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NEVER COOL ENOUGH: LEGAL AND POLICY CHALLENGES TO KEEPING DATA CENTERS AND COMMUNITIES EMPOWERED IN A WARMING WORLD

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In a rapidly evolving world, artificial intelligence (AI) and cryptocurrency are two technologies at the forefront of the future. Although these developments promise many potential societal benefits and revenue, they come with a price. The data processing required to operate these new technologies demands a large amount of energy, using water to cool the systems and enable them to run without overheating. With such high water and energy demands, the benefits from these technological advancements come at a steep environmental cost. Despite the negative environmental impacts of these data centers, the Trump Administration continues to roll back environmental protections. The social impacts from data centers are being felt from communities bearing the economic costs and everyday impacts. This Essay examines the benefits, environment costs, community impacts, and potential policy solutions to the increasing expansion of data centers.

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INTRODUCTION

Society has undergone many transformative eras in communication: from the manuscript age to print, shifting then to digital, and now to an intelligence-driven era.[1] This new age has brought about a dominance of technology companies who not only impact daily lives, but also play a major role in the global economy. Technology companies that deal in artificial intelligence (AI), cryptocurrency, and social media are among the world's most valuable companies—a major shift from just a few decades ago when the largest companies in the world were extraction companies like Texaco and Standard Oil.[2]

The COVID-19 pandemic accelerated the digitalization of society, which was already well underway with our existence increasingly online.[3] As digitalization has flourished, so have the capabilities of AI and cryptocurrency. Technology companies today are experiencing their own version of a "gold rush,"

[1] Jonathan Haidt, *Foreword* to ALISON TAYLOR, HIGHER GROUND: HOW BUSINESS CAN DO THE RIGHT THING IN A TURBULENT WORLD, at ix (2024).

[2] Tom Chapman, *The World's Most Valuable Companies in 1980, 2000 and Today*, BUS. CHIEF (Sep. 18, 2023), https://businesschief.com/technology-and-ai/worlds-most-valuable-companies-in-history [https://perma.cc/MU56-PD3E].

[3] Haidt, *supra* note 1, at ix.

as each one seeks to capitalize on the potential gains from AI[4] and cryptocurrency.[5]

AI is a term that is not always clearly defined and is often conflated with various types of machine learning, but it largely "refers to computer systems that can perform complex tasks normally done by human-reasoning, decision making, creating."[6] Cryptocurrency refers to a medium of exchange created and stored electronically on the blockchain, using "cryptographic techniques and its protocol to verify the transfer of funds" and an algorithm "to control the creation of monetary units."[7]

This new intelligence-led era is offering society revolutionary advancements at record speed. It is allowing myriads of industries the ability to increase efficiencies, innovate, and problem-solve.[8] For example, AI is already helping doctors diagnose patients with heart disease[9] and cancer.[10] According to the U.S. Department of Energy, AI is also helping improve energy access by supporting grid modernization, accelerating innovation, and promoting energy efficiency.[11] AI is allowing the general population to utilize a wide range of applications—from virtual

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[4] Queenie Wong, *A New Gold Rush? How AI Is Transforming San Francisco*, L.A. TIMES (Aug. 10, 2025, at 03:00 PT), https://www.latimes.com/business/story/2025-08-10/how-ai-is-changing-sf [https://perma.cc/A2R4-JVYB].

[5] Joe Light, *Everyone Is Along for the Crypto Ride Now, Even if It Ends Badly*, BARRON'S (Aug. 7, 2025, at 16:12 EDT), https://www.barrons.com/articles/bitcoin-crypto-washington-economy-financial-system-c072e362 [https://perma.cc/6F75-4LCV] ("Trump administration officials say cryptocurrencies and blockchains could drive innovations that help investors and propel the U.S. economy.").

[6] Kelley May, *What Is Artificial Intelligence?*, NASA (May 13, 2024), https://www.nasa.gov/what-is-artificial-intelligence/ [https://perma.cc/6RXE-YXDV].

[7] *Making Sense of Bitcoin, Cryptocurrency and Blockchain*, PWC (Apr. 11, 2024), https://www.pwc.com/us/en/industries/financial-services/fintech/bitcoin-blockchain-cryptocurrency.html [https://perma.cc/XB9U-8E7X] (detailing how the blockchain functions: first, someone requests a transaction; second, the transaction is broadcast to a peer-to-peer network; third, cryptographic techniques are employed to validate of the user's status using algorithms; fourth, the verified transaction is combined with others to create a new block of data; and finally, the new block is added to the existing blockchain).

[8] *9 Benefits of Artificial Intelligence (AI) in 2026*, UNIV. CINCINNATI, https://online.uc.edu/blog/artificial-intelligence-ai-benefits/ [https://perma.cc/GV8B-P4P3] (last visited May 10, 2026).

[9] Andrew Gregory, *Doctors Develop AI Stethoscope That Can Detect Major Heart Conditions in 15 Seconds*, THE GUARDIAN (Aug. 30, 2025, at 05:15 EDT), https://www.theguardian.com/technology/2025/aug/30/doctors-ai-stethoscope-heart-disease-london [https://perma.cc/7CPZ-8N8E].

[10] Ekaterina Pesheva, *A New Artificial Intelligence Tool for Cancer*, HARVARD MED. SCH. (Sep. 4, 2024), https://hms.harvard.edu/news/new-artificial-intelligence-tool-cancer [https://perma.cc/5653-U9K6].

[11] *Artificial Intelligence for Energy*, U.S. DEP'T OF ENERGY, https://www.energy.gov/topics/artificial-intelligence-energy [https://perma.cc/P32J-9DAJ] (last visited Jan. 24, 2026).

relationships[12] to providing deep subject-matter expertise at their fingertips.[13] Similarly, proponents of cryptocurrency state the emerging technology will be able to decentralize the financial industry and expand inclusion for individuals without access to formal identification.[14] Proponents of cryptocurrency further state that the digital currency offers asset holders protection from inflation as it is not tied to the mainstream financial system.[15]

The monetary gains from technology advancements are also a key driver of AI, as the benefits will significantly impact a multitude of industry sectors.[16] "Banking, high tech, and life sciences are among the industries that could see the biggest impact as a percentage of their revenues from generative AI."[17] Experts at McKinsey estimate that AI could deliver between $2.6 trillion and $4.4 trillion in value to the economy in areas such as customer service, research, and software engineering.[18]

These new technological advancements show great promise but also pose significant societal risks. Frequently, the discussion around adverse consequences focuses on the direct impacts of technology products on consumers. For AI, that often includes impacts such as unintentional bias, privacy violations, cybersecurity

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[12] Neil Sahota, *How AI Companions Are Redefining Human Relationships in the Digital Age*, FORBES (July 18, 2024, at 10:00 EDT), https://www.forbes.com/sites/neilsahota/2024/07/18/how-ai-companions-are-redefining-human-relationships-in-the-digital-age/ [https://perma.cc/RL6W-A7N8].

