Why Fearing AI's Energy Cost is a Myopic View of Our Future

Dr. Lane Freeman

The Morality of Progress: Why We Can't Unplug the Future

I hear it often now—from cautious educators to concerned citizens: "Using AI is immoral." This pushback isn't usually about fear of a Terminator scenario, but about the machine's appetite. Critics point to the staggering energy consumption of data centers and argue that by adopting AI, we are accelerating environmental collapse. It is a valid fear, and as stewards of our world, it is one we should not dismiss lightly.

In fact, communities are right to push back if they feel the industry is taking advantage of their resources. This friction is productive: strict accountability forces tech giants to negotiate, finding creative ways to directly benefit local economies and infrastructure in exchange for housing their data centers. Furthermore, this pressure acts as a catalyst for radical innovation, driving developers to look toward solutions that sound like science fiction—such as hosting data centers in the cold vacuum of space—but are rapidly becoming our reality

However, viewing AI solely through the lens of its current power consumption is a dangerous myopia. It is akin to condemning the first steam engine for the coal it burned, without foreseeing the global transportation revolution it would birth. We are judging a transformative technology by its expensive infancy, rather than its potential to mature.

The truth is that we cannot starve the technology that will likely invent the solution to energy efficiencies and cures to diseases (University of Cincinnati Online, n.d.), elevating the quality of life to the globe. To retreat from AI now is to choose stagnation over solution. We must embrace this technology not just for workforce readiness, but because it is the only tool powerful enough to unlock the physics of cold fusion (Degrave et al., 2022), revolutionize battery storage (Baker, 2024), and secure the future of democratic values on the global stage.

The Energy Paradox: Spending Power to Save the Planet

We must be honest about the power "ledger": AI is hungry. Current estimates suggest that data centers could consume more than 1,000 TWh of electricity by 2026 – more than double the 2022 level and roughly equivalent to Japan's entire electricity consumption (International Energy Agency, 2024). To the environmentalist, this looks like gluttony; to the historian, it looks like a startup cost.

Every major leap in human quality of life has required an initial, often inefficient, spike in energy consumption. The first steam engines of the Industrial Revolution were woefully inefficient, belching black smoke to produce a fraction of the power a modern turbine generates. Yet, that dirty, expensive "startup phase" bought us the thermodynamics and engineering prowess that eventually lifted billions out of subsistence poverty. We are in a similar moment now. We are spending a significant amount of energy today to train models that will likely invent the efficiencies of tomorrow. To cut this investment short is akin to stopping the construction of a hydroelectric dam because the bulldozers are burning too much diesel—it misses the ocean of clean power waiting on the other side.

The Cost of Amusement vs. The Price of Progress

Think of your daily time online as having a 'digital energy budget'—the electricity used by everyday activities like streaming, scrolling, or video calls. When we scrutinize AI's footprint, we rarely hold it up against the mirror of our own digital leisure. Here is how many typical, standard AI questions (like asking a chatbot to draft a lesson plan) could be powered by the energy we spend on entertainment.

Activity	Duration	Approx. Electricity Used	Number of Typical AI Prompts	Source
Watching Netflix in HD	1 hour	About 100 watt-hours	Around 330	(Warp News, 2025)
Scrolling Facebook/TikTok	1 hour	About 100–120 watt-hours	Around 350–400	(Holter, 2025)
Video call (Zoom)	1 hour	About 200 watt-hours	Around 670	(Purdue University, 2021)
Fully charging smartphone	One full charge	About 18 watt-hours	Around 60	(Surfshark, 2025)
Cloud gaming session	1 hour	About 500 watt-hours	Around 1,670	(Muckypaws, 2025)

Note: These numbers are approximate full-lifecycle estimates (your device + network + data centers) based on recent analyses. A typical short text-based AI question uses roughly 0.3 watt-hours of electricity.

