



# INVESTING IN INTELLIGENCE: THE KEY TO UNLOCKING THE FULL POTENTIAL IN THE ENERGY & UTILITY INDUSTRY

# The Ever-Evolving Energy Landscape

The energy and utility industry landscape is shifting, driven by demanding customers, fierce competition, and a sustainability push. Do CX woes, grid instability, and sustainability nightmares sound familiar? To thrive amidst these changes, companies must adopt a multifaceted approach that places a premium on customer experience (CX), operational efficiency, and sustainable ecosystem development.

Customers crave transparency, control, and seamless experiences. Failure to deliver can lead to churn and damage brand loyalty or, worse, attract regulatory scrutiny, as three UK energy suppliers found out to their disadvantage. These companies paid millions for delaying or not paying compensating owed to customers<sup>1</sup>. Similarly, efficient operations are imperative for energy and utility firms to remain agile and responsive. Data analytics enables companies to optimize resource allocation, anticipate demand fluctuations, and streamline internal processes, ultimately bolstering their competitive advantage.

But how can they achieve this? Enter Artificial Intelligence (AI), a game-changer poised to revolutionize this critical sector. It can propel an energy and utility firm towards a better user experience by boosting customer experience, driving efficient data-driven operations, and creating a sustainable energy ecosystem. This paper highlights how AI can help personalize CX and enable data-driven interfaces, grid optimization, sustainability, and energy efficiency – all critical to ensuring the future of firms in this industry.



## Lights, Grid, Action! How AI Powers the Energy Industry

### 1. Personalized customer experience/Redefining customer-centricity



Having 24/7 customer service representatives is crucial in this industry as it provides essential services. Moreover, strict regulatory rules reinforce the importance of delivering an optimal customer experience. Add to that personalization, which becomes the secret sauce to winning and retaining customers.

AI can be a game-changer and usher in a new era of customer-centricity. Here's how.

Intelligent chatbots or agents provide customers with 24/7 support, allowing them to reach out anytime for billing inquiries or similar concerns. Furthermore, customers can schedule appointments with various departments and easily access technical support.

The outcome is enhanced customer satisfaction and reduced dependency on human intervention.

#### *AI in action in the real world*

By integrating AI into its email response system, Octopus Energy efficiently managed over a third of customer emails, outperforming emails written by humans by almost 20%<sup>2</sup>. This adoption not only elevated customer satisfaction but also notably enhanced productivity,

<sup>1</sup> UK energy suppliers pay millions over compensation failures and overcharging | ITV News

<sup>2</sup> How Generative AI Is Already Transforming Customer Service | BCG





## 2. Dynamic data-driven interfaces/Towards informed and empowered customers



Customers are often frustrated in their attempts to obtain accurate answers through web channels or customer care representatives.

AI can address this issue by training support systems with relevant documents, including regulatory and billing information. This enables them to provide precise, contextualized answers to customer queries through chatbots or customer representatives, thus acting as a smart assistant and augmenting customer experience.

AI systems can perform more magic. They can help provide personalized dashboards based on users' preferences and consumption patterns and quickly help set up self-service options for customers who prefer to be empowered. Imagine receiving a notification from your utility firm on an upcoming power outage and the expected resolution time. As an extension, during an outage crisis, they can quickly rescue call centers by deftly handling the surge of calls.

In addition, AI systems can intelligently nudge customers into replacing older assets nearing the end of life by analyzing customer data.

With these value-additions, AI systems greatly enhance transparency and significantly reduce customer frustration during an outage.

### *AI in action in the real world*

Florida Power & Light (FPL) is leading the charge in customer-centricity through its innovative application of AI-powered virtual assistants. During outage events, customers can use these assistants via the FPL mobile app and website to access a range of self-service options, empowering them with information and control. Customers can report outages, receive immediate updates, and access tailored assistance—the outcome – is more transparency, happier customers, and better management of outage incidents<sup>3</sup>.

<sup>3</sup> Integrating Artificial Intelligence into Outage Management Systems at Florida Power & Light - Utility Analytics Institute



### 3. Grid Optimization/AI's hand in energy efficiency



Utilities can transform the grid into a dynamic and responsive system by harnessing AI. Here's how.

First, AI-powered demand forecasting anticipates energy fluctuations, enabling utilities to optimize operations. This means more efficient operations, especially during peak hours and saving costs. Beyond prediction, AI can monitor grid flow patterns and identify unusual fluctuations that could indicate energy theft. This not only protects honest customers but also helps secure valuable resources.

Next, by integrating smart meters with dynamic pricing, personalized energy costs reflect real-time demand.

This incentivizes customers to shift usage to off-peak hours, smoothing out demand curves and benefiting both consumers and the grid. AI understands the need for customized approaches and analyzes individual consumption patterns to develop personalized pricing structures, rewarding customers who adjust their usage during peak hours. This fosters a collaborative approach to grid management, incentivizing sustainable practices.

AI paves the way for a more sustainable and efficient energy future for all stakeholders by enhancing efficiency, securing resources, and incentivizing responsible behavior – it acts as a catalyst for positive change.

#### *AI in action in the real world*

Lunar Energy's AI brain, Gridshare, analyzes data from thousands of homes to predict individual energy needs. Powered by battery tech and AI power, it delivers personalized savings for customers by optimizing their energy usage for everything from EVs to dishwashers. Thanks to AI, peak-hour discounts and lower bills are a reality now<sup>4</sup>.