[13] Angela Yang & Jasmine Cui, *OpenAI Releases GPT-5, Calling it a 'Team of Ph.D. Level Experts in Your Pocket,'* NBC NEWS (Aug. 7, 2025, at 10:00 PDT), https://www.nbcnews.com/tech/tech-news/openai-releases-chatgpt-5-rcna223265 [https://perma.cc/PUS4-34S7].

[14] *Crypto and Financial Inclusion*, COINBASE: COINBASE INST., https://www.coinbase.com/public-policy/advocacy/documents/crypto-and-financial-inclusion [https://perma.cc/63ZE-VWTP] (last visited May 10, 2026).

[15] *See What Is Inflation?*, COINBASE, https://www.coinbase.com/learn/crypto-basics/what-is-inflation [https://perma.cc/YB5F-F6AH] (last visited May 10, 2026) ("One attribute that has made cryptocurrencies—particularly Bitcoin—so appealing to investors is the idea that they're more resistant to inflation than fiat currencies like the U.S. dollar.").

[16] MICHAEL CHUI, ERIC HAZAN, ROGER ROBERTS, ALEX SINGLA, KATE SMAJE ET AL., MCKINSEY & CO., THE ECONOMIC POTENTIAL OF GENERATIVE AI: THE NEXT PRODUCTIVITY FRONTIER 3 (2023), https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier [https://perma.cc/UT7K-6XD5].

[17] *Id.*

[18] *Id.*

concerns,[19] misinformation proliferation,[20] workforce replacement,[21] and copyright infringement.[22] For cryptocurrency, that has been linked to potential adverse social impacts including attracting vulnerable investors,[23] terrorism,[24] and facilitating payments for illicit activities.[25] What can be left out of the discussions are the potential adverse social and environmental impacts from the operations underlying these technological advancements.

The largest operational impacts of AI and cryptocurrency stem from data storage and use, as these technologies request vast amounts of data processing.[26]

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[19] BRIAN BOTHWELL & KEVIN WALSH, U.S. GOV'T ACCOUNTABILITY OFF., GAO-25-107172, TECHNOLOGY ASSESSMENT: ARTIFICIAL INTELLIGENCE: GENERATIVE AI'S ENVIRONMENTAL AND HUMAN EFFECTS 21–22 (2025).

[20] NICHOLAS DUFOUR, ARKANATH PATHAK, POUYA SAMANGOUEI, NIKKI HARIRI, SHASHI DESHETTI ET AL., ARXIV, AMMEBA: A LARGE-SCALE SURVEY AND DATASET OF MEDIA-BASED MISINFORMATION *IN-THE-WILD* 1–2 (2024), https://arxiv.org/pdf/2405.11697 [https://perma.cc/EVR7-RQQH] (finding that "fact check misinformation claims dramatically increased" in spring 2023 in association with the advent of AI).

[21] Atul Kumar, *Why AI Is Replacing Some Jobs Faster Than Others*, WORLD ECON. F. (Aug. 12, 2025), https://www.weforum.org/stories/2025/08/ai-jobs-replacement-data-careers/ [https://perma.cc/7WKG-BVVB] (discussing fears related to AI replacing workers, and highlighting the jobs being hit the hardest as those in software development, customer support, and finance).

[22] Gil Appel, Juliana Neelbauer & David A. Schweidel, *Generative AI Has an Intellectual Property Problem*, HARVARD BUS. REV.: INTELL. PROP. (Apr. 7, 2023), https://hbr.org/2023/04/generative-ai-has-an-intellectual-property-problem [https://perma.cc/YYC2-ZBPC] ("Though generative AI may be new to the market, existing laws have significant implications for its use. . . . There are infringement and rights of use issues, uncertainty about ownership of AI-generated works, and questions about unlicensed content in training data and whether users should be able to prompt these tools with direct reference other creators' copyrighted and trademarked works by name without their permission.").

[23] *Crypto Economy—A New Social Model?*, SANTANDER, https://www.santander.com/en/press-room/insights/crypto-economy-a-new-social-model [https://perma.cc/Y3ZU-7V34] (last visited May 10, 2026).

[24] Anshu Siripurapu & Noah Berman, *The Crypto Question: Bitcoin, Digital Dollars, and the Future of Money*, COUNCIL ON FOREIGN RELS. (Jan. 17, 2024, at 13:00 PT), https://www.cfr.org/backgrounder/crypto-question-bitcoin-digital-dollars-and-future-money [https://perma.cc/WDP4-F892].

[25] Sean Foley, Jonathan R. Karlsen & Tālis J. Putniņš, *Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed Through Cryptocurrencies?*, 32 REV. FIN. STUD. 1798, 1800 (2019) (finding that "approximately one-quarter of all users (26%) and close to one-half of bitcoin transactions (46%) are associated with illegal activity").

[26] James O'Donnell & Casey Crownhart, *We Did the Math on AI's Energy Footprint. Here's the Story You Haven't Heard.*, MIT TECH. REV. (May 20, 2025), https://www.technologyreview.com/2025/05/20/1116327/ai-energy-usage-climate-footprint-big-tech/ [https://perma.cc/P7C4-462B]; *see* Mark Morey, Glenn McGrath & Hiroaki Minato, *Tracking Electricity Consumption from U.S. Cryptocurrency Mining Operations*, U.S. ENERGY INFO. ADMIN. (Feb. 1, 2024), https://www.eia.gov/todayinenergy/detail.php?id=61364 [https://perma.cc/7BJ2-RNT8].

Large technology companies and "crypto miners" operate and frequently own "data centers," or centralized facilities designed to house IT infrastructure.[27] "Large data centers[] contain at least 5,000 servers" and generate significant amounts of heat.[28] To keep the server at necessary temperatures, cooling systems engage energy to pump water, cool the air, and remove heat from the IT equipment.[29] It can be tough to distinguish AI's server needs from more traditional technology demands as these types of computing needs are increasingly comingling;[30] however, scientists are predicting that by 2028, AI will account for more than half of data centers' energy needs.[31]

It's not just the intensifying energy demands and usage—data centers also use a massive amount of water and contribute to community e-waste. A large data center can use, on a daily basis, up to 5 million gallons of water per day.[32] Servers and GPUs—the backbone of data center operations—are typically replaced every 2–5 years, generating millions of tons of obsolete equipment, over 80% of which

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[27] Mandy Deroche, *Managing the Growing Energy Demands of Datacenters and Crypto Mining*, EARTHJUSTICE (Dec. 20, 2024), https://earthjustice.org/experts/mandy-deroche/managing-the-growing-energy-demands-of-datacenters-and-crypto-mining [https://perma.cc/2BCX-C2E8]; *see, e.g.*, *AWS Data Centers*, AWS, https://aws.amazon.com/trust-center/data-center/ [https://perma.cc/L9T9-LQZK] (last visited May 11, 2026); *Cloud Locations*, GOOGLE CLOUD, https://cloud.google.com/about/locations/ [https://perma.cc/2QEM-UYH7] (last visited May 11, 2026); *Microsoft Datacenters: Illuminating the Unseen Power of the Cloud*, MICROSOFT, https://datacenters.microsoft.com/ [https://perma.cc/QR97-TJNE] (last visited May 11, 2026).