The point is simple: many things we do every day without a second thought use as much (or far more) energy as asking dozens, hundreds, or even thousands of AI questions. It helps put things in everyday perspective — what we already accept as

normal can often match or exceed the cost of using AI productively. While the energy spent on streaming is used solely to entertain us, the energy "spent" on AI is actively working to solve real-world problems and improve the quality of human life.

The "Water Wars" Myth

Critics also frequently point to the "thirst" of AI, citing the millions of gallons of water used to cool data centers. While this concern is valid, it often lacks context. In standard evaporative cooling systems, roughly 80% of the water withdrawn evaporates—returning to the atmosphere as part of the natural cycle—while the remainder is typically treated and discharged (Environmental and Energy Study Institute, 2025).

Context is key: this consumption pales in comparison to the agricultural sector, which accounts for the vast majority of global water withdrawal. Furthermore, the industry is rapidly pivoting to "dry cooling" and recycled water systems that drastically reduce freshwater dependency (Microsoft, 2025). Most importantly, this is a temporary terrestrial problem. As we transition to orbital compute, we eliminate the need for Earth-based cooling entirely, trading water towers for the passive radiative cooling of deep space.

The "Holy Grail" of Energy: Fusion and Next-Gen Batteries

If the energy deficit is the short-term cost, the long-term payoff is the potential for infinite, clean power. We are currently in a race to stabilize nuclear fusion—the same process that powers the sun. For decades, this "holy grail" of energy has remained out of reach because human calculations cannot react fast enough to control the superheated plasma inside a reactor. However, AI has changed the physics of the possible.

In a landmark breakthrough, researchers used Deep Reinforcement Learning to autonomously control the magnetic coils inside a tokamak reactor, successfully maintaining the plasma's stability in real-time (Degrave et al., 2022). This suggests that AI is arguably the *only* tool capable of managing the extreme complexity required to bring fusion energy—and its promise of limitless, carbon-free power—online.

Similarly, we are using AI to break our reliance on environmentally taxing lithium mining. Microsoft recently utilized high-performance computing and AI to screen over 32 million potential inorganic materials, identifying a new solid-state electrolyte that uses approximately 70% less lithium than current batteries (Baker, 2024). This discovery, which would have taken human chemists decades of trial and error, was accomplished in weeks.

We must reframe our view of AI's consumption. We are not just "burning" electricity; we are investing it. We are effectively spending energy now to discover the materials and physics required to produce infinite, clean energy later.

The Space-Based Solution: A 3-Year Horizon

Critics often argue that AI's energy demands are unsustainable, but this view assumes data centers must remain confined to Earth. Emerging developments suggest we could shift significant high-power AI compute to orbit within the next three years, marking the beginning of meaningful orbital deployment.

This is no longer science fiction—it's an active engineering push. Starcloud (formerly Lumen Orbit) launched its first prototype satellite, Starcloud-1, in November 2025, successfully training AI models and running large language models on an NVIDIA H100 GPU in orbit (Y Combinator, 2025).

In parallel, SpaceX filed with the FCC in January 2026 to authorize up to one million solar-powered satellites explicitly designed as an orbital data center system to support AI workloads, leveraging dramatically reduced launch costs.

The EU-funded ASCEND project, led by Thales Alenia Space, has also confirmed the technical and environmental feasibility of space-based data centers through detailed studies.

Orbital compute directly tackles the AI era's core challenges: energy supply and heat dissipation. In optimal orbits, solar panels can access near-continuous sunlight, producing up to 8 times more power than equivalent terrestrial panels while generating zero ongoing carbon emissions on Earth.

The vacuum of space enables passive radiative cooling, allowing heat to dissipate directly into the extreme cold (~-270°C effective sink) without energy-intensive chillers or water consumption.

By moving demanding AI workloads upward, we can reframe the energy challenge as an opportunity for abundant, clean, and scalable compute.

The Human Cost: Is it Immoral *Not* to Use It?

We must pivot the argument away from a simple calculation of watts and carbon. If we acknowledge that AI is currently the most powerful tool we have for preserving human life, the moral question flips. If AI can cure disease or secure our energy infrastructure, is it not immoral *to delay it*? When we slow down AI development to save energy, we are not just saving kilowatts; we are potentially spending lives that could have been saved by faster medical breakthroughs.

