



GREEN HYDROGEN IN AI DATA CENTERS

USE CASE

USE HYDROGEN TO CUT COSTS BY OVER 60%

In this detailed use case, we'll present real cost data from Duke Energy's off-peak pricing and compare it to traditional battery storage, demonstrating how Tobe's hydrogen solution can save customers more than 60% on their energy costs. We'll break down the numbers and show the tangible economic and environmental benefits of leveraging green hydrogen for AI data centers.

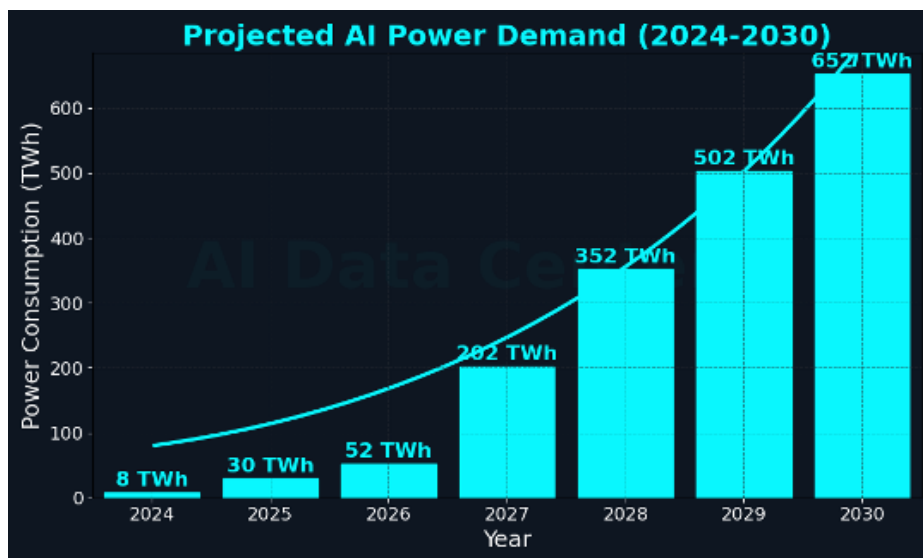
www.tobe.energy

Solving AI's Energy Crisis: Over 60% Cheaper, Zero-Emission Power

AI power consumption is set to skyrocket, but so are the challenges of global warming. As demand for energy grows, the gold standard for powering data centers increasingly points toward renewable, low-emission sources. At the forefront of the conversation are nuclear, solar, and wind energy. While all of these power sources face challenges—particularly with the need for energy storage—today we're focusing on what many consider the most scalable solution for large-scale renewable power generation: nuclear energy.

You might be wondering, what about hydrogen?

While hydrogen plays a pivotal role, it's important to clarify that hydrogen isn't "harvested" like wind, solar, nuclear, or fossil fuels. In many ways, hydrogen functions more like a battery than a traditional fuel source—but don't worry, we'll explain why that's crucial.



The Nuclear Landscape:

Nuclear energy holds a unique place in the energy mix. Unlike other energy sources, nuclear power plants have little tolerance for turning up or down based on demand. Humans, however, tend to use the most energy during "peak" hours—typically when they come home from work—and almost none during "off-peak" times, like while they sleep. This mismatch creates challenges. But nuclear plants need to run consistently, and that's where the concept of "peak" and "off-peak" pricing comes in.

For example, Duke Energy, one of the nation’s largest nuclear operators, drops its energy prices by more than 60% during off-peak times. On-peak pricing can be around 27.64 cents per kWh, while off-peak pricing falls to 10.47 cents per kWh. This begs the question: Why doesn’t everyone bank energy during off-peak times when it’s cheapest, and then use it during peak hours when it’s more expensive?



The answer is simple: Batteries are incredibly expensive. Two of Tesla’s car batteries, for instance, can cost up to \$15,000 each or \$30,000 total, for the equivalent energy storage that our Tobe Electrolyzer can generate for less than \$2,500. Our system produces 10 kg of hydrogen per day—enough to fill two standard gas tanks—at a fraction of the cost.