[28] BOTHWELL & WALSH, *supra* note 19, at 4.

[29] *Id.*

[30] *See, e.g.*, Arm Editorial Team, *From Commodity to Purpose-Built: Why AI Infrastructure Is Entering a New Era*, ARM NEWSROOM: BLOG (Feb. 10, 2026), https://newsroom.arm.com/blog/cloud-ai-is-purpose-built [https://perma.cc/3PG5-U6J7] ("In short, CPUs are becoming even more central to how AI infrastructure functions as a system. In a world where AI workloads must be continuously fed, coordinated, secured and scaled, general-purpose compute evolves from a standalone layer into the connective tissue that binds the entire AI platform together."); Nicholas Merizzi, Chris Thomas & Ed Burns, *The AI Infrastructure Reckoning: Optimizing Compute Strategy in the Age of Inference Economics*, *in* TECH TRENDS 2026, at 33, 36–37 (2025), https://www.deloitte.com/content/dam/insights/articles/2025/us188546_tt-26/pdf/DI_Tech-trends-2026.pdf [https://perma.cc/E9QG-FQXL] ("The evolution involves integrating multiple processor types within single systems: GPUs for parallel AI processing, CPUs for orchestration and traditional workloads, neural processing units for efficient inference, and tensor processing units for specific machine learning tasks. Server refreshes now include mixed CPU/GPU configurations.").

[31] Sila Ermut, *AI Energy Consumption Statistics*, AIMULTIPLE (Apr. 6, 2026), https://aimultiple.com/ai-energy-consumption [https://perma.cc/273X-E83E].

[32] Miguel Yañez-Barnuevo, *Data Centers and Water Consumption*, ENV'T & ENERGY STUDY INST. (June 25, 2025), https://www.eesi.org/articles/view/data-centers-and-water-consumption [https://perma.cc/C9K7-PW4A].

ends up discarded.[33] Environmental impacts are only being furthered by the current Trump Administration, which is dismantling many protections currently in place.[34]

I. INTELLIGENCE-LED TECHNOLOGY IS GAINING TRACTION

The innovation and efficiency gains associated with the intelligence-led era are key reminders of why this industry is gaining steam so quickly. We have seen that key industries like scientific research, medicine, energy management, research, finance, and many others are pushing forward in new avenues and at breakneck speed. We are digging into many of the implicit and explicit impacts of this new technological age, but it is important to understand what is underpinning this aggressive growth.

A. Scientific and Medical Breakthroughs

Scientific and medical experts are finding ways to engage AI to accelerate progress in understanding complex diseases and driving breakthroughs across scientific fields.[35] Researchers are developing algorithms that can generate new insights and concepts on their own.[36] AI-powered robots may soon perform surgeries themselves, reducing human error and improving patient outcomes.[37] Even the climate community is utilizing AI models for advancement. Scientists are using AI to understand the effects of climate change, advance technologies such as

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[33] Huilai Gu, *The Hidden Environmental Cost of Data Center Growth—Millions of Tons of E-Waste*, MEDIUM (Dec. 9, 2024), https://medium.com/@celions/the-hidden-environmental-cost-of-data-center-growth-millions-of-tons-of-e-waste-0bb4a18dbaa1 [https://perma.cc/B79L-HLM9]; *see also Topics: What Is a GPU and its Role in AI?*, GOOGLE CLOUD, https://cloud.google.com/discover/gpu-for-ai?hl=en [https://perma.cc/6E2U-AWP2] (last visited May 11, 2026) (defining Graphics Processing Unit (GPU) as "a specialized electronic circuit originally designed to speed up the creation of images and videos," and explaining how "its remarkable ability to perform vast numbers of calculations rapidly has led to its adoption in diverse fields, including artificial intelligence").

[34] *See* Michael Phillis, Alexa St. John & Matthew Daly, *'Trump's EPA' in 2025: A Fossil Fuel-Friendly Approach to Deregulation*, AP NEWS (Dec. 30, 2025, at 08:42 PDT), https://apnews.com/article/epa-trump-zeldin-fossil-fuels-transformation-1e9de2d2f9e1cba13922374478b463b1 [https://perma.cc/8T8R-2LKM].

[35] *See, e.g.*, Amanda Morris, *AI Identifies Key Gene Sets That Cause Complex Disease*, NW: NW NOW (June 9, 2025), https://news.northwestern.edu/stories/2025/06/ai-identifies-key-gene-sets-that-cause-complex-disease [https://perma.cc/N4DS-U3HH].

[36] Sara Frueh, *How AI Is Shaping Scientific Discovery*, NAT'L ACADS. OF SCI., ENG'G & MED. (Nov. 6, 2023), https://www.nationalacademies.org/news/2023/11/how-ai-is-shaping-scientific-discovery [https://perma.cc/UCB9-RN3V].

[37] *9 Benefits of Artificial Intelligence (AI) in 2026*, *supra* note 8.

carbon capture, and enhance grid optimization.[38] These industries are utilizing this technology to improve human health and scientific exploration, a key reason that this growth is not slowing down.

B. Autonomous Finance

Cryptocurrency, underpinned by blockchain and AI, is driving a new era of autonomous finance that is reshaping the financial system itself. Blockchain is providing the framework, ensuring transparency and enabling instant settlements without intermediaries, while AI serves as the intelligence, and executes trades in real time through autonomous agents.[39] The potential benefits of AI in finance allows for "the security, efficiency, and accessibility of cryptocurrency systems, while also enabling new avenues for innovation."[40]

C. Economic and Efficiency Boom

The efficiencies that AI affords businesses are leading to a large uptick in potential revenue gains, pushing investment. It's projected that AI could boost productivity and gross domestic product (GDP) by up to 1.5% by 2035.[41] According to the International Monetary Fund, AI is expected to impact "almost 40% of jobs around the world" and Goldman Sachs predicts AI will boost "global

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[38] *See, e.g.*, Jayme DeLoss, *AI Helping to Unravel Complexity of Climate, Weather and Land Use, Find Solutions to Climate Change*, COLO. STATE UNIV. (Aug. 31, 2023), https://source.colostate.edu/how-can-ai-help-in-climate-change/ [https://perma.cc/MN7J-VXRF] (describing a university research group using "machine learning to detect the impacts of climate change, predict weather and climate a few weeks to decades into the future, and explore the potential outcomes of hypothetical climate intervention strategies like geoengineering"); Rob Mitchum, *Researchers Generate a Carbon Capture Breakthrough Using AI, Physics and Supercomputers*, UIC TODAY (May 8, 2026, at 18:06 PT), https://today.uic.edu/researchers-generate-a-carbon-capture-breakthrough-using-ai-physics-and-supercomputers/ [https://perma.cc/DC2H-54XU] (describing a research team using AI to identify new materials for carbon capture technology); Adam Zewe, *Responding to the Climate Impact of Generative AI*, MIT NEWS (Sep. 30, 2025), https://news.mit.edu/2025/responding-to-generative-ai-climate-impact-0930 [https://perma.cc/TZH6-77XX] (discussing "some of the ways experts are working to reduce [AI's] carbon footprint").

