells it. An energy intelligence platform is what enables this transition by providing the forecasting and optimization capabilities needed to determine, in real time, when it is advantageous to consume grid electricity, when it is more beneficial to draw from onsite generation, and when surplus capacity can be sold back to the grid or local microgrid at favorable prices.

Cost optimization: The compounding dividend

The third dimension, cost optimization, is where the compounding logic of the energy intelligence layer becomes most visible. An organization that has achieved operational resilience (it can keep running regardless of grid conditions) and strategic advantage (it can trade and arbitrage energy) is in a structurally different cost position from one that simply

pays its electricity bill. The intelligence layer continuously optimizes the timing, source, and volume of energy consumption based on real-time pricing, demand forecasts, and asset availability.

Over time, these micro-optimizations accumulate. An organization that dynamically manages a portfolio of solar, wind, battery storage, and grid supply across a 10–15% fluctuation in wholesale energy prices can materially compress its effective energy cost per unit of output. Considering that energy represents a substantial portion of operating expenditure for industrial and facility-intensive enterprises, the margin impact is significant. Furthermore, the intelligence layer generates the data and reporting needed to demonstrate return on investment (ROI) to internal stakeholders, enabling the organization to justify continued and expanded investment in energy transition infrastructure with the confidence that each new asset will be fully optimized within the broader portfolio.

Building the foundation: From data to energy intelligence

The transition from fragmented energy assets to an intelligently orchestrated portfolio is not without complexity, but the challenges involved are well understood, increasingly well served by mature technology solutions, and addressable through structured, phased approaches. IDC Energy Insights highlights four areas that technology leaders should plan for proactively:

- **Prioritize data integration and data model standardization as the foundational investment.** An effective energy intelligence platform must ingest data from a heterogeneous landscape of operational technology (OT) systems, building management systems (BMS), SCADA environments, IoT sensors, smart meters, weather APIs, grid operator signals, and wholesale energy market feeds. In many organizations, these data sources reside in disconnected silos, managed by different functions (facilities, operations, IT, procurement, and sustainability), with inconsistent formats, refresh rates, and quality standards. The imperative is to treat data integration not as a technical prerequisite that delays value delivery but as a strategic initiative in its own right. Establishing common data models that normalize asset performance, consumption, generation, and market data into a unified schema is fundamental to enabling the cross-domain analytics and optimization that an intelligence layer requires. Organizations that invest early in data architecture and governance will find that every subsequent capability, from basic monitoring to AI-driven dispatch optimization, is materially easier and faster to deploy.
- **Build AI capabilities incrementally, leveraging early wins to accelerate adoption.** The intelligence layer depends heavily on advanced analytics and artificial intelligence for forecasting, optimization, and automated decision-making. Many large energy consumers, particularly those in traditional industrial sectors, are still in the early stages of their AI journey, and this should be acknowledged as a starting point rather than treated as a barrier. IDC's 2026 *Energy Transition Survey* confirms this spectrum: while 60% of organizations report they are already implementing, scaling, or realizing value from AI for energy optimization, nearly 40% remain in the exploring or planning stages. A phased approach that begins with descriptive analytics (understanding current consumption patterns and asset performance), progresses to diagnostic and predictive capabilities (forecasting demand, generation, and pricing), and ultimately advances to prescriptive and autonomous optimization (real-time dispatch decisions driven by AI) enables organizations to build internal confidence, develop talent, and demonstrate

ROI at each stage. The key is to select platforms with embedded AI that can grow with the organization's maturity rather than requiring a full-scale AI transformation as a prerequisite.

- **Account for regulatory and market heterogeneity in platform selection.** Energy markets are regulated differently across geographies, with significant variations in tariff structures, grid access rules, feed-in policies, demand response eligibility, and carbon pricing mechanisms. For organizations with multicountry operations, this heterogeneity is a design consideration, not a reason to defer action. Technology leaders should prioritize platforms that offer modular, configurable architectures capable of adapting to regional market structures and regulatory frameworks, ensuring that optimization logic can be calibrated to local conditions while enterprise-level visibility and governance remain centralized. European organizations in particular should evaluate platform readiness for the evolving flexibility markets and local energy community frameworks being shaped by the EU's Clean Energy Package.
- **Cybersecurity and OT-IT convergence risks require explicit attention.** Connecting operational energy assets to an intelligent software layer that interfaces with external market platforms introduces new attack surfaces. The convergence of IT and OT environments, while essential for orchestration, must be accompanied by robust security architectures, including network segmentation, endpoint protection, access controls, and incident response protocols. Organizations should evaluate not only the functional capabilities of energy intelligence platforms but also their security posture, compliance certifications, and track record in protecting critical infrastructure environments.

Taken together, these considerations represent an implementation road map rather than a set of obstacles. The organizations that address them systematically will be positioned to capture the compounding value of operational resilience, strategic advantage, and cost optimization, while those that wait for conditions to be perfect risk falling further behind in an energy landscape that rewards preparedness.

The energy intelligence imperative

Large energy consumers have made the investments. Few have made them pay off. The organizations that turn scattered energy assets into a coordinated system first will operate at a structurally lower cost, and a structurally lower risk, than those still waiting.

IDC Energy Insights believes that the market for energy intelligence platforms will continue to grow as the compounding complexity of distributed, intermittent, electrified energy portfolios makes manual or siloed management untenable. Tata Consultancy Services (TCS) is positioned in the Leaders category in *IDC MarketScape: Worldwide Energy Transition Professional Services 2025 Vendor Assessment* (IDC #US52984025, August 2025). The company brings a combination of digital and engineering capabilities, proprietary platforms such as EnerDynamix and Clever Energy, and an ecosystem-led approach that includes partnerships with GE Vernova, Landis+Gyr, Oracle, and Schneider Electric. Applied to this orchestration challenge, these capabilities give TCS a significant opportunity to help large energy consumers close the intelligence gap and unlock the full return on their energy transition investments.

About the IDC analyst



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Gaia Gallotti is a research director and head of IDC Energy Insights. Gaia leads the IDC Energy Insights: Worldwide Utilities Customer Experience Strategies advisory service, designed to help utilities and energy retailers servicing customers in competitive and regulated markets at the worldwide level (including electricity, gas, and water).

Message from the sponsor

As enterprises evolve from managing energy as a utility expense to leveraging energy as a strategic business asset, TCS appears well positioned to help clients operationalize energy intelligence at scale. By combining AI-driven forecasting, optimization, energy market participation, distributed energy resource orchestration, and enterprise-wide energy visibility through its proprietary platforms and broader sustainability portfolio, TCS has the potential to enable a shift from reactive energy management toward continuous, intelligence-led optimization. This convergence of energy expertise, engineering capabilities, digital technologies, and ecosystem partnerships is a key differentiator as organizations seek greater value from increasingly complex energy ecosystems and energy transition investments.

For more information: [Tata Consultancy Services: Infrastructure to Intelligence](#)



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