Not only does the price of batteries make large-scale energy storage impractical, but relying on batteries also means we would quickly run out of rare earth minerals if every home and business required battery backups. The high costs and limited resources make batteries an unsustainable solution to energy storage at scale.

Why Hasn’t This Been Done With Hydrogen Before?

Simply put, today’s hydrogen companies are where incandescent light bulbs were before the invention of the LED. The Tobe Electrolyzer is the LED of green hydrogen production. Not only are we over 45% more efficient, but our system also costs 75% less to construct than current comparative technologies.

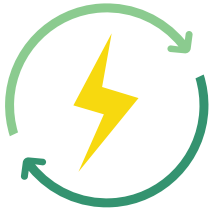
If you think about the different types of electrolyzers –AEM, PEM, Alkaline, SOEC—they are all like examining different types of filaments in incandescent bulbs. They all have the same fundamental challenge: lots of heat generation and wasted energy (remember how hot those incandescent bulbs got?). The Tobe Electrolyzer is a complete reboot of this process, much like how the LED transformed lighting technology.

The Facts

No exotic materials means
75% LESS CAPEX
AND FASTER DELIVERIES

Highest efficiency on the market means
45% LESS OPEX
STORING ENERGY AS
EFFICIENCY AS BATTERIES

We Have More Than
1,000 HOURS
OF PROTOTYPE TESTING



What Does This Have to Do with AI and Data Centers?

The connection between AI, data centers, and hydrogen energy storage is simple yet revolutionary. As AI data centers continue to demand more power, energy efficiency and cost savings become crucial considerations. Here's where Tobe's hydrogen technology steps in: because our system is a fraction of the cost of a traditional battery system and produces true zero-emission fuel, AI data centers can store low-cost, off-peak power in a form that's flexible, storable, and usable at any time.

Duke Energy Peak // Off-Peak Pricing Case Study

Take Duke Energy's pricing model, for example—during off-peak hours, electricity costs over 60% less. Tobe Electrolyzers can produce green hydrogen during these off-peak hours, storing the energy for future use at a fraction of the cost compared to batteries. This not only lowers utility bills for AI data centers but also reduces their carbon footprint. When hydrogen is used, the only by-product is water, unlike traditional fossil fuels that contribute to harmful emissions.

Moreover, integrating hydrogen into AI data centers' energy mix significantly reduces stress on the grid by distributing energy use more evenly, helping prevent costly overloads and outages.

Tobe's solution isn't just about short-term savings—it's about future-proofing the energy needs of AI data centers, both financially and environmentally. Here are three key benefits that make our approach stand out:



Cost Savings: AI data centers can capitalize on significantly lower energy prices by storing energy as green hydrogen during off-peak hours and using it when energy prices spike.



Efficiency: Our Tobe Electrolyzers are 75% cheaper to build and 45% more efficient to operate than traditional electrolysis systems, offering the most affordable and efficient green hydrogen solution available.



Sustainability: The combination of nuclear power and green hydrogen creates true zero-emission energy, offering AI data centers a cleaner, more sustainable way to meet their growing power demands.

