POWER, UTILITIES & RENEWABLES, *REIMAGINED*

WITH AGENTIC AI

Agentic AI can transform the Power, Utilities, & Renewables sector, moving from reactive and fragmented operations to a connected, intelligent, and resilient energy enterprise

The sector is navigating a once-in-a-generation reset: electricity demand is increasing as AI data centers expand, and US$1.4 trillion in capital investment is required across the US by 2030[1].

Yet most still operate on systems and operating models never designed for this scale of complexity - creating challenges such as:

THE PROBLEM

- Aging infrastructure, extreme weather, and wildfire risk often outpace manual operating models, limiting **grid reliability** and **operational resilience**
- AI, electrification, and Distributed Energy Resources (DERs) can overwhelm fragmented systems, constraining **real-time grid intelligence** and **response capability**
- Affordability pressure, regulatory complexity, and eroding customer trust constrain **grid investment capacity** and **customer retention**

WHY AGENTIC AI AND WHY NOW?

94%	**Sector CIOs increasing AI investment[2]**
US$110B	**Potential annual savings in power operations[3]**
30%	**Reduction in distribution losses with AI[3]**

- Agentic AI can enable ***proactive asset risk and grid resilience monitoring***, connecting field intelligence with Vertex AI to predict failures, and improve ***grid reliability***
- Supports ***real-time grid intelligence and demand-dispatch optimization***, leveraging BigQuery to forecast load growth, manage DERs, and balance the grid dynamically
- Orchestrates ***AI-driven field and vegetation management execution*** across inspection, risk scoring, and crew routing, converting manual workflows into ***risk-prioritized, automated operations***
- Helps accelerate ***regulatory compliance and rate case delivery*** by automating documentation, and sustainability reporting with Gemini, reducing ***cycle times*** and ***compliance risk***
- Enables ***smarter customer communication and billing intelligence*** during outages and peak demand, protecting ***customer trust***, reducing churn, and safeguarding ***revenue***

DELOITTE'S ENGAGEMENT MODEL

Deloitte's structured, end-to-end engagement model helps organizations move seamlessly from vision to value

1. **AI discovery lab**
2. **Discovery and design workshops**
3. **Minimum viable product deployment**
4. **Enterprise AI readiness**
5. **Scale with the Agentic innovation studio**

Source: 1. Deloitte Research 2. Gartner 3. Patent PC

KEY BUSINESS PROCESSES REIMAGINED WITH AGENTIC AI

1 START

Plan, invest and forecast

- Forecast **load growth** and demand scenarios and capital plans
- Automate **rate case** benchmarking and regulatory strategy
- Review **policy compliance** against new legislation
- **Forecast renewable generation output** using weather and grid data

2

Develop, procure and build

- Estimate **early interconnection costs** and grid feasibility
- Optimize **vendor sourcing** and procurement decisions
- Generate project **documentation** and construction work orders
- Automate renewable energy procurement and contract validation

3

Operate and maintain assets

- Predict **asset failures** using real-time sensor data
- **Automate solar and wind asset performance** monitoring and fault detection
- Identify **safety risks** using incident data
- Schedule **predictive maintenance** across asset life cycle

4

Manage grid and field ops

- Automate **vegetation risk scoring** and AI trim prescription
- Predict **storm damage** and stage response resources
- Monitor **grid reliability** and detect transmission anomalies
- Optimize **crew routing** and field work order execution

5

Optimize markets and flexibility

- Orchestrate **DER and Virtual Power Plant** flexibility dynamically
- Forecast **wholesale energy prices** and market signals
- Balance **demand response** across industrial and grid loads
- **Optimize hybrid storage and renewable** dispatch for grid balancing

6 FINISH

Serve customers and prosumers

- Predict **high bills** and notify at-risk customers
- Assist **service agents** via AI-powered Customer Relationship Management
- Summarize **customer calls** and generate agent insights
- Draft **customer responses** across digital channels
- Analyze customer experience data

DELOITTE'S SOLUTION: VegAI

VegAI is Deloitte's purpose-built Agentic AI solution for utility vegetation management, automating risk detection, trim prescriptions, and crew routing across thousands of miles of transmission and distribution infrastructure.

Utilities may be under pressure to reduce wildfire risk, improve grid resilience, and optimize vegetation operations at scale.
Agentic AI can eliminate ***manual workflows***, identifying, scoring, and prioritizing ***vegetation risk across the network:***

Data ingestion → **AI risk modeling** → **Network intelligence** → **Risk prioritization** → **Crew dispatch**

CURRENT STATE

- Manual span-level inspections
- Limited tree-level risk visibility
- Reactive trim planning
- Limited network-wide prioritization

From span-level inspections to tree-level intelligence with **AI Trim Rx**

FUTURE STATE

- AI-generated trim prescriptions
- Tree-level risk prioritization
- Optimized crew routing
- Faster vegetation response

Vegetation clearance reporting reduced from 90 to 14 days[4] and automated 35% of transmission trim work orders in 1st Year[4]

Source: 4. Deloitte Client Engagement

LET'S TRANSFORM TOGETHER

Deloitte is ready to help you move from strategy to scale, with demonstration sessions, discovery labs, rapid prototyping, and solution deployment. Deloitte can also help you with general enterprise AI readiness through the services of the Agentic Innovation Studio, a modular "agent factory" that helps organizations industrialize and continuously evolve AI-driven processes.

LEARN MORE

Discover how Deloitte can help you with your AI-led transformation journey

Scan or click to engage our team and accelerate your path to enterprise-wide value

LET'S TALK

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