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WHITEPAPER

Outlook 2026: The Agentic Energy & Utilities Enterprise

Introduction:
The Current State of Play

Aging infrastructure, rising service demand, and increasingly severe weather are colliding to strain grid reliability and erode customer trust. Operational volatility is no longer episodic. It is constant and compounding: across the grid, the balance sheet, and the customer experience.

Extreme weather is no longer an exception. Severe storms, heatwaves, and wildfires are driving more frequent outages and accelerating asset degradation. At the same time, decarbonization and ESG mandates are pushing utilities toward cleaner operations while increasing grid visibility requirements and reporting complexity.

Customer expectations have also shifted as utility clients increasingly compare their experience to telecom, retail, and banking, expecting proactive outage communication, faster resolution, real-time updates, and greater billing transparency.

> Nearly 50% of oil and gas companies plan to increase investment in analytics, AI and machine learning, automation, IoT, and cloud platforms this year, signaling a broader shift toward more adaptive, data driven operating models across energy sectors.[1]

Inside the organization, economic and workforce pressures are tightening. Legacy systems including AMI, SCADA, GIS, outage management, remain siloed. Billing teams spend hours resolving disputes tied to smart meter glitches and volatile pricing. Field operations stay reactive when they need to be coordinated in real time. An aging workforce and surging data volumes only make the bottlenecks worse.

Many utilities have already invested in analytics, automation, and AI pilots across forecasting, metering, or customer operations. But these initiatives often remain isolated, improving individual tasks without transforming how the enterprise operates end to end. Core decisions still depend on fragmented data, manual handoffs, and human escalation.

1 https://www.deloitte.com/us/en/what-we-do/capabilities/applied-artificial-intelligence/articles/ai-dossier-energy-resources-industrials.html

In essence, the utility industry is caught between rising expectations and aging infrastructure.

Agentic AI offers a fundamentally different approach. Instead of supporting isolated tasks, agentic systems can perceive conditions across grid operations and customer environments, decide what actions are required, and act autonomously within defined guardrails.

The market agrees. Agentic AI in energy and utilities (E&U) is projected to grow from $0.64 billion in 2025 to $3.14 billion by 2030, reflecting how quickly utilities are moving beyond assistive AI toward autonomous operations.[2]

This whitepaper outlines three priority operational areas where agentic AI can deliver immediate, measurable impact by reducing operational risk, improving grid reliability, and modernizing the meter-to-cash value chain. It provides utility leaders with a practical framework for moving from isolated AI pilots to coordinated, agent-driven execution across the enterprise.

2 https://www.mordorintelligence.com/industry-reports/agentic-artificial-intelligence-development-platform-market

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3 Agentic Opportunities for E&U

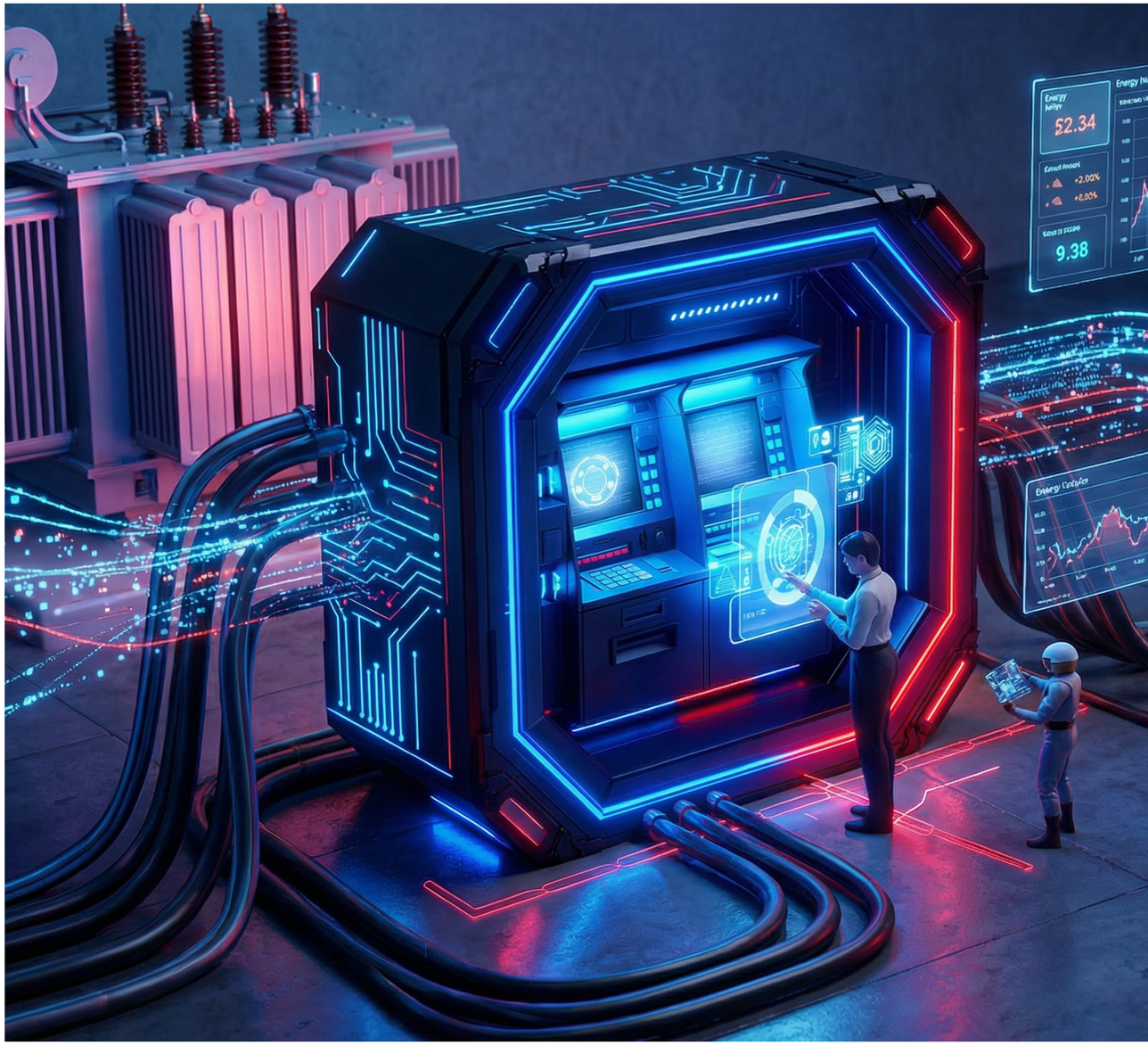
Opportunity 1:
Agentic Grid Health & Outage Management