Consider the fight against cancer. Historically, treatment breakthroughs took decades; AI has compressed this timeline into weeks. As of early 2026, oncology forecasts predict AI is becoming a core clinical tool, personalizing treatments and boosting survival rates through real-time diagnostics (Dana-Farber Cancer Institute, 2026b). Researchers are already using generative models to design "protein keys" that train a patient's own immune cells to attack specific tumors—work that creates personalized "missiles" for the immune system in record time (Technical University of Denmark, 2025). To unplug this capability is to deny patients a fighting chance.

Furthermore, AI is opening a new front against the "silent pandemic" of antimicrobial resistance. In February 2026, researchers at MIT unveiled a generative AI framework that accelerates antibiotic discovery, designing novel compounds in weeks to combat drug-resistant infections that threaten millions of lives annually (MIT News, 2026). While traditional methods fail to keep pace with superbugs, AI offers a high-throughput pipeline to safeguard global health.

Finally, AI acts as a shield for our collective safety. In the nuclear energy sector—critical for our green transition—AI is now being used to monitor reactor safety with superhuman vigilance. The Argonne National Laboratory is expanding its use of AI to detect faults early and accelerate licensing for advanced reactors, ensuring that our path to clean energy is not only efficient but fail-safe (Argonne National Laboratory, 2026). From discovering new antibiotics to keeping the lights on, AI is the silent guardian of our modern quality of life.

The Geopolitical Reality: Democracy at Risk

While we debate the ethics of a gigawatt, our global competitors are aggressively securing terawatts. The uncomfortable truth is that the development of artificial intelligence is an arms race, and if America pauses out of environmental guilt, we do not stop the race; we simply forfeit it. We must recognize that unilateral disarmament in the digital age does not lead to a greener planet—it leads to a darker geopolitical future.

Our primary competitor, China, is not debating the morality of AI energy consumption; they are building the infrastructure to dominate it. As of early 2026, China is leading the world's most aggressive nuclear expansion, with 58 reactors currently operable and another 33 under active construction (World Nuclear Association, 2026). This is part of a broader strategy to add over 3.4 terawatts of electricity generation capacity by 2030—roughly six times the projected growth of the United States (Bloomberg, 2026a).

This energy surplus is not just for residential lights; it is explicitly weaponized for AI dominance. In January 2026, Alibaba Group formalized this strategy by launching a joint venture with China National Nuclear Power, securing dedicated nuclear baseload

specifically to power its AI data clusters (Bloomberg, 2026b). If we restrict our own development while they accelerate theirs, we hand the keys of the future to a regime that views energy as a strategic asset rather than a utility.

The stakes go far beyond economic dominance. If an authoritarian regime leads the development of general artificial intelligence, they will earn the right to define the rules of digital warfare, global surveillance, and information control. We are already seeing the export of "digital authoritarianism," where AI is used to monitor citizens and suppress dissent; indeed, Freedom House's most recent report ranks China's internet freedom at a dismal 9/100, the worst globally (Freedom House, 2024). America must lead this revolution not simply to win market share, but to ensure that the most powerful technology in human history is architected to protect democratic values, privacy, and individual liberty, rather than to subvert them.

Conclusion: The Steward's Responsibility

Ultimately, the question is not *whether* we should use AI, but *how* we steward it. We must be wise stewards of our environment, yes, but we must also be wise stewards of our human potential. There is a tangible danger in the classroom today: if we allow our younger population to "opt out" of AI on moral grounds, we are not protecting them; we are handicapping them.

We risk creating a devastating new digital divide. Properly engaged, AI has the power to be the greatest equalizer in educational history. Recent data supports this: AI-driven personalization has been shown to boost course completion rates by up to 70% (Faculty Focus, 2026), while the OECD's *Digital Education Outlook 2026* warns that with 86% of students globally now using AI tools, those who avoid them are rapidly falling behind their peers (OECD, 2026). However, if we encourage avoidance, we turn this tool of equity into a wedge of disparity.