[39] Roomy Khan, *Trillion-Dollar Fusion: AI and Crypto Rewiring Finance*, FORBES (Mar. 12, 2025, at 10:11 EDT), https://www.forbes.com/sites/roomykhan/2025/03/12/trillion-dollar-fusion-ai-and-crypto-rewiring-finance/ [https://perma.cc/AR9L-REJG].

[40] *AI and Cryptocurrency: A Match Made in Heaven?*, DATACENTERS.COM: CRYPTOCURRENCY (Sep. 22, 2023), https://www.datacenters.com/news/ai-and-cryptocurrency-a-match-made-in-heaven [https://perma.cc/3UCK-QB2G].

[41] Alexander Arnon, *The Projected Impact of Generative AI on Future Productivity Growth*, UNIV. PA.: PENN WHARTON BUDGET MODEL (Sep. 8, 2025), https://budgetmodel.wharton.upenn.edu/issues/2025/9/8/projected-impact-of-generative-ai-on-future-productivity-growth [https://perma.cc/2883-NZK3.

GDP by $7 trillion—or 7%—over 10 years."[42] We can see it in the daily life of many office workers in the United States, as nearly 40% of U.S. workers say they use AI in their work at least a few times a year.[43]

II. "DIGITAL POLLUTION" FROM DATA CENTER EXPANSION

The term "digital pollution" encompasses the physical impacts from the digital economy and world.[44] The environmental impacts of data centers go beyond carbon to include increases in water and energy consumption as well as waste generation from operations.[45] Similar to other types of pollution, digital pollution impacts the quality of life of the people and the communities nearest to the sites.

Data centers consume energy in the processing and storage of data, and use water in the cooling process. Close to half of the energy used by a data center is used to power infrastructure, while up to 40% is used for cooling.[46] The processing power required is significant—with one estimate indicating it could be the equivalent of supplying energy for up to 800,000 households,[47] and another indicating energy usage can equal the normal demands of a mid-sized city.[48] Water consumption is also

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[42] Dylan Walsh, *A New Look at the Economics of AI*, MIT MGMT.: SLOAN SCH. (Jan. 21, 2025), https://mitsloan.mit.edu/ideas-made-to-matter/a-new-look-economics-ai [https://perma.cc/DX7R-3VYJ].

[43] Ryan Pendell, *AI Use at Work Has Nearly Doubled in Two Years*, GALLUP (June 16, 2025), https://www.gallup.com/workplace/691643/work-nearly-doubled-two-years.aspx [https://perma.cc/L83V-3LG3].

[44] Arava Tsoury & Zohar Barnett-Itzhaki, *Exploring the Associations Between Socioeconomic and Demographic Factors and Literacy in Environmental and Digital Pollution*, SUSTAINABILITY, July 10, 2025, at 1, 1 ("Digital pollution encompasses various environmental impacts arising from digital technologies."); *see also AI Has an Environmental Problem. Here's What the World Can Do About That*, UNEP (Nov. 13, 2025), https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about [https://perma.cc/VPY9-NU4J] (explaining some of the physical impacts AI has on the environment).

[45] *Digital Sustainability as a Solution to Reduce Our Environmental Impact*, IBERDROLA, https://www.iberdrola.com/sustainability/digital-pollution [https://perma.cc/7N5P-QWMV] (last visited May 11, 2026); *The Environmental Cost of Data Centers*, NET ZERO INSIGHTS (Apr. 29, 2025), https://netzeroinsights.com/resources/data-centers-environmental-cost/ [https://perma.cc/R9KH-J4KH].

[46] ELEC. POWER RSCH. INST., POWERING INTELLIGENCE: ANALYZING ARTIFICIAL INTELLIGENCE AND DATA CENTER ENERGY CONSUMPTION 9 (2024), https://www.epri.com/research/products/000000003002028905 [https://perma.cc/X76R-GNXT]; *DOE Announces $40 Million for More Efficient Cooling for Data Centers*, U.S. DEP'T OF ENERGY (May 9, 2023), https://www.energy.gov/articles/doe-announces-40-million-more-efficient-cooling-data-centers [https://perma.cc/N5ZX-LMHV].

[47] ELEC. POWER RSCH. INST., *supra* note 46, at 6.

[48] Laila Kearney, *U.S. Public Power Sector Weighs Risks and Rewards of Data Center Customers*, REUTERS (Oct. 2, 2025), https://www.reuters.com/business/energy/us-public-power-

concerning, with one estimate indicating training an AI model could evaporate 5.4 million liters of water, including 700,000 liters of onsite water consumption.[49] A large data center can use 5 million gallons of freshwater per day, "equivalent to the water use of a town populated by 10,000 to 50,000 people."[50] While information on waste produced specifically by data centers is difficult to ascertain, we do know that e-waste as a whole is continuing to increase.[51] According to a UN report, we are on track to produce 82 million metric tons of e-waste by 2030.[52]

A. The Federal Government Is Incentivizing the Abandonment of Environmental Protections for AI Growth

1. Federal Environmental Permitting and Policy

The United States' data center regulation is evolving quickly at the federal level by undercutting the environmental permitting process. In 2025, the Trump Administration issued an executive order designed to remove the barriers to AI expansion.[53] The Administration iterated on the executive order by releasing an AI Action Plan ("Plan") organized under "three pillars: innovation, infrastructure, and international diplomacy and security."[54] As part of the infrastructure pillar, the Plan highlighted the importance of accelerating data center permitting and expansion to sustain AI growth.[55] To achieve speedy construction of AI infrastructure, the Plan's guidance includes a significant curtailing of regulatory permitting requirements under the National Environmental Policy Act (NEPA); the Clean Water Act; the Clean Air Act; and the Comprehensive Environmental Response, Compensation, and Liability Act.[56]

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sector-weighs-risks-rewards-data-center-customers-2025-10-02/ [https://perma.cc/K6PX-ZCL9].

[49] Pengfei Li, Jianyi Yang, Mohammad A. Islam & Shaolei Ren, *Making AI Less 'Thirsty,'* 68 COMMC'NS ACM, July 2025, at 54, 56.

[50] Yañez-Barnuevo, *supra* note 32.

[51] Press Release, UN Inst. for Training & Rsch., Global E-Waste Monitor 2024: Electronic Waste Rising Five Times Faster Than Documented E-Waste Recycling, https://unitar.org/about/news-stories/press/global-e-waste-monitor-2024-electronic-waste-rising-five-times-faster-documented-e-waste-recycling [https://perma.cc/LC9K-GX99] (last visited May 11, 2026).

[52] CORNELIS P. BALDÉ, RUEDIGER KUEHR, TALES YAMAMOTO, ROSIE MCDONALD, ELENA D'ANGELO ET AL., THE GLOBAL E-WASTE MONITOR 2024, at 18 (2d ed. 2024), https://ewastemonitor.info/wp-content/uploads/2024/12/GEM_2024_EN_11_NOV-web.pdf [https://perma.cc/DUY7-GEAV].