The Challenge

In 2026, utilities will be challenged to rapidly supply reliable capacity to the most strained areas of the grid. From increasingly intense heatwaves to unexpected cold snaps, extreme weather events are testing the limits of infrastructure originally designed for a more stable climate.

Compounding the challenge is the fact that many early warning signals are buried or locked in data silos. Many energy and utilities companies report underuse and underreporting of AMI anomalies, SCADA alerts, or insights from field technicians.[3]

Outage detection also continues to hinge on customer calls or manual system checks. When an outage is confirmed, restoration requires coordination across multiple departments like diagnostics, field operations, and communications, all using different tools and timelines. This lag has consequences: prolonged outages, higher SAIDI/SAIFI scores, lower customer satisfaction, and increased scrutiny from regulators.



3 https://www.aceee.org/research-report/u2001

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The Agentic AI Opportunity

Agentic systems are a real-time control layer, embedding intelligence directly into the operational workflow. AI agents can monitor grid telemetry continuously, detect anomalies instantly, and prioritize fault resolution based on how critical the asset, safety risk, and customer impact.

During an extreme heatwave, an agentic system spots abnormal voltage fluctuations across multiple feeders. It correlates AMI and SCADA signals, flags a transformer at risk of failure, and escalates the issue before an outage occurs. A work order is created, the nearest qualified crew is dispatched, and affected customers receive proactive notifications before service is disrupted.

> AI digital assistants deflected up to 22% of seasonal high demand calls at water utilities, easing pressure on frontline teams during peak periods.

No more waiting for customer reports. Outage detection becomes a proactive process where faults are classified automatically, and recommended actions are surfaced to grid operators and field crews instantly. Additionally, agentic systems connected with Digital Twins don’t just flag issues but instantly run thousands of ‘what-if’ scenarios to simulate the ripple effect across the local topology. This allows the agent to recommend the optimal reconfiguration of the grid to isolate the fault, maintaining power for as many customers as possible while the physical repair is underway. At the same time, coordinated customer communication flows keep people informed with up-to-the-minute updates as the situation evolves.

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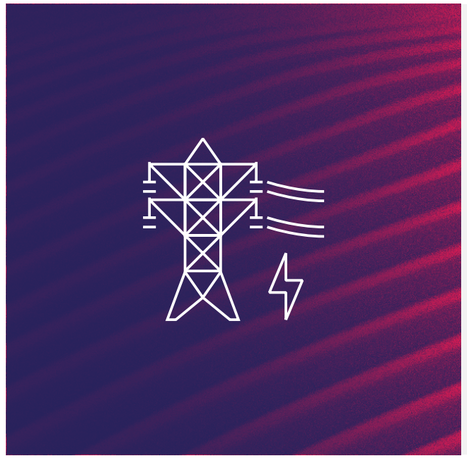
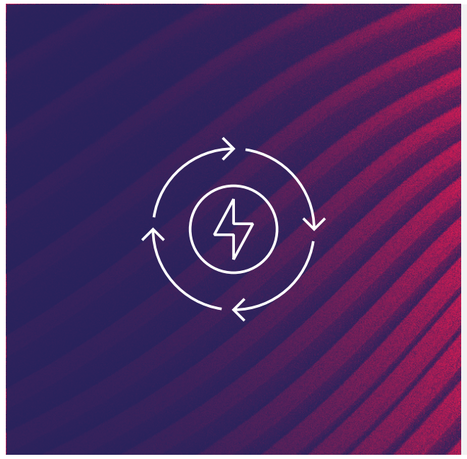
Practical Actions for E&U Leaders



Assess grid-operations readiness for autonomy: Start with a structured assessment of outage management, fault triage, dispatch workflows, and data accessibility to pinpoint where agentic automation is safe and high-ROI. A structured **digital assessment** helps identify which grid decisions are ready for automation and where foundational gaps still exist.



