

Moving from pilots to performance

How energy companies can scale AI value with responsible AI



The better the question.
The better the answer.
The better the world works.



Shape the future
with confidence

There's no room in the energy industry for AI that fails. Energy spans critical infrastructure, national security, customer affordability and market integrity. The cost of getting it wrong extends beyond the balance sheet.

This dynamic reframes the responsible AI conversation entirely. In energy, responsible AI isn't a compliance tax. It is an essential operating system for AI to

scale safely, consistently and profitably. Succeeding with AI in energy isn't about running the most pilots. It's about outgoverning the competition by turning fragmented AI experimentation into trusted performance. This article offers an industry view of responsible AI and a practical path for treating AI like an operational discipline.

The opportunity for AI in energy is significant. It's reshaping forecasting, asset performance, trading, customer interactions and support functions across the value chain.

High stakes for responsible AI in energy

AI failure is a business risk in most industries. In energy, it is a systemic risk. AI increasingly influences decisions that can affect everything from reliability of supply and safety of people and assets to market integrity. Trust, assurance and accountability aren't optional.

Energy companies have complex operating models. They combine decades-old physical assets with digital systems; span generation, networks, retail, trading and services; and operate in many regulatory environments. AI is often developed close to operational teams or business units. The fragmentation risk is clear. There are different assumptions, controls and views of "acceptable" risk.

These differences create a paradox. The industry needs AI to accelerate the energy transition, improve resilience and manage complexity. Yet it must treat AI as a critical system, not simply a digital product. This requires engineering discipline, clear accountability and continuous oversight.

In large energy companies, AI rarely fails because of technology. It fails because governance isn't designed for how these companies operate. Scaling AI means creating shared standards and being explicit about how decisions are made, and who makes them.



Governance is a clear differentiator

Our data confirms what many energy leaders intuitively feel. Seventy-two percent of C-suite executives say AI is “integrated and scaled” in most or all initiatives, and 99% are in the process of doing so. Yet only around one-third have responsible AI controls for their current models, according to the EY Global Responsible AI Pulse Survey.¹

In the power and utilities sector, the gap is even more pronounced.

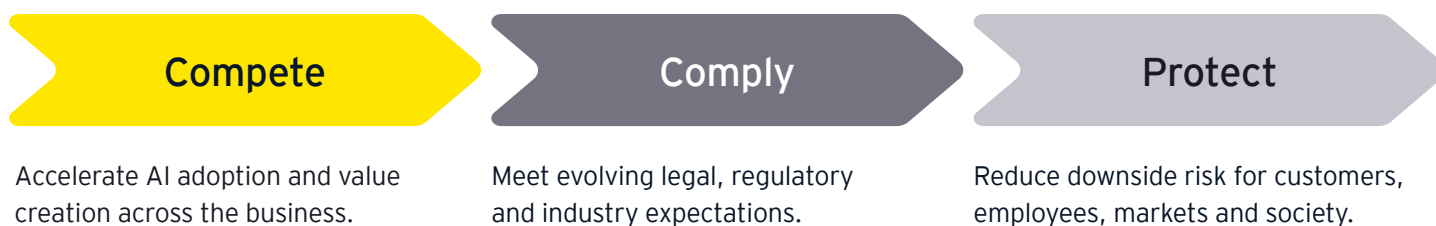
Only about one-third of leaders report robust responsible AI measures, and many acknowledge the challenge of developing AI governance frameworks. This suggests that AI capability alone is no longer a competitive advantage. Governance maturity is.

EY analysis reveals that organizations that embed responsible AI into how they design, deploy and operate AI systems outperform peers on the dimensions that matter most: value realization, risk reduction and stakeholder trust.

Shifting from compliance to performance

Responsible AI initiatives stall when organizations manage them like compliance exercises.

It’s much more effective to center them around a business-focused purpose using this framework:



This framing matters. It positions responsible AI to enable innovation and scale. It also reflects C-suite and functional leaders’ priorities in the same agenda, making it easier to align priorities.

Operationalizing this framework takes anchoring it in principles such as explainability, fairness, sustainability and data protection – and embedding them across the AI lifecycle.