[53] Exec. Order No. 14179, 90 Fed. Reg. 8741, 8741 (Jan. 31, 2025).

[54] THE WHITE HOUSE, WINNING THE RACE: AMERICA'S AI ACTION PLAN 1 (2025), https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf [https://perma.cc/X4KT-9JYW].

[55] *Id.* at 14.

[56] *Id.* at 14–15.

The NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions, including decisions on permit applications.[57] Data centers can also be subject to NEPA review if using federal funding, using federal land, crossing federal lands, or requiring other federal permits.[58]

The Administration's current Plan proposes a categorical exclusion of NEPA reviews for data centers that would otherwise fall within its scope. Depending on the federal action, the NEPA requires different reviews: Categorical Exclusion determination, Environmental Assessment, or Environmental Impact Statement.[59] A Categorical Exclusion applies when an agency determines "the federal action normally does not have a significant effect on the human environment."[60] An Environmental Assessment applies when a Categorical Exclusion does not apply and there is no significant impact finding.[61] For federal actions with a significant environmental impact, an Environmental Impact Statement is required.[62] The Administration's new guidance is that a new categorical exception should be created "under NEPA to cover data center-related actions that normally do not have a significant effect on the environment."[63] Categorizing data centers as exempt from review would accelerate the project approval process for these sites by curtailing the environmental reviews data centers would otherwise be subject to.[64] Categorizing data centers as exempt might also curtail broader analysis of their effect on the human environment.[65]

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[57] *What Is the National Environmental Policy Act?*, U.S. ENV'T PROT. AGENCY (Apr. 11, 2025), https://www.epa.gov/nepa/what-national-environmental-policy-act [https://perma.cc/XA7A-TSDZ].

[58] COUNCIL ON ENV'T QUALITY, A CITIZEN'S GUIDE TO THE NEPA: HAVING YOUR VOICE HEARD 4 (2007), https://ceq.doe.gov/docs/get-involved/citizens_guide_dec07.pdf [https://perma.cc/F27J-JZT6]; *National Environmental Policy Act (NEPA)*, ACCELERATING RESTORATION, https://acceleratingrestoration.org/agencies/nepa/ [https://perma.cc/8Y7S-GZBR] (last visited May 11, 2026).

[59] *National Environmental Policy Act Review Process*, U.S. ENV'T PROT. AGENCY (Apr. 7, 2026), https://www.epa.gov/nepa/national-environmental-policy-act-review-process [https://perma.cc/LU86-5BF6].

[60] *Id.*

[61] *Id.* (explaining that the Environmental Assessment "determines whether or not a federal action has the potential to cause significant environmental effects" and generally "includes a brief discussion of . . . [t]he environmental impacts of the proposed action and alternatives").

[62] *Id.*

[63] THE WHITE HOUSE, *supra* note 54, at 14.

[64] *See* Matthew Daly, *House Backs Bill to Speed Permitting Reviews for New Energy and Infrastructure Projects*, AP NEWS (Dec. 18, 2025, at 13:18 PDT), https://apnews.com/article/nepa-energy-projects-environmental-review-speed-02fcdd02031a03f85f6d066c42ecc906 [https://perma.cc/3HMW-MFWN] (discussing the "bureaucratic bottleneck" created by the permitting processes required under the NEPA).

[65] Travis D. Jones, *Humans Long Ignored: Revisiting NEPA's Definition of "Human Environment" in the Era of Black Lives Matter*, 32 VILL. ENV'T L.J. 1, 2–7 (2021) (proposing that the NEPA's definition of "human environment" should be broadened to encompass these

2. Data Centers and Energy Policy

The Administration also issued Executive Order 14318 to provide economic support for AI energy infrastructure, while curtailing support for renewable energy sources. The order states that "Qualifying Projects" to support AI infrastructure may be eligible for "loans and loan guarantees, grants, tax incentives, and offtake agreements."[66] The order, however, limits this support to dispatchable energy sources such as: "natural gas turbines, coal power equipment, nuclear power equipment, geothermal power equipment, and any other dispatchable baseload energy sources, including electrical infrastructure (including backup power supply) constructed or otherwise used principally to serve a Data Center Project."[67]

A requirement for energy sources to be "dispatchable" refers to energy sources that can be brought online in a moment's notice to meet energy demand—traditionally, this has been associated with fossil fuels.[68] Renewable energy, in contrast, is traditionally classified as "intermittent" because it can be contingent on the time of day and weather.[69] Data centers require access to consistent energy access to meet the demands for constant data processing.[70] "[F]ossil fuels supply the majority (56%) of data center energy in the world, and are expected to meet 40% of new demand by the end of the decade."[71] In addition, to meet the growing demand, some utilities companies have announced plans to build fossil fuel facilities.[72] Companies like Meta are partnering with local utilities to build massive

adverse psychological and socio-economic considerations).

[66] Exec. Order No. 14318, 90 Fed. Reg. 35385, 35386 (July 28, 2025).

[67] *Id.* at 35385.

[68] *Understanding Dispatchable and Non-Dispatchable Generation Assets*, ARCUS POWER (Aug. 9, 2024), https://www.arcuspower.com/post/understanding-dispatchable-and-non-dispatchable-generation-assets [https://perma.cc/GDQ3-V2A9]; Gunther Glenk & Stefan Reichelstein, *Intermittent Versus Dispatchable Power Sources*, MIT: CLIMATE PORTAL (Sep. 10, 2021), https://climate.mit.edu/posts/intermittent-versus-dispatchable-power-sources [https://perma.cc/74VM-3CBG].

[69] *Understanding Dispatchable and Non-Dispatchable Generation Assets*, *supra* note 68; Glenk & Reichelstein, *supra* note 68.

[70] Karthik Ramachandran, Duncan Stewart, Kate Hardin & Gillian Crossan & Adriane Bucaille, *As Generative AI Asks for More Power, Data Centers Seek More Reliable, Cleaner Energy Solutions*, DELOITTE INSIGHTS (Nov. 19, 2024), https://www.deloitte.com/us/en/insights/industry/technology/technology-media-and-telecom-predictions/2025/genai-power-consumption-creates-need-for-more-sustainable-data-centers.html [https://perma.cc/4BPA-S43B].

[71] SALESFORCE, AI SUSTAINABILITY OUTLOOK: THE CHALLENGES, POTENTIAL, AND PATH FORWARD 4, https://www.salesforce.com/en-us/wp-content/uploads/sites/4/documents/company/sustainability/salesforce-ai-sustainability-outlook.pdf [https://perma.cc/KCE7-Y6EY] (last visited May 11, 2026).