Unify AMI, SCADA, GIS, and field records into a real-time operational layer. Agentic detection and triage only work when signals are connected and usable in real time. **Data engineering** can help to build unified schemas, reliable pipelines, and “model-ready” environments that let agents correlate anomalies across systems.

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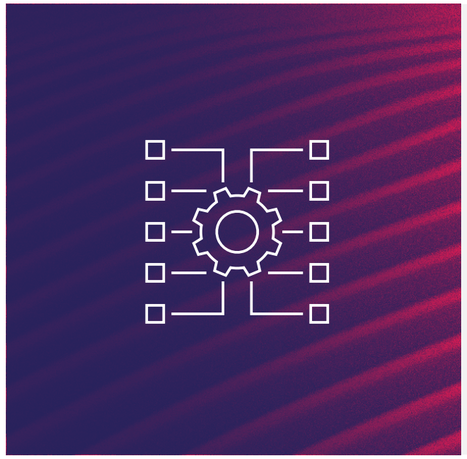
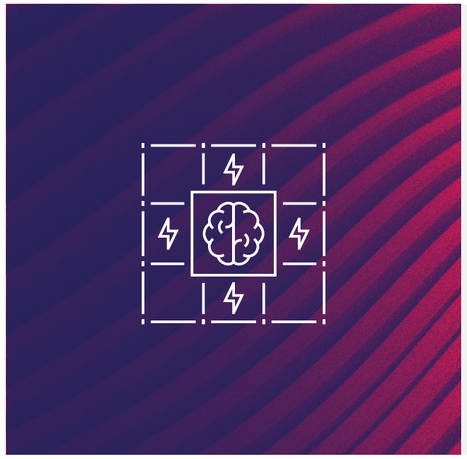


Shift repetitive, time-sensitive decisions to intelligent agents. Once the data layer is in place, grid health agents can detect outages early, classify issues without human review, and automatically prioritize dispatch, with audit trails and human override controls built in for compliance.



Automate outage communications alongside restoration workflows. Proactive alerts alone are not enough. **Agentic communication flows** can manage routine decisions such as when to notify, what to update, and when to escalate, while humans step in only for complex or high-impact situations.

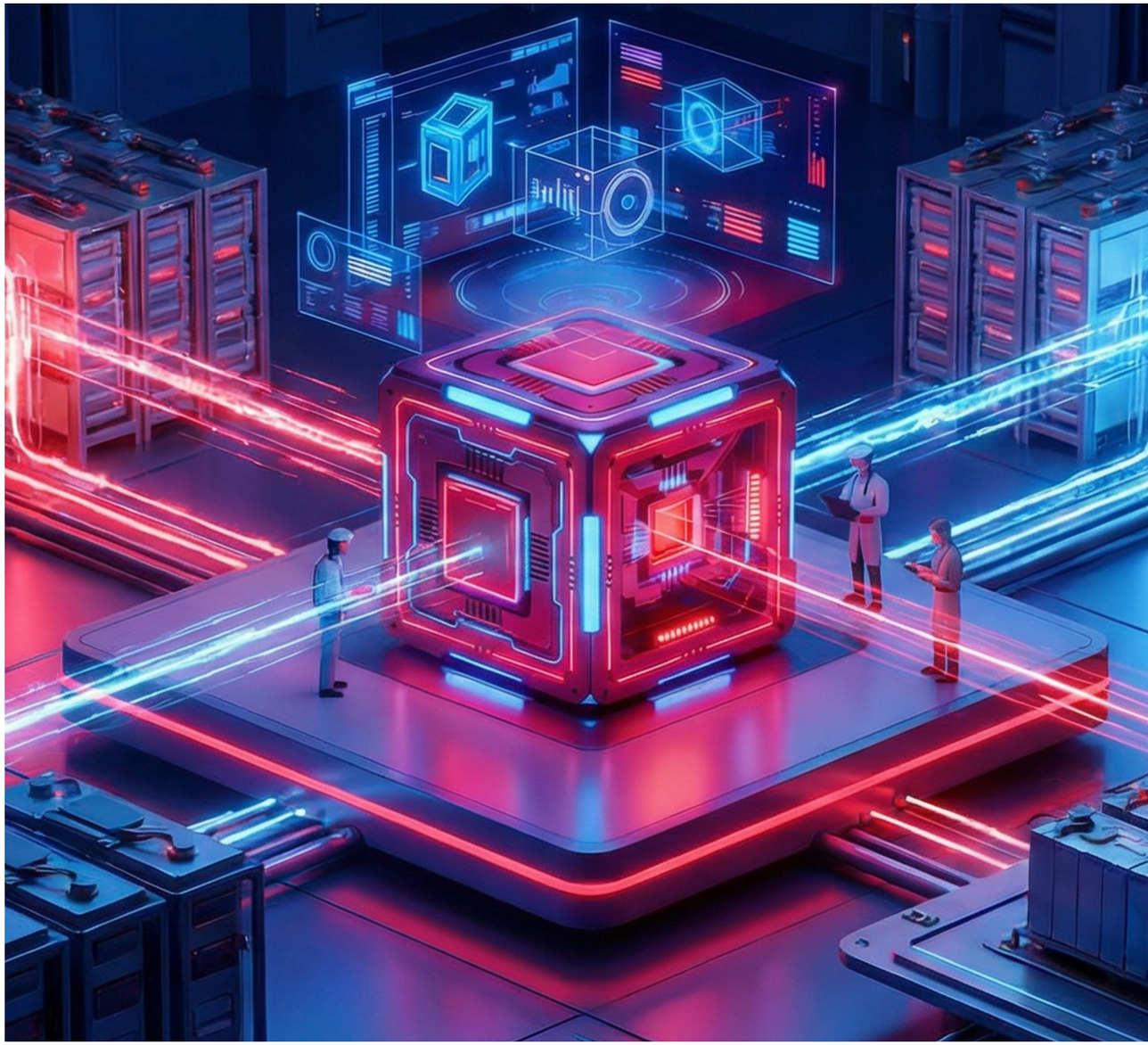
Opportunity 2:
Autonomous Billing Verification & Revenue Assurance