For our education system, "opting out" is not a virtue—it is a vulnerability. We cannot afford to send a generation into the future unprepared to wield the very tools that will define it. Our responsibility is not to reject the machine, but to master it—teaching students to navigate its biases, verify its outputs, and direct it toward human flourishing. We must guide AI toward the benevolent goals we cherish: curing disease, solving our energy crisis, and securing our democracy. The future belongs to those who show up to build it.

AI Transparency Statement: *The core arguments, opinions, and strategic outlook presented in this editorial are the original thoughts of Dr. Lane Freeman. Artificial Intelligence tools, specifically Google Gemini and xAI's Grok, were utilized to research facts, locate citations, and draft the initial text to consolidate these ideas into a cohesive narrative. OpenAI's ChatGPT was*

subsequently employed to verify sources and refine the editorial flow. All final content has been reviewed and approved by the author.

References

Argonne National Laboratory. (2026, February 4). *Argonne helps nuclear industry embrace AI to speed up licensing and reduce delays*. https://www.anl.gov/article/argonne-helps-nuclear-industry-embrace-ai-to-speed-up-licensing-and-reduce-delays

Baker, N. (2024, January 9). *Unlocking a new era for scientific discovery with AI: How Microsoft's AI screened over 32 million candidates to find a better battery*. Microsoft Azure Quantum Blog. https://azure.microsoft.com/en-us/blog/quantum/2024/01/09/unlocking-a-new-era-for-scientific-discovery-with-ai-how-microsofts-ai-screened-over-32-million-candidates-to-find-a-better-battery/

Bloomberg. (2026a, February 4). *China ramps up energy boom flagged by Musk as key to AI race*. https://www.bloomberg.com/news/articles/2026-02-04/china-ramps-up-energy-boom-flagged-by-musk-as-key-to-ai-race

Bloomberg. (2026b, January 21). *Alibaba forms power generation JV with China nuclear partner for AI data centers*. https://www.bloomberg.com/news/articles/2026-01-21/alibaba-forms-power-generation-jv-with-china-nuclear-partner

CNBC. (2025, December 10). Nvidia-backed Starcloud trains first AI model in space, orbital data centers. https://www.cnbc.com/2025/12/10/nvidia-backed-starcloud-trains-first-ai-model-in-space-orbital-data-centers.html

Dana-Farber Cancer Institute. (2026a, January 15). Dana-Farber researchers create experimental AI-based oncologist's assistant. Dana-Farber Blog. https://blog.dana-farber.org/insight/2026/01/dana-farber-researchers-create-experimental-ai-based-oncologists-assistant

Dana-Farber Cancer Institute. (2026b, January 20). *Ten cancer-related breakthroughs giving us hope in 2026*. Dana-Farber Blog. https://blog.dana-farber.org/insight/2026/01/ten-cancer-related-breakthroughs-giving-us-hope-in-2026

Data Center Dynamics. (2025, March 3). Lumen Orbit rebrands to Starcloud, raises another $10m for in-orbit data centers. https://www.datacenterdynamics.com/en/news/lumen-orbit-rebrands-to-starcloud-raises-another-10m-for-in-orbit-data-centers

Degrave, J., Felici, F., Buchli, J., Neunert, M., Tracey, B., Carpanese, F., ... & Hassabis, D. (2022). Magnetic control of tokamak plasmas through deep reinforcement learning. *Nature*, *602*(7897), 414–419. https://doi.org/10.1038/s41586-021-04301-9

Environmental and Energy Study Institute. (2025, June 25). *Data centers and water consumption*. https://www.eesi.org/articles/view/data-centers-and-water-consumption

Faculty Focus. (2026, January 21). *Designing the 2026 classroom: Emerging learning trends in an AI-powered education system*. https://www.facultyfocus.com/articles/teaching-with-technology-articles/designing-the-2026-classroom-emerging-learning-trends-in-an-ai-powered-education-system/