[72] Zach Bright, *Southeast Utilities Have a 'Very Big Ask': More Gas*, E&E NEWS BY POLITICO (Jan. 22, 2024, at 06:56 EST), https://www.eenews.net/articles/southeast-utilities-have-a-very-big-ask-more-gas/ [https://perma.cc/2KYL-PRXS].

fossil fuel infrastructures to power AI.[73] For corporations, states, and other stakeholders looking to meet climate change commitments, the increased energy demand—combined with a renewable energy shortage—will likely lead to missed targets.[74]

In addition, analysts warn that 40% of AI data center projects could encounter "power bottlenecks in 2027, and three-quarters of [technology teams] may face energy constraints by 2030."[75] The challenges in managing AI-driven load are becoming increasingly apparent as the North American Electric Reliability Corporation issued an alert indicating the challenges it is having managing the electric load.[76] "The gap between AI demand and energy supply threatens delayed AI growth and innovation, higher costs, and power reliability disruptions."[77]

3. Data Centers and Water Policy

Executive Order 14318 also proposes to reevaluate data centers' permits issued under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Appropriation Act of 1899.[78] The modern Clean Water Act was passed in 1972 and "establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters."[79] Section 404 of the Clean Water Act regulates discharges of dredged or fill material into the waters of the United States.[80] The executive order directs the U.S. Army Corps of Engineers to evaluate the need for the 404 permits for data centers.[81]

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[73] *See, e.g.*, Delaney Nolan, *Meta Is Sinking $10 Billion Into Rural Louisiana to Build the Home of Its Wildest AI Aspirations, Setting the Template for the Nation's Grid Buildout*, FORTUNE (Aug. 24, 2025, at 06:00 ET), https://fortune.com/2025/08/24/meta-data-center-rural-louisiana-framework-ai-power-boom/ [https://perma.cc/Z8ZQ-QR9H] (detailing Meta's "project 'Hyperion' . . . a data center 'supercluster' that eventually could use the energy equivalent of 4 million homes and become the world's biggest data center project").

[74] Bright, *supra* note 72 (outlining how Georgia, North Carolina, and South Carolina have plans to bring new gas fuel plants which could derail the United States' national commitments).

[75] SALESFORCE, *supra* note 71, at 4.

[76] *NERC Issues Level 3 Alert, Reliability Focused on Large Load Challenges*, NERC (May 4, 2026), https://www.nerc.com/newsroom/nerc-issues-level-3-alert-reliability-guideline-focused-on-large-load-challenges [https://perma.cc/NC4L-494P].

[77] *Id.*

[78] Exec. Order No. 14318, 90 Fed. Reg. 35385, 35387 (July 28, 2025) (citing Clean Water Act § 404, 33 U.S.C. § 1344; Rivers and Harbors Appropriation Act of 1899 § 10, 33 U.S.C. § 403).

[79] *Summary of the Clean Water Act*, U.S. ENV'T PROT. AGENCY (May 22, 2025), https://www.epa.gov/laws-regulations/summary-clean-water-act [https://perma.cc/R8L5-JFDN].

[80] *Permit Program Under CWA Section 404*, U.S. ENV'T PROT. AGENCY (Feb. 26, 2025), https://www.epa.gov/cwa-404/permit-program-under-cwa-section-404 [https://perma.cc/P3WA-UA69].

[81] Exec. Order No. 14318, 90 Fed. Reg. at 35386–87.

Data centers are immensely water intensive, and without a permitting process the surrounding communities are left without a voice in the process. "Data centers' water usage depends on various factors, including location, climate, water availability, size, and IT rack chip densities."[82] According to a recent analysis, 40% of planned and existing U.S. data centers are located in areas classified as having "high" or "extremely high" water scarcity.[83] "In hotter climates, like in the southwest United States, data centers need to use more water to cool the building and equipment."[84] "AI data centers' freshwater demand could be as much as 1.7 trillion gallons (at the higher end) by 2027."[85] Data centers consume nearly 80% of the water they withdraw, needing to constantly draw in more fresh water to replace it.[86] "This can put additional strain on systems that support local communities and other industries, like agriculture, that rely on water."[87] A recently approved Utah data center is a microcosm of this challenge, as it risks lowering water levels of the Great Salt Lake and exposing toxic dust from lower water levels. The proponents of the project note they will comply with all environmental regulations.[88] Proponents of data center projects highlight their compliance with environmental laws; however, as the government increasingly repeals environmental regulation and permitting requirements, it is unclear the standards developers will hold themselves to.

The only legislative option in the United States currently—in the absence of federal policy to protect community interest in water resources—lies with states who are proposing water protection legislation.[89] For example, Arizona proposed a bill where part of the taxes collected from data centers would be used for projects directed toward water efficiency.[90] Texas passed Senate Bill 7 to help support

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[82] Yañez-Barnuevo, *supra* note 32.

[83] Dakin Campbell, *How Data Centers Are Deepening the Water Crisis*, BUS. INSIDER (June 24, 2025, at 16:42 EST), https://www.businessinsider.com/how-data-centers-are-deepening-the-water-crisis-2025-6 (on file with the Lewis & Clark Law Review).

[84] Yañez-Barnuevo, *supra* note 32.

[85] Ramachandran et al., *supra* note 70; Karen Hao, *AI Is Taking Water From the Desert*, THE ATLANTIC (Mar. 1, 2024), https://www.theatlantic.com/technology/archive/2024/03/ai-water-climate-microsoft/677602/ [https://perma.cc/5R3R-XRVH] ("[G]lobal AI demand could cause data centers to suck up 1.1 trillion to 1.7 trillion gallons of fresh water by 2027.").

[86] Li et al., *supra* note 49, at 55.

[87] SALESFORCE, *supra* note 71, at 5.

[88] Clare Duffy, *Why Utah Residents Are Protesting a Massive AI Data Center Project Backed by Kevin O'Leary*, CNN (May 9, 2026), https://www.cnn.com/2026/05/09/tech/ai-data-center-utah-kevin-oleary-opposition [https://perma.cc/WPN9-YMD5].

[89] Stratton P. Constantinides & Aaron Goldman, *Water Use in US Data Centers: Legal and Regulatory Risks*, NIXON PEABODY LLP (Sep. 5, 2025), https://www.nixonpeabody.com/insights/articles/2025/09/05/water-use-in-us-data-centers-legal-and-regulatory-risks [https://perma.cc/EP7X-LD3Y].

[90] H.B. 2893, 57th Leg., 1st Reg. Sess. (Ariz. 2025).

water efficiency and recovery likely due, at least in part, to an increase in water use from data centers.[91] Colorado went further, proposing tax and utility benefits to data center operators who became certified with a number of environmental stewardship practices.[92]

III. COMMUNITY IMPACTS FROM DATA CENTER EXPANSION

The social impacts of data centers are still emerging and not entirely certain; however, early signs are pointing to a multitude of adverse impacts in surrounding communities. Some of the most significant impacts of data centers include rising utility costs, minimal local job creation despite public subsidies, and public health concerns from noise and air pollution.