The Challenge

Billing is a persistent pain point across the energy sector. Customers increasingly complain of high bills, estimated reads, or confusing tariff structures. And on the backend? Support teams are overwhelmed with disputes, many of which stem from inconsistent meter data, missing context, or aging billing logic.

This is revenue leakage in action. It's often accepted as the cost of doing business, but it's entirely preventable.

Traditional billing systems are part of the problem. They can't verify consumption data in real time or reconcile edge cases across systems. When issues grace the desk of your support team, resolution is time-intensive and missing transparency. NPS scores further suffer with dissatisfaction and eroding customer trust.



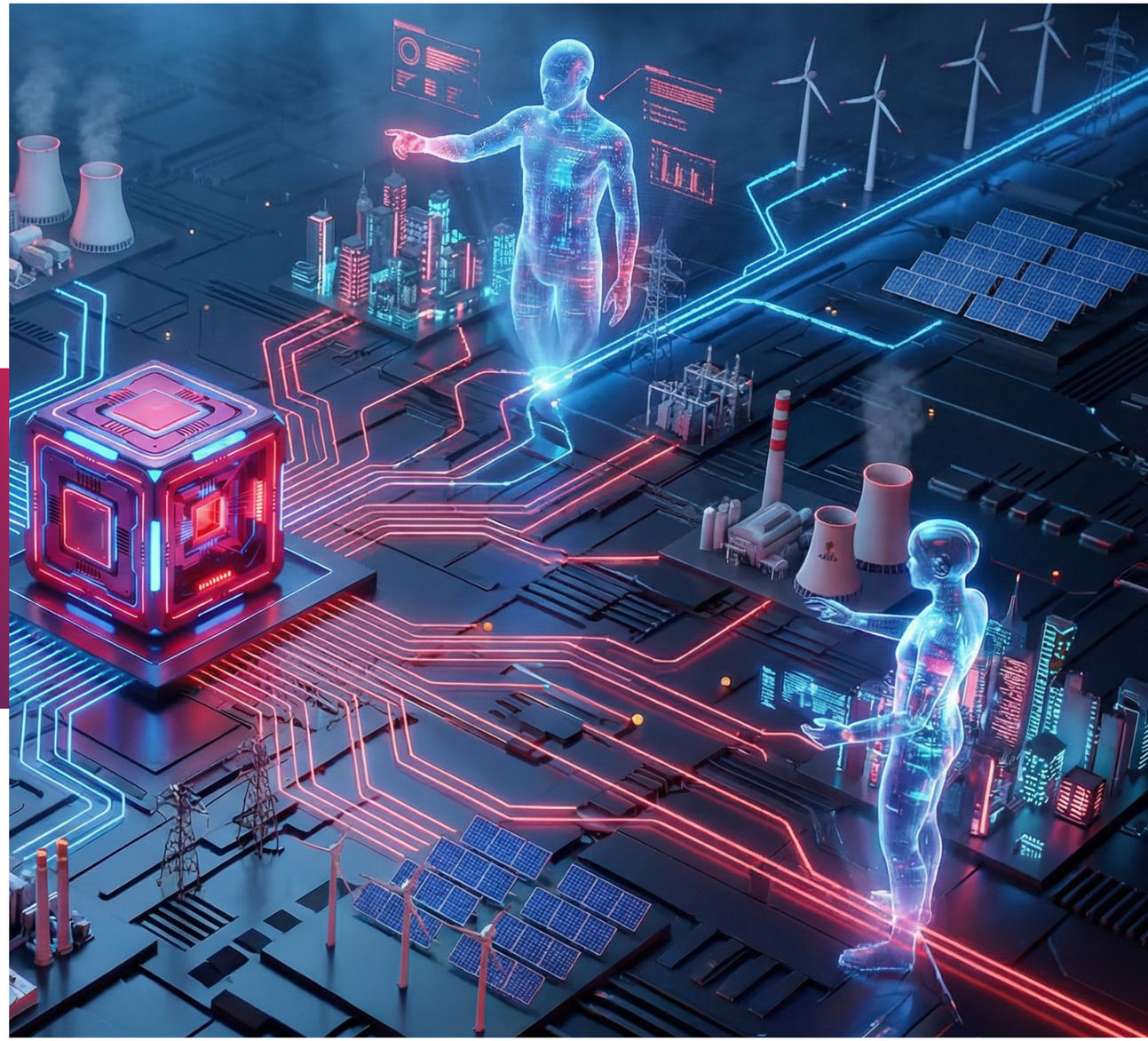
The Agentic AI Opportunity

Agentic AI is transforming the billing process from a manual onslaught into a continuous, autonomous verification cycle. AI agents validate meter reads, apply tariffs, detect anomalies, and flag inconsistencies before bills are even sent to customers, preventing disputes at the source.

When customers do raise concerns, language models can classify the type of dispute and guide resolution or escalation with precision.

> A leading U.S. electricity and natural gas provider serving over 5 million customers used AI-powered knowledge management and automation to boost QA scores by 30%, cut average handle time by 15%, and reduce service order errors from 25% to under 5%.[4]

With agentic AI, accuracy rates and dispute cycle times improve, and only complex or sensitive cases require human intervention. This is based on real-time data streaming from different sources of the business that help the agent make intelligent decisions.