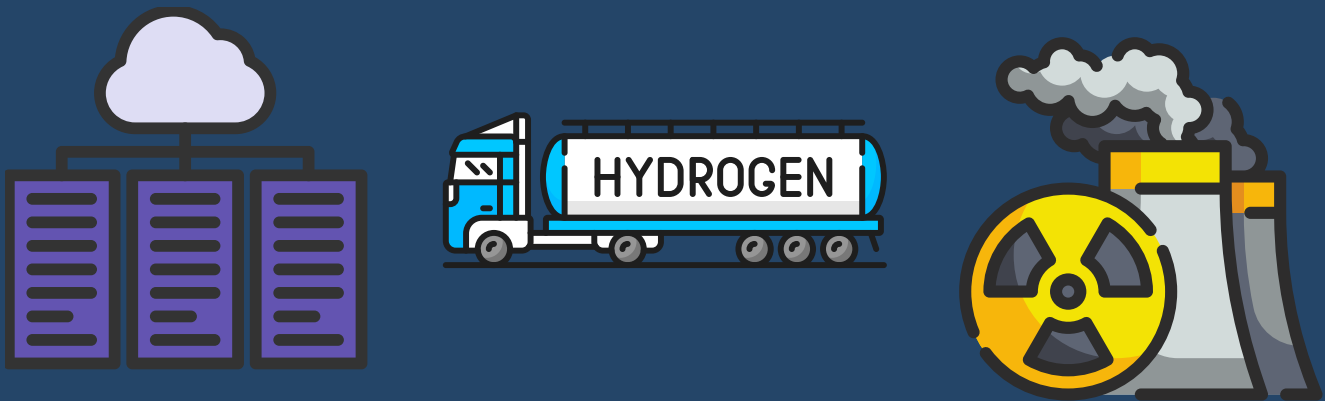
Tobe's Green Hydrogen: Mitigating the Challenges of the AI Revolution

As the world races to accommodate the exponential growth in AI power demands, the energy infrastructure supporting this transformation must evolve. Hydrogen, traditionally thought of as a fuel source, can play a pivotal role in addressing the challenges posed by fluctuating energy demands and increasing global carbon emissions. The Tobe Electrolyzer offers a game-changing solution by making green hydrogen as efficient and cost-effective to store energy as batteries—but without the price tag or environmental strain of mining rare earth materials.

This isn't just about reducing utility bills for AI data centers. It's about building a resilient, future-proof energy model that supports the expansion of AI without compromising on sustainability. With Tobe Electrolyzers, we're not only reducing costs but also reducing carbon emissions and grid stress, paving the way for a more sustainable, scalable, and green AI revolution.

The future of energy is green hydrogen and the future of green hydrogen is Tobe.

Whether you're looking to reduce operational costs, minimize environmental impact, or be at the cutting edge of AI energy infrastructure, our approach is uniquely positioned to help AI data centers succeed both today and tomorrow. We are excited to continue revolutionizing energy storage and to partner with those looking to lead in this new era of innovation.



As the demand for AI infrastructure grows and energy usage intensifies, integrating cost-effective, zero-emission hydrogen storage solutions becomes increasingly vital. By capitalizing on off-peak nuclear energy pricing, Tobe's electrolyzer technology enables AI data centers to dramatically reduce operational expenses—over 60% in some cases—while shrinking their carbon footprint. This forward-looking approach eases grid strain, ensures long-term energy availability, and establishes a more resilient, sustainable, and economically sound future for large-scale data operations.

About Us

Tobe Energy is a pioneering clean technology company dedicated to accelerating the global adoption of green hydrogen. Combining cutting-edge engineering with a fresh approach to electrolysis, we've developed a breakthrough, novel approach to electrolysis that eliminates waste heat and dramatically reduces production costs.

Who We Are

We are a team of innovators, engineers, and energy industry veterans committed to pushing the boundaries of what's possible in sustainable energy. Drawing on deep expertise across chemical engineering, power electronics, and materials science, we unite around a single goal: to make hydrogen a truly accessible, zero-emission energy source.

What We Do

At Tobe Energy, we create advanced electrolyzers that deliver industry-leading efficiency at a fraction of the cost of conventional systems. By integrating our electrolyzers as a core component of the electrical circuit—much like an LED replaces an incandescent bulb—we have reimaged hydrogen production to better serve rapidly evolving markets, from industrial manufacturing to AI data centers.

Our Mission

Our mission is to transform hydrogen from a specialized fuel into a practical, affordable, and clean cornerstone of the global energy system. We aim to enable businesses, communities, and entire industries to power their growth with reliable, zero-emission hydrogen—reducing carbon footprints while strengthening energy independence.

Our Vision

We envision a world where green hydrogen supports sustainable economic development, stabilizes grids, and fuels the most energy-intensive sectors without compromising affordability or the environment. By pioneering efficient, scalable hydrogen solutions, we seek to inspire a new era of clean energy innovation—propelling us toward a healthier planet and a more resilient future.