Communities are financing the cost of building the expanded energy capacity needed to power data centers.[93] Bloomberg reported that electricity costs in communities located near data centers have increased 267% in five years.[94] Local utilities and officials are struggling to balance the desire to be a leader in AI with rising utility costs, which have increased for some everyday consumers.[95] The new data center demand for energy is crashing into other electric grid challenges, including an aging infrastructure and demand for electric vehicles, which is further driving up energy prices.[96] The increases in energy costs impact the most vulnerable, who oftentimes face difficulties in relocating or absorbing the cost increases.[97]

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[91] S.B. 7, 89th Leg., Reg. Sess. (Tex. 2025) (enacted); *see* MARGARET COOK, HARC, THIRSTY DATA AND THE LONE STAR STATE: THE IMPACT OF DATA CENTER GROWTH ON TEXAS' WATER SUPPLY 6 (2026), https://harcresearch.org/wp-content/uploads/2026/01/Thirsty-Data-Water-Use-and-The-Projected-Data-Center-Boom-in-Texas.pdf [https://perma.cc/ULM6-ZQZ8] ("Recurring droughts, rapid population growth, and rising demand are already straining Texas' water resources, and data centers, a key component of the state's thriving digital economy, are among the fastest-growing water users.").

[92] S.B. 25-280, 75th Gen. Assemb., 1st Reg. Sess. (Co. 2025).

[93] *See, e.g.*, Sean Patrick Cooper, Opinion, *Noisy, Hungry Data Centers Are Catching Communities by Surprise*, N.Y. TIMES (Sep. 15, 2024), https://www.nytimes.com/2024/09/15/opinion/data-centers-ai-amazon-google-microsoft.html [https://perma.cc/5E8F-QBPH].

[94] Josh Saul, Leonardo Nicoletti, Demetrios Pogkas, Dina Bass & Naureen Malik, *How AI Data Centers Are Sending Your Power Bill Soaring*, BLOOMBERG (Sep. 29, 2025), https://www.bloomberg.com/graphics/2025-ai-data-centers-electricity-prices/?embedded-checkout=true [https://perma.cc/C4B7-DKGV].

[95] *See id.* (describing one Maryland man who saw an 80% increase in his energy bills compared to three years prior).

[96] *See* Ken Silverstein, *As AI Booms, Data Centers May Create Electricity Scarcity Among Users*, FORBES (Dec. 15, 2025, at 15:25 EST), https://www.forbes.com/sites/kensilverstein/2025/12/15/as-ai-booms-data-centers-may-create-electricity-scarcity-among-users/ [https://perma.cc/5LFV-FABQ].

[97] *See, e.g.*, Majd Al-Waheidi & Henry Larson, *An Energy Expert Explains Why Electricity Prices Keep Climbing*, NPR (Oct. 6, 2025, at 04:57 ET), https://www.npr.org/2025/10/06/nx-s1-

The costs associated with AI development are not only increasing costs to consumers but are doing so with little job creation and high risk to communities. For communities financing data centers, most jobs created are short-term to build the data center.[98] While utilities and consumers finance the expansion in energy infrastructure needed to meet the expected AI demand, there are increased concerns that if the "future AI power demand does not materialize," then the technology sector will leave "$85 billion in stranded assets."[99] The stranded assets from AI failing to live up to its promise would likely result in rate payers financing underutilized energy infrastructure into the future.

In addition, the health impacts from data centers remain significantly underreported. "Data centers generate significant noise pollution primarily from diesel generators and Heating, Ventilation, and Air Conditioning (HVAC) systems, with internal noise levels reaching up to 96 A-weighted decibels," exceeding levels safe for human hearing.[100] The constant noise impacts staff, communities, and wildlife.[101] Residents near data centers report the sound of a data center to be equivalent to a leaf blower constantly blowing.[102] Increases in energy production for data centers could impact air quality and human health, if powered with fossil fuels and diesel.[103] This is because air pollutants, including "nitrogen oxides and fine particulate matter," are released, thereby "increasing rates of respiratory diseases, cardiovascular conditions, and elevating cancer risk in nearby communities."[104] The Administration's focus on dispatchable energy could exacerbate public health challenges as it increasingly focuses on fossil fuels.

5557166/electric-power-bills-grid-costs-inflation [https://perma.cc/YYY9-85NH] ("Seniors down here [in Florida] that are living check to check, now we got to decide whether we're going to pay the electric bill or buy medication."); *see also* David Dayen, *Why the Poor Get Trapped in Depressed Areas*, NEW REPUBLIC (Mar. 18, 2016), https://newrepublic.com/article/131743/poor-get-trapped-depressed-areas [https://perma.cc/A7JZ-ZC62] ("Poorer Americans are now more likely to stay put. To put it simply, they don't have enough money to move.").

[98] *See* Ellen Thomas, *The AI Data Center Boom Will Create New Jobs. Most Won't Be at Amazon, Microsoft, Google, or Meta.*, BUS. INSIDER (Mar. 11, 2025, at 02:00 PT), https://www.businessinsider.com/data-center-job-boom-in-construction-not-big-tech-2025-3 [https://perma.cc/924D-TEHH] ("Construction workers often travel to data center sites and stay for extended periods of time, which leads to a need for hotels, restaurants, and other services.").

[99] Press Release, Glob. Energy Monitor, U.S. Bet on Gas Plants to Meet Uncertain AI Energy Demand Risks $85 Billion in Stranded Assets (Feb. 26, 2025), https://globalenergymonitor.org/press-release/u-s-bet-on-gas-plants-to-meet-uncertain-ai-energy-demand-risks-85-billion-in-stranded-assets/ [https://perma.cc/U3QK-962A].

[100] Yu Tao & Peng Gao, Letter, *Global Data Center Expansion and Human Health: A Call for Empirical Research*, 4 ECO-ENV'T & HEALTH, Sep. 2025, at 1, 1.

[101] *Id.*

[102] *See, e.g.*, Cooper, *supra* note 93.

[103] Tao & Gao, *supra* note 100, at 1.

[104] *Id.*

Communities, policy makers, and public utilities around the country have started raising concerns over the economic costs and social impacts from data centers depleting environmental resources.[105] "Some parts of the world are already facing issues in generating power and managing grid capacity in the face of growing electricity demand from AI data centers."[106] As a result, communities have started organizing under the principle of "not-in-my-backyard."[107]

The AI community backlash continues to grow across the United States; at least 12 states have filed moratorium bills on new data center construction and 188 local opposition groups are now active across 40 U.S. states.[108] The pushback from communities has led some states to question state tax breaks for data centers.[109] Public utilities are balancing the cost of subsidies to the public with the desire to attract technology investment. For example, the state of Virginia is the largest U.S. hub for data centers, in part driven by its subsidies to stimulate tax

[105] *See* Ryan Murphy & Emily Feng, *Why More Residents Are Saying 'No' to AI Data Centers in Their Backyard*, NPR (July 17, 2025, at 05:00 ET), https://www.npr.org/2025/07/17/nx-s1-5469933/virginia-data-centers-residents-saying-no [https://perma.cc/5M6U-H2E3]; *see also* Carla Walker & Ian Goldsmith, *From Energy Use to Air Quality, the Many Ways Data Centers Affect US Communities*, WORLD. RES. INST. (Feb. 17, 2026), https://www.wri.org/insights/us-data-center-growth-impacts [https://perma.cc/BC4F-FWEQ] (explaining how some states and utilities are "exploring ways to ensure that data centers can come online without shifting costs to other ratepayers").