4 https://www.sutherlandglobal.com/insights/case-study/leading-clean-energy-provider-improved-qa

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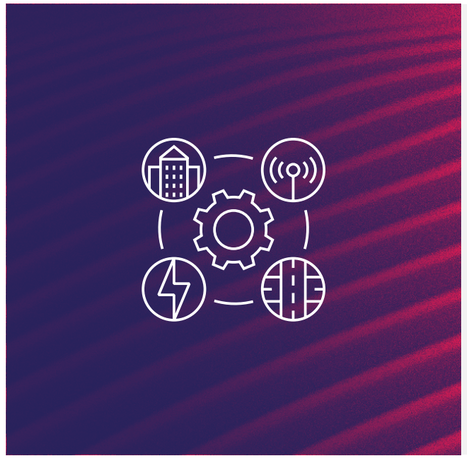
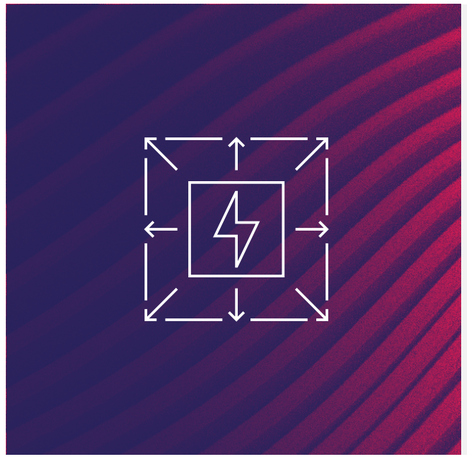
Practical Actions for E&U Leaders



Connect data to provide billing context. Agentic AI cannot verify bills intelligently without context. Accurate decisions depend on understanding how meter history, tariffs, customer profiles, weather patterns, and regulatory rules relate to one another, not on isolated data points. Strong **data engineering** provides agents with memory and retrieval capabilities so they can reason over this information consistently and avoid errors.



Automate dispute triage and guided resolution. Use **LLM-based workflows** to classify billing inquiries, resolve common issues, and escalate only sensitive or high-risk cases, reducing backlog and cycle times.

Modernize billing platforms to enable pre-issuance validation. Legacy billing systems often detect issues only after customers complain. **Modernizing applications** and integrations allows AI agents to validate reads, tariffs, and estimates before bills are issued, preventing disputes at the source.

Maintain auditability and financial governance. As intelligent verification expands, governance must evolve with it. Agentic AI requires clear audit trails, explainable decisions, and controls aligned with financial and regulatory standards. Human oversight remains essential for high risk or sensitive exceptions. Apply a **digital quality assurance** approach to meet regulatory and financial standards.