Federal Communications Commission. (2026, February). DA 26-113: Space Bureau accepts for filing SpaceX's application for orbital data centers. https://docs.fcc.gov/public/attachments/DA-26-113A1.pdf

Freedom House. (2024, October 16). *Freedom on the net 2024: The struggle for trust online*. https://freedomhouse.org/country/china/freedom-net/2024

Google Research. (2025, November 4). Exploring a space-based, scalable AI infrastructure system design. https://research.google/blog/exploring-a-space-based-scalable-ai-infrastructure-system-design

Holter, A. (2025, May 24). *Why your ChatGPT prompt uses half the energy of a TikTok video*. Adam Holter. https://adam.holter.com/why-your-chatgpt-prompt-uses-half-the-energy-of-a-tiktok-video/

International Energy Agency. (2024). Electricity 2024: Analysis and forecast to 2026. https://www.iea.org/reports/electricity-2024

Microsoft. (2025). *2025 environmental sustainability report*. https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/msc/doc

uments/presentations/CSR/2025-Microsoft-Environmental-Sustainability-Report.pdf

MIT News. (2026, February 4). *3 questions: Using AI to accelerate the discovery and design of therapeutic drugs*. https://news.mit.edu/2026/3-questions-using-ai-to-accelerate-discovery-design-therapeutic-drugs-0204

Muckypaws. (2025, April 21). *Is AI really the energy villain?* https://muckypaws.com/2025/04/21/is-ai-really-the-energy-villain/

NVIDIA Blog. (2025, October 15). How Starcloud is bringing data centers to outer space. https://blogs.nvidia.com/blog/starcloud

OECD. (2026, January 19). *OECD Digital Education Outlook 2026: Governing AI for learners*. https://www.oecd.org/en/publications/oecd-digital-education-outlook-2026_062a7394-en.html

Purdue University. (2021, January 14). *Turn off that camera during virtual meetings, environmental study says*. https://www.purdue.edu/newsroom/archive/releases/2021/Q1/turn-off-that-camera-during-virtual-meetings,-environmental-study-says.html

Reuters. (2026, January 31). SpaceX seeks FCC nod for solar-powered satellite data centers for AI. https://www.reuters.com/business/aerospace-defense/spacex-seeks-fcc-nod-solar-powered-satellite-data-centers-ai-2026-01-31

Starcloud Inc. (2024, September). Why we should train AI in space [White paper]. https://starcloudinc.github.io/wp.pdf (Original white paper from pre-rebrand era, updated hosting)

Surfshark. (2025, June 3). *How much energy does generative AI use?* https://surfshark.com/research/chart/chatbots-energy-consumption

Technical University of Denmark. (2025, July 24). *AI turns immune cells into precision cancer killers—in just weeks*. ScienceDaily. https://www.sciencedaily.com/releases/2025/07/250724232416.htm

Thales Alenia Space. (2024, June 27). Thales Alenia Space reveals results of ASCEND feasibility study on space data centers. https://www.thalesaleniaspace.com/en/press-releases/thales-alenia-space-reveals-results-ascend-feasibility-study-space-data-centers-0

University of Cincinnati Online. (n.d.). *9 Benefits of artificial intelligence (AI) in 2026*. Retrieved February 6, 2026, from https://www.online.uc.edu/blog/artificial-intelligence-ai-benefits.html

Warp News. (2025, May 24). *ChatGPT uses less energy than an hour of Netflix*. https://www.warpnews.org/artificial-intelligence/chatgpt-uses-less-energy-than-an-hour-of-netflix/

World Nuclear Association. (2026, January). *Nuclear power in China*. https://world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power.aspx

Y Combinator. (2025, November 13). *Inside the startup launching AI data centers into space* [Video]. YouTube. https://www.youtube.com/watch?v=hKw6cRKcqzY

Y Combinator. (n.d.). Starcloud: Data centers in space. https://www.ycombinator.com/companies/starcloud