



3 Ways AI Can Help Your Business Optimize Energy Usage

For greater energy cost savings and productivity, many industries are utilizing AI.

The average human makes more than 33,000 decisions per day.¹ Some 95% of those decisions are made subconsciously, without active decision-making in the brain.

Helping with some of that mental workload has made artificial intelligence (AI) invaluable in navigating our days personally and professionally. Today, people are using AI to make quick, informed decisions when writing emails with predictive text, making purchases with the help of browser and purchase history algorithms, and seeking help from customer service via chatbots.

Business Leaders Embrace AI

AI is making big waves in business, too. According to a 2024 survey, 72% of companies use AI for at least one business function.² Half of companies nationwide are using AI for at least two business functions — a percentage that's grown significantly from around 30% in 2023. Business leaders say positive impacts abound: 64% said AI would improve productivity, 59% said it could help save costs and 44% said using AI would enhance their decision-making abilities.³

AI Delivers Sustainability Solutions

Large businesses and institutions who are subject to regulations and consumer pressures to reduce their emissions are using the power of AI to reduce their footprint while also gaining cost-saving operational efficiencies.

- **Amazon** uses a Packaging Decision Engine, an AI solution designed to determine efficient packaging options for its millions of daily shipments. The tool has helped Amazon reduce packaging waste, eliminating over two tons of packaging material since 2015.⁴
- **Walmart's** AI-powered route optimization solution, which is now available to other businesses, is a logistics tool that recommends delivery routes and trailer packing strategies to reduce miles driven, fuel costs and environmental impact.⁵
- **Google** and its AI research lab DeepMind developed a solution for its data centers that optimized cooling systems, reducing energy usages for cooling by 40% while achieving a 15% overall improvement in power usage efficiency.⁶

How AI Optimizes Energy Usage for Big Businesses

PECO Ways to Save supports businesses that are implementing more energy efficient HVAC systems, lighting and motorized equipment, as well as building automation systems, controls and refrigeration. Many of these businesses can use AI to uncover additional operational savings and other benefits. Indeed, a 2024 study published in the scientific journal Nature Communications estimates that adopting AI could reduce energy consumption and carbon emissions by approximately 8% to 19% in 2050.⁷



How does your business fit in? Here are three ways businesses can use AI to save energy, reduce costs, increase productivity, extend equipment life and make informed decisions.

1. AI Spots Inefficiencies — Allowing for Predictive Maintenance

AI has proven an excellent tool for tracking performance and energy usage of vital equipment in real time. Especially in older, poorly maintained equipment, AI can discover issues in energy consumption in short order.⁸ Many businesses today use *preventive* maintenance, which involves regular inspections, to ensure efficiency; AI monitoring allows for *predictive* maintenance, which uses sensor data to monitor equipment performance in real time, and can provide alerts for operating anomalies or equipment defects within seconds. A recent study showed that companies leveraging predictive maintenance can reduce equipment downtime by 19% compared to preventive maintenance (and can reduce downtime by more than 53% when compared to lesser *reactive maintenance*)⁹. Reducing downtime boosts savings — especially because a single hour of equipment downtime can cost a small- to medium-size manufacturer \$150,000 in lost productivity.¹⁰

2. Responsive, Precise Control for Facility Comfort

Uncomfortable employees struggle to focus, resulting in errors, inefficiencies and even safety incidents. When paired with HVAC and lighting systems, advanced AI-driven controls can dial in ideal conditions for productivity. AI advanced controls measure current conditions using occupancy sensors, thermostats, humidity sensors, ambient light sensors and more. They leverage usage patterns, energy consumption data and weather forecasts to make precise adjustments to lighting and HVAC equipment in real time. Your system saves energy, and it keeps employees happier and productive, too.

3. AI Paired with Renewables Reduces Emissions

Facilities that use on-site renewable energy sources like wind or solar stand to benefit massively from AI controls. These AI tools combine weather forecasts and renewable energy production data to predict when solar or wind energy production will be high or low.¹¹ Production processes can then be shifted to appropriate times, reducing carbon footprint and potentially saving money by requiring less grid-purchased energy consumption.¹² Businesses considering solar energy adoption can use AI tools to better understand meteorological and geographic data, helping to determine size, placement and orientation of solar panels to maximize production and minimize installation cost.¹³

▶ If you're considering integrating AI into your facility energy plans, connect with PECO Ways to Save to learn how you can get started and save. Visit solutions.peco-energy.com/getting-started to schedule a conversation today.

¹ Reill, Amanda. A Simple Way to Make Better Decisions. Harvard Business Review, 2023. Harvard Business Review, hbr.org/2023/12/a-simple-way-to-make-better-decisions. Accessed 3 March 2025.

² Hahn, Katherine. "22 Top Statistics and AI Trends." Forbes, 2025, www.forbes.com/advisor/business/ai-statistics/. Accessed 3 March 2025.

³ Hahn, Katherine. "How Businesses Are Using AI." Forbes, 2025, www.forbes.com/advisor/business/software/ai-in-business/. Accessed 3 March 2025.

⁴ Hurst, Kara. "Seven ways Amazon is using AI to build a more sustainable future" About Amazon, 15 February 2024, <https://www.aboutamazon.eu/news/sustainability/7-ways-amazon-is-using-ai-to-build-a-more-sustainable-future>. Accessed 9 April 2025.

⁵ AbsoluteLabs. "Walmart Opens Up AI-Powered Route Optimisation Tech to Other Businesses." LinkedIn, 19 March 2024, <https://www.linkedin.com/pulse/walmart-opens-up-ai-powered-route-optimisation-tech-other-xxhef>. Accessed 9 April 2025.

⁶ Okyere, Emmanuel. "How DeepMind's AI Framework made Google Energy Efficient." Nural Research, 24 January 2021, <https://www.nural.cc/deepmind-ai-framework/>. Accessed 9 April 2025.

⁷ Ding, C., et al. "Potential of artificial intelligence in reducing energy and carbon emissions of commercial buildings at scale." Nat Commun 15, 5916 (2024), doi.org/10.1038/s41467-024-50088-4.

⁸ Stano, Simon, and J. Mark Munoz. "3 Ways to Leverage A.I. for Efficient Energy Management." California Review Management, 2024, cmr.berkeley.edu/2024/11/3-ways-to-leverage-a-i-for-efficient-energy-management/. Accessed 3 March 2025.

⁹ Deloitte. "Predictive Maintenance." Deloitte.com, 2024, www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-smart-manufacturing-predictive-maintenance-infographic.pdf. Accessed 3 March 2025.

¹⁰ Siemens. "The True Cost of Downtime 2024." Siemens, assets.new.siemens.com/siemens/assets/api/uuid:1b43afb5-2d07-47f7-9eb7-893fe7d0bc59/TCOD-2024_original.pdf. Accessed 3 March 2025.

¹¹ Whitworth, Ed. "How Can AI Help Companies Become More Energy Efficient?" Bionic, 27 September 2023, bionic.co.uk/business-energy/guides/can-ai-help-company-energy-efficiency/. Accessed 3 March 2025.

¹² Servier. "AI to Help Industry Reduce Environmental Impact." Servier, 2025, servier.com/en/newsroom/ai-industry-reduce-environmental-impact/. Accessed 3 March 2025.

¹³ Hartung, Richard. "Artificial Intelligence Delivers Great Benefits for Solar Energy." Solar Washington, 2024, www.solarwa.org/artificial_intelligence_delivers_great_benefits_for_solar. Accessed 3 March 2025.