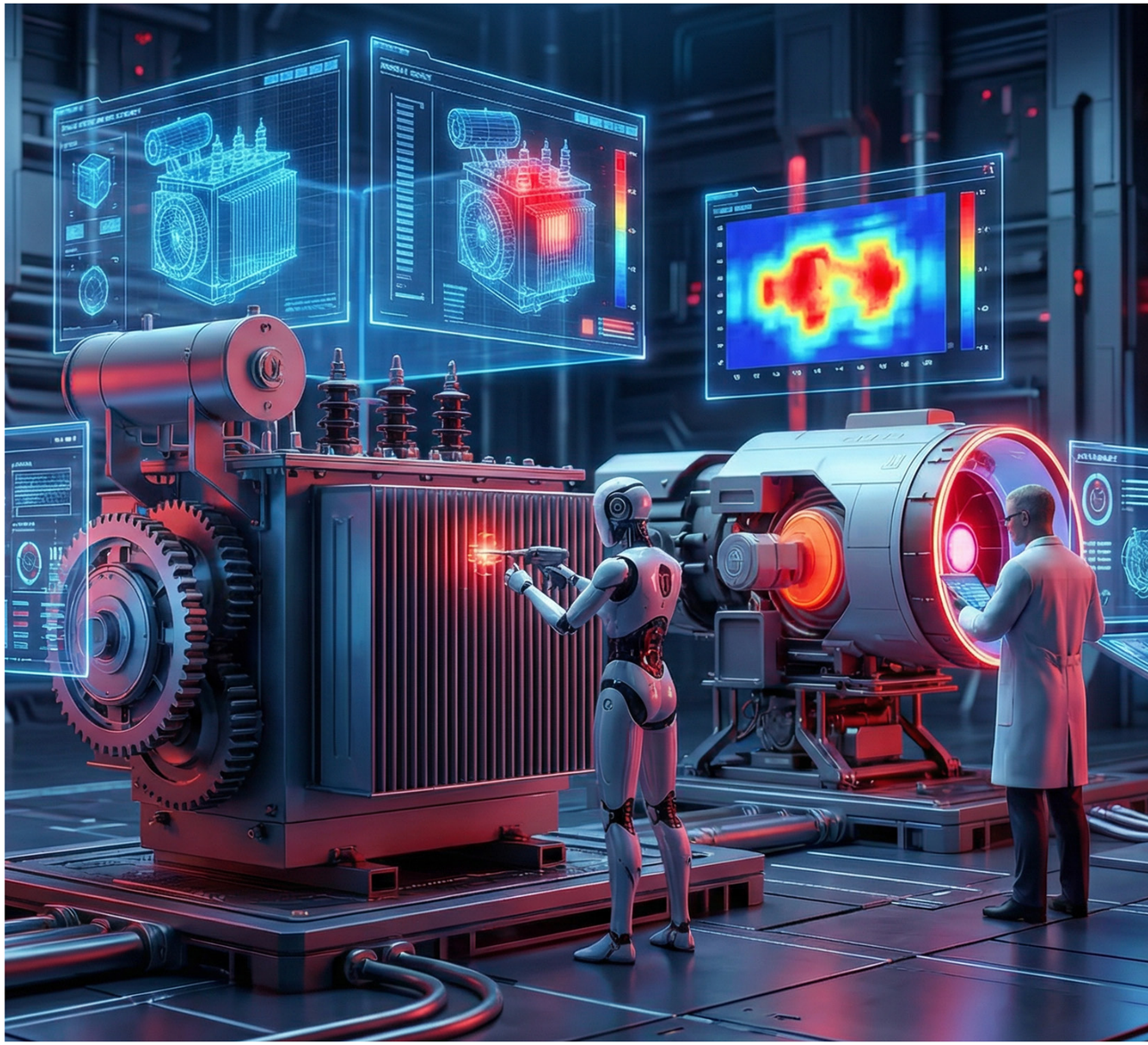
Opportunity 3:
Predictive Field Operations & Digital Workforce Enablement

The Challenge

Field operations teams are being asked to do more with less. Aging assets, many installed decades ago, are failing more often under modern load, weather volatility, and electrification pressure. Outages are more frequent, maintenance backlogs are growing, and SLAs are tightening. Yet task assignment in many utilities still relies on static rules and dispatcher intuition rather than real time grid conditions or technician skill profiles, driving unnecessary truck rolls and longer restoration windows.

Senior technicians with deep asset knowledge are retiring, taking years of context with them. Newer technicians must ramp quickly, often learning in the field rather than through structured onboarding. The result is more escalations, slower diagnostics, and greater dependence on a shrinking pool of experts, especially during storms or peak demand events.

Crews generate large volumes of diagnostic data, but most of it isn't usable. Photos of leaning poles or damaged equipment arrive without consistent labels, lighting, or geolocation, leaving AI unable to interpret what matters.