1. How responsible AI translates investment into impact, dated October 2025. https://www.ey.com/en_gl/insights/ai/how-can-responsible-ai-bridge-the-gap-between-investment-and-impact

What regulators consider “high risk” in critical infrastructure

Under the EU AI Act, AI systems used as safety components in the management and operation of critical infrastructure – including electricity, gas, heating and water – may be classified as high risk when their failure or malfunction could endanger health and safety or cause disruptions.

This means that many AI use cases already in production or under development across the energy industry could attract new regulatory expectations around governance, documentation, human oversight and post deployment monitoring.

Success factors for scaling AI responsibly in energy

Moving from principles to practice requires intentional choices. Our experience points to six success factors that consistently separate energy organizations that scale AI responsibly from those that don’t.

1. Tier AI use cases by risk and impact

Not all AI is equal. Safety critical grid operations, market sensitive trading algorithms and customer impacting pricing or credit decisions don’t require the same controls as low risk productivity tools. Leading organizations tier use cases and define approvals, oversight and monitoring accordingly.

2. Precisely engineer human oversight

In control room or field contexts, “human in the loop” can’t be a slogan. Leaders must decide when humans must approve, when AI can recommend, and how overrides, incident escalation and accountability work in practice.

3. Treat data provenance as a strategic asset

For forecasting, asset health, market analysis and customer interactions, traceability of data sources, lineage and permissions is often the difference between scalable AI and perpetual rework. Data governance is not hygiene; it is a value enabler.

4. Match transparency to the decision

Explainability requirements should be proportional to impact, especially in complex energy environments. For regulated or high impact decisions, auditability and rationale capture are essential.

5. Build in cyber resilience for AI

Security risks multiply as AI becomes embedded across operational and enterprise processes. Protecting models from manipulation, data poisoning and supply chain risk should be at the core of AI governance.

6. Monitor confidence continuously

Responsible AI controls should never be a one-time deployment. Leading organizations treat them as always on, with clear KPIs and KRIs to detect model drift, bias, performance degradation and policy non compliance.

Building a management system for AI

High performing organizations don't manage responsible AI through a checklist. They build an agile management system with a clear AI inventory, defined roles across the lifecycle, structured escalation processes, and integration with existing risk, compliance and cyber frameworks.

But structure without leadership doesn't hold. The EY Responsible AI Pulse Survey reveals a

persistent gap between executive confidence and what stakeholders actually see and experience. Closing it requires three things from the C-suite: direct exposure to customer and societal concerns about AI; responsible AI embedded into development and operations; and visible, evidence-based communication that builds trust with regulators, customers and partners.

The AI confidence lens

One of the biggest challenges that energy leaders face is visibility. They struggle to "see" AI risk consistently across models, vendors and use cases. By assessing confidence in responsible AI principles at the solution level, and then aggregating results across a portfolio – weighted by business impact – organizations can create a common language for boards, regulators, risk leaders and delivery teams.

This shifts abstract debates about "responsibility" to concrete questions, such as, "where are our highest impact AI systems?" or "where are the biggest gaps?" This portfolio view is particularly powerful for energy companies, given their diversity of assets, markets and regulatory contexts.

From pilots to performance How to get started

For energy players wondering where to begin with responsible AI, a phased approach can create momentum quickly:

■ Weeks 1-4:

Define the ethical compass and AI risk appetite; confirm the enterprise AI definition; establish an initial AI inventory.

■ Weeks 5-8:

Put governance structures and decision workflows in place; define minimum control standards for high impact use cases.

■ Weeks 9-12:

Pilot continuous monitoring on a small set of priority systems; launch targeted enablement for key roles; prepare board level reporting that links AI risk posture to value outcomes.

The goal isn't perfection. It's traction to build a foundation that can scale. Waiting for a "perfect" framework can delay value and increases uncontrolled experimentation. Leaders who treat responsible AI as an operational discipline can capture more AI value across the energy value chain.

There's more to EY than you think

Connecting responsible AI governance to business value

EY is more than a trusted audit partner. We have a track record of helping organizations design and implement overall responsible AI management systems, embedded into strategy, operations and culture.

We can help you:

- Secure and accelerate AI driven value creation.
- Meet shifting regulatory and security requirements.
- Build trust with employees, customers and regulators.
- Scale AI responsibly and sustainably.

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Ask Yourself

Does your AI governance reflect the systemic risks of operating in energy?

Are you scaling AI faster than your governance can support?

Is your approach to responsible AI enabling progress and innovation?

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