<sup>4</sup> Four ways AI is making the power grid faster and more resilient | MIT Technology Review



#### 4. Sustainability and Energy Efficiency/ AI for a greener energy future



In pursuing a sustainable future, the energy and utility sector can capitalize on AI to optimize usage and improve grid stability. AI-powered data analysis provides recommendations for resource efficiency, pinpointing areas for improvement across the board. Smart AI-controlled appliances learn real-time usage patterns, automatically adjusting settings to minimize energy consumption while seamlessly integrating renewable sources like solar and wind into the grid. There's more - AI analyzes project data, identifying further optimization possibilities and ultimately reducing the carbon footprint of energy generation and consumption. Fueled by intelligence and data, this comprehensive approach paves the way for a more sustainable and efficient energy ecosystem.

##### *AI in action in the real world*

OVO's "Energy Forecast" campaign took to London's largest billboard, using AI and real-time data to show how Britain uses energy. With interactive elements, it aims to educate and empower people to reduce CO2 using energy when the grid is greener. OVO tackles misinformation and bridges the gap, paving the way for a more sustainable future through informed consumer choices<sup>5</sup>.

<sup>5</sup> OVO's Energy Forecast uses AI to lift the lid on Britain's energy habits (creativebrief.com)



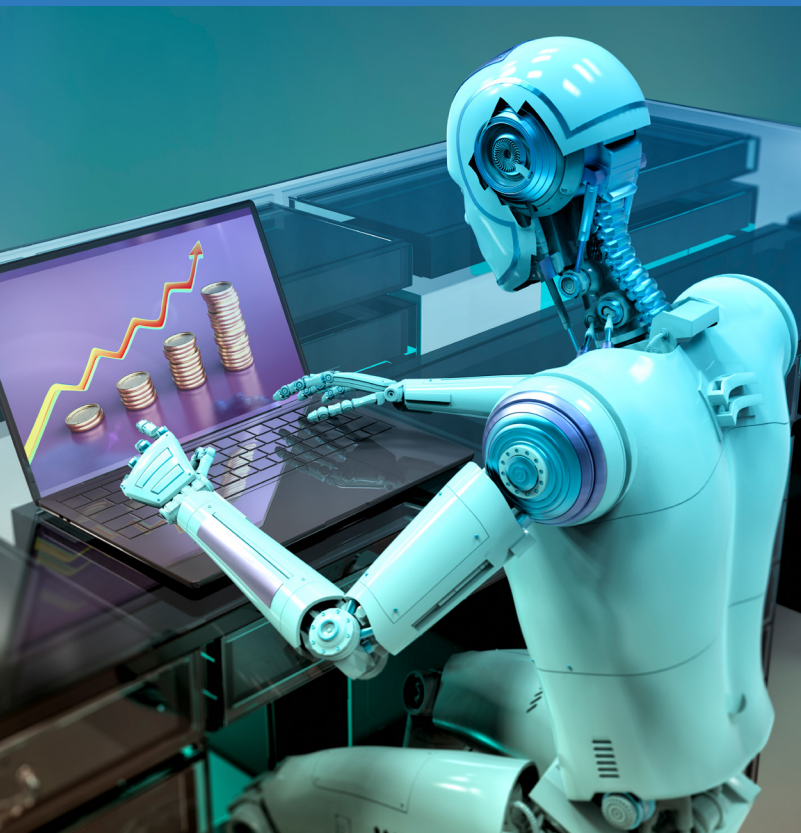
## 5. Extended Reality



The immersive world of AR/VR/MR extends beyond the entertainment arena and can tangibly impact real-world applications. Technicians can use smart glasses like Apple Vision Pro to diagnose and repair complex machinery remotely without traveling to the location. AR/VR training simulations also create safe, immersive environments to hone skills while customer education becomes interactive and engaging through product visualizations and virtual walkthroughs.

### *AI in action in the real world*

Shell employs VR for training and simulation across its operations, utilizing immersive simulations to train employees on safety procedures, equipment operation, and emergency response protocols. This initiative enhances safety and preparedness in the field through experiential learning<sup>6</sup>.



## 6. Upping the ante on cybersecurity



AI can make a big difference in risk management. It hunts down threats by analyzing vast amounts of data for anomalies that may indicate potential security breaches, predicting equipment failures for proactive maintenance, and monitoring all systems for vulnerabilities. It even acts as a theft detective, identifying and preventing illegal energy siphoning. This multifaceted approach builds robust defenses, ensuring a more secure and efficient future for the energy industry.

### *AI in action in the real world*

Giants like PG&E, Enel, and Southern Company are outsmarting energy theft with AI. Powerful analytics and machine learning scan massive data sets, pinpointing unusual consumption patterns - potential theft red flags - for a swift investigation. This tech shields resources and bolsters grid security, protecting companies and honest consumers<sup>7</sup>.

<sup>6</sup>Virtual Reality & Augmented Reality | Shell Global

<sup>7</sup> Fraud Detection in Energy Using AI to Detect Fraudulent Energy Billing Practices - (datategy.net)

## The Power of Possibility: Envisioning an AI-Driven Energy Ecosystem/ The Road Ahead: Charting the Course for a Sustainable and AI-Powered Energy Future

As AI continues to make its mark in the energy and utility industry, the emergence of AI-powered marketplaces signifies a transformative shift towards localized energy exchange within communities and seamless integration into smart grids.

However, alongside these promising advancements come notable challenges. Issues such as data privacy, ensuring trust in AI recommendations, and the need for infrastructure upgrades to enable AI implementation pose significant hurdles. Addressing these challenges will be crucial in realizing the full potential of AI in revolutionizing energy distribution and consumption. With careful consideration and strategic planning, the industry can harness the power of AI to drive efficiency, sustainability, and resilience in the evolving energy landscape. AI doesn't just enhance customer experience (CX) or optimize operations; it empowers companies to build truly sustainable ecosystems, navigating these challenges and unlocking unprecedented opportunities.

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