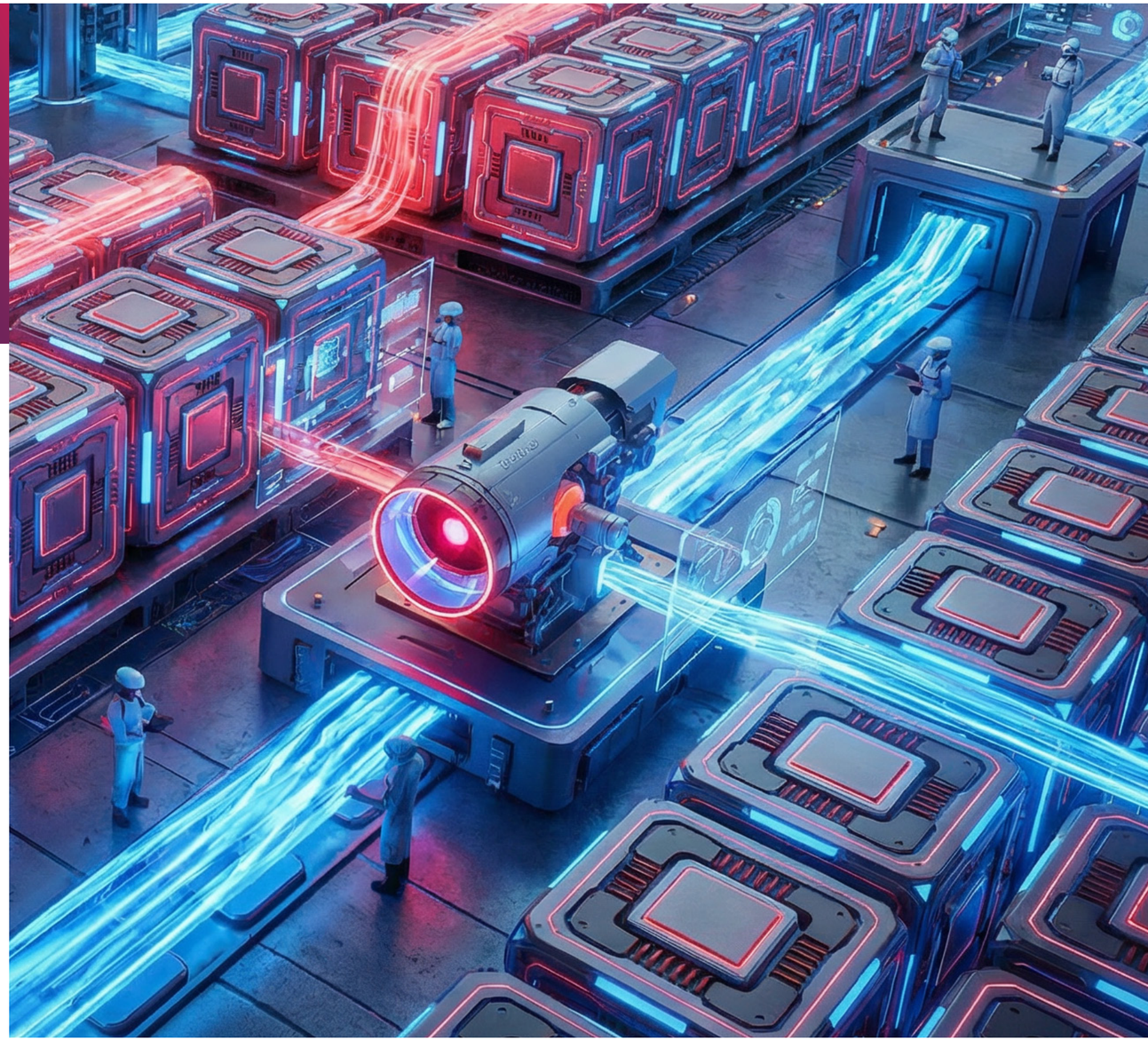
The Agentic AI Opportunity

Agentic AI closes these gaps by continuously analyzing asset condition, environmental factors, and operational signals to anticipate issues before they escalate into failures.

Instead of reacting to outages, utilities can intervene earlier, dispatch more intelligently, and equip crews with the right information at the moment it matters.

Predictive agents monitor asset health, consumption anomalies, weather exposure, and historical failure patterns in real time, surfacing early warning signals that would previously be missed. Instead of presenting this as static dashboards, agentic AI enables a “visual command center,” with predictive visualizations, pulling in real-time data to give users operational foresight. When risk thresholds are crossed, agentic systems dynamically prioritize work and assign the most appropriate technician based on skills, proximity, and urgency, replacing static dispatch rules with data-driven coordination. At the same time, AI agents can collaborate with the human in the loop to make the process of AI-decision making more transparent. For example, visual "simulation playback” showing predicted outcomes enhances operator understanding and builds trust.

