AI agent use cases for Energy & Utilities

Energy and utilities organisations are under pressure to do more with less, with ageing assets, rising customer expectations, complex regulation and a growing skills gap — all while maintaining safety and reliability.

AI agents act as digital teammates, working across operational workflows to plan, act and improve in real time. Integrated with existing OT, IT, and data platforms, they operate within strict regulatory guardrails and escalate to humans when judgement or safety is required. The outcome is improved resilience, decision-making and service outcomes without compromising compliance.

Here are our top AI agent use cases to add value to your organisation.

How to get started

- **Pick one high-volume, repeatable workflow** (e.g. outage communications, work order creation, regulatory reporting)
- **Define success upfront** (time saved, risk reduction, customer satisfaction, compliance confidence)
- **Pilot in a controlled environment**, including safety-critical and edge-case scenarios
- **Instrument telemetry** to track accuracy, interventions, outcomes and adoption
- **Harden guardrails** using role-based access, human-in-the-loop controls and audit logging
- **Scale in waves** once value and trust are proven

Governance and trust to make it safe by design

- **In energy and utilities**, AI must operate with absolute trust, transparency, and control:
- **Human-in-the-loop** for safety-critical, regulatory and operational decisions
- **Least-privilege** access to operational, customer and asset data
- **Auditability** with immutable logs of recommendations, actions and approvals
- **Change control** for prompts, models and integrations
- **Responsible AI practices**, including explainability for material decisions and clear user labelling

High-impact AI agent use cases for your organisation

1) Customer operations and service reliability

- **Customer Enquiry & Triage Agent:** Handles high-volume customer queries (billing, outages, meter reads, switching), triaging complex cases to human agents with full context to reduce call volumes and improve response times.
- **Outage Communications Agent:** Automatically generates accurate, consistent customer updates during planned and unplanned outages using real-time network data and incident feeds.
- **Vulnerability Support Agent:** Identifies vulnerable customers during service disruptions and ensures priority communications and support pathways are followed in line with regulatory obligations.

2) Network operations and field services

- **Work Order & Dispatch Agent:** Creates, prioritises and schedules work orders based on asset criticality, location, skills availability and SLA requirements — reducing manual planning overhead.
- **Field Insight Agent:** Summarises job history, asset condition, safety notes and schematics for engineers before they arrive on site, improving first-time fix rates.
- **Predictive Maintenance Agent:** Monitors asset data to flag early indicators of failure, recommend interventions and reduce unplanned outages.

3) Compliance, regulation and risk

- **Regulatory Reporting Agent:** Compiles and validates data for regulatory submissions, performance reports and audits to reduce manual effort and risk of noncompliance.
- **Safety & Procedure Compliance Agent:** Checks work orders, field reports and operational plans against safety procedures and regulatory requirements, flagging deviations before execution.
- **Incident Review & Lessons Learnt Agent:** Analyses incidents, near misses and outcomes to surface patterns and automatically capture lessons learnt for future prevention.

4) Capital projects, finance and asset investment

- **Project Controls Agent:** Tracks milestones, budgets, risks and dependencies across capital programmes, surfacing issues early and supporting proactive intervention.
- **Cost & Forecasting Agent:** Models cost scenarios, demand changes and investment impacts to support long-term asset planning and regulatory price reviews.
- **Revenue & Billing** Assurance Agent: Identifies billing anomalies, data gaps or revenue leakage across metering and billing processes.

Your sample 30/60/90 day plan

Days 0–30 (pilot design):

Select use case, define success metrics, map systems and test against historical scenarios.

Days 31–60 (controlled pilot):

Limited rollout, daily review of outputs, tuning accuracy and strengthening guardrails.

Days 61–90 (scale readiness):

Prove value vs baseline, formalise operating models, enable teams and plan next-phase use cases.

Want to explore how agentic AI can improve resilience, compliance, and customer outcomes across energy and utilities?

Talk to our experts about where AI agents can deliver safe, measurable impact in your organisation.

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