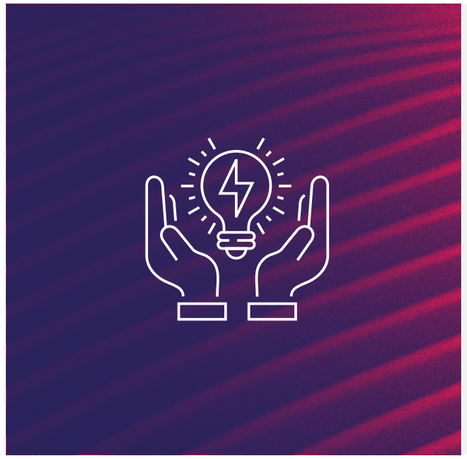
At a gas distribution utility, predictive anomaly models prevented approximately 15% of potential equipment failures, reducing both outage risk and maintenance costs.



In the field, digital assistants surface asset history and guide diagnostics, helping technicians resolve issues faster while capturing structured observations that improve future predictions. They can facilitate immersive maintenance via mobile devices or AR headsets, projecting high-quality 3D visualizations of internal components to allow field crews to "see" through the exterior of a transformer or substation before they arrive on-site. Additionally, integrating with Asset Digital Twins goes a step further and facilitates "Virtual Troubleshooting." This tests a repair sequence on the digital twin to ensure it will work on the first attempt to increase First-Time Fix Rates (FTFR).

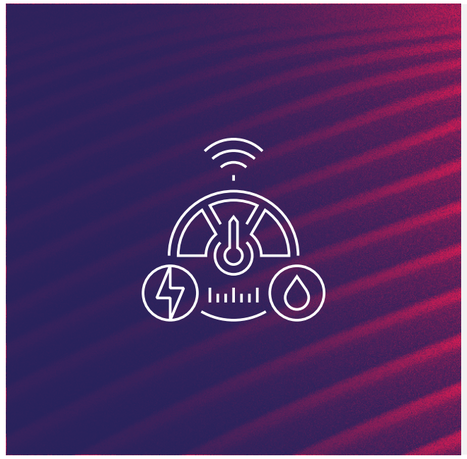
Over time, each completed job feeds learning back into the system, steadily improving prediction accuracy, dispatch logic, and field productivity. The result is a field organization that shifts from reactive response to anticipatory operations, improving reliability while easing workforce constraints.

Practical Actions for E&U Leaders

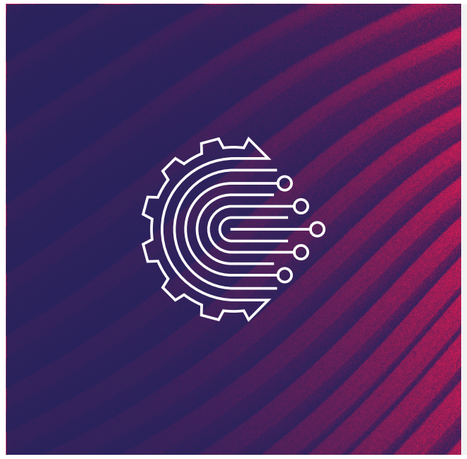


Standardize and structure field diagnostics so agents can learn and reason. Photos, notes, and inspection results must be consistent and contextual (asset ID, geo, time, condition codes). Apply a **data engineering framework** to convert unstructured field inputs into governed data products that improve predictive maintenance models and reduce repeat truck rolls.

Integrate scheduling with real-time grid and workforce signals: Move beyond static dispatch rules by connecting outage risk indicators, asset condition, crew availability, and skill profiles into a single scheduling layer. This requires scalable foundations. Optimize your **cloud infrastructure** to host real-time orchestration and support surge events (storms, heatwaves) without degradation.



Equip crews with guided diagnostics, next-best-action prompts, and fast access to asset history and procedures. An evolving solution landscape – across both **packaged and custom applications** – can keep pace with changing business demands and technological advancements, implementing field experiences that are agent-compatible (API-accessible, workflow-driven) and designed for adoption in high-variability environments.



Embed governance into every autonomous decision. For safety-critical work, define approval thresholds, role-based permissions, and escalation paths so humans remain in control.

The Road to the Agentic E&U Enterprise

Disruption in energy and utilities is an operating condition.

Agentic AI marks a clear inflection point. Across grid operations, billing, customer engagement, and field services, intelligence is already moving closer to the point of action.

Utilities that invest today in connected data foundations, governed autonomy, and agentic workflows are building an advantage that compounds over time. They are better positioned to absorb volatility, meet regulatory expectations, protect revenue, and deliver the level of reliability and transparency customers now expect.

Agentic transformation is already underway in the sector. The leaders who move decisively – starting with the decisions that slow them down today – will be the ones shaping what operational excellence looks like tomorrow.

Agentic capability relies on the right foundational elements. Explore Outlook 2026: The Road to the Agentic Enterprise **for the fundamentals every organization needs.**

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