[106] Ramachandran et al., *supra* note 70; *see also* Chris Baraniuk, *Electricity Grids Creak as AI Demands Soar*, BBC (May 20, 2024), https://www.bbc.com/news/articles/cj5ll89dy2mo [https://perma.cc/TDT7-HGGR] ("Nearly a fifth of Ireland's electricity is used up by data centres, and this figure is expected to grow significantly in the next few years—meanwhile Irish households are reducing their consumption." (citing Robert Shortt, *Households Cut Electricity Use, Consumption by Data Centres Up*, RTÉ (June 12, 2023, at 17:37 PT), https://www.rte.ie/news/business/2023/0612/1388694-power-consumption-by-data-centres-jumped-31-last-year/ [https://perma.cc/6GJ6-QC8B])).

[107] Murphy & Feng, *supra* note 105.

[108] Joel Makower, *Data Centers Are Ground Zero for AI Backlash. Here's What Needs to Change*, TRELLIS (May 27, 2026), https://trellis.net/article/data-centers-ground-zero-ai-backlash-what-must-change [https://perma.cc/5ES9-9N2C].

[109] *See* Karin Rives, *Some State Lawmakers Question Tax Breaks for Datacenters, Others Roll Out Mat*, S&P GLOB. (Aug. 12, 2024, at 20:25 UTC), https://www.spglobal.com/energy/en/news-research/latest-news/electric-power/081224-some-state-lawmakers-question-tax-breaks-for-datacenters-others-roll-out-mat [https://perma.cc/A6LG-Y65C] (describing how Georgia finalized a bill to halt tax breaks out of concern that the tax breaks do not have adequate return on investment due to the lack of job creation).

revenue.[110] The controversy over the prevalence of data centers in Virginia is so significant it has made it into public discourse and policymaking.[111]

IV. POTENTIAL LEGAL AND POLICY SOLUTIONS TO ENVIRONMENTAL AND SOCIAL IMPACTS FROM DATA CENTER OPERATIONS

Both the promise and pitfalls of data center-dependent technologies remain unclear, making the decisions around policy trade-offs more difficult. What is clear, however, is that current legal and policy frameworks are ill placed to respond to the new digital landscape unfolding. Communities with data centers are now facing the externalities from increased energy consumption, water use, and air pollution; this is impacting their quality of life and bottom line.

A. Governance Solutions to Foster Trust

Among the recommendations by the U.S. Government Accountability Office is better transparency on data center performance.[112] As a starting point to managing the scope of the problem is for data center owners to disclose the energy and water use of their data centers by facilities. Transparency can help drive accountability and performance improvement, which will ultimately benefit companies.[113] The authors were unable to find any requirements to compel data center owners and operators to publicly disclose energy and water use outside of the permitting process. It is worth noting, however, that calls for transparency of energy use from emerging technologies have been met with concerns over misuse, including terrorism.[114]

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[110] *Data Centers in Virginia*, VA. GEN. ASSEMBLY: JOINT LEGIS. AUDIT & REV. COMM'N, https://jlarc.virginia.gov/landing-2024-data-centers-in-virginia.asp [https://perma.cc/4WU7-7KD4] (last visited May 13, 2026).

[111] Charles Paullin, *Virginia Democrats Fail to Reach Compromise on Data Center Tax Exemption*, INSIDE CLIMATE NEWS (Mar. 12, 2026), https://insideclimatenews.org/news/12032026/virginia-democrats-fail-to-reach-compromise-on-data-center-tax-exemption/ [https://perma.cc/QA4C-ZXBW].

[112] BOTHWELL & WALSH, *supra* note 19, at 31.

[113] *See* Julia Edinger, *Top of Mind for Data Center Best Practices? It's Transparency*, GOV'T TECH. (Nov. 17, 2025), https://www.govtech.com/artificial-intelligence/top-of-mind-for-data-center-best-practices-its-transparency [https://perma.cc/DKE8-ZXAT].

[114] *See, e.g.*, Keaton Peters, *State Utility Commission Sues Texas Attorney General to Avoid Releasing Data on Crypto Companies' Power Use*, TEX. TRIB. (Aug. 11, 2025, at 15:39 CT), https://www.texastribune.org/2025/08/11/texas-public-utility-commission-cryptocurrency-mining-power-lawsuit/ [https://perma.cc/5DCA-KG52] (describing how the Texas utility commission argued that disclosure of data center energy and water use could be used by "terrorists to plan attacks on Texas's energy grid and critical infrastructure").

B. Solutions to Redress Environmental Impacts

Today, "56% of the electricity used to power data centers nationwide comes from fossil fuels."[115] The simplest way data centers can lower their climate impact and public health concerns is by supporting renewable energy and battery storage. Data centers can secure renewable energy through power purchase agreements, "generat[ing] renewable power on-site, or they can make their facilities more energy efficient."[116] Companies operating data centers could also replace their diesel back-up generators with battery storage.[117] Lastly, technology companies could also invest in distributed energy resources and leverage emerging software to manage load fluctuations.[118]

Data centers could also reduce their water impacts by incorporating sustainability criteria into their planning. The first step in reducing water impact is selecting data center locations with abundant water resources in partnership with the community. Operators could also secure gains by leveraging new technologies to minimize, capture, or eliminate the quantity of water evaporated.[119]

This Essay only discussed the concerns and some of the legal and policy mechanisms from a U.S. perspective, however, it is worth noting inequalities and concerns are exacerbated in developing markets. The absence of stable electric grids and mitigation technology access, existing social inequalities, lack of governance infrastructure, and disparate opportunities in securing financing in developing markets could exacerbate the Global South's competitiveness in the age of AI.[120]

As we seek to respond to the speed of change, the Global South is also a source of creativity and solutions to addressing externalities. For example, Singapore

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[115] Miguel Yañez-Barnuevo, *Data Center Energy Needs Could Upend Power Grids and Threaten the Climate*, ENV'T & ENERGY STUDY INST. (Apr. 15, 2025), https://www.eesi.org/articles/view/data-center-energy-needs-are-upending-power-grids-and-threatening-the-climate [https://perma.cc/3SNR-8NN4] (internal citation omitted).

[116] *Id.*

[117] Tao & Gao, *supra* note 100, at 1.

[118] Jen Downing, *Distributed Energy Resources Can Accelerate Data Center Interconnection*, UTILITY DIVE (Oct. 6, 2025), https://www.utilitydive.com/news/distributed-energy-resources-can-accelerate-data-center-interconnection/801964/ [https://perma.cc/TK83-RMKW].

[119] *See, e.g.*, Steven Solomon, *Sustainable by Design: Next-Generation Datacenters Consume Zero Water for Cooling*, MICROSOFT CLOUD BLOG (Dec. 9, 2024), https://www.microsoft.com/en-us/microsoft-cloud/blog/2024/12/09/sustainable-by-design-next-generation-datacenters-consume-zero-water-for-cooling/ [https://perma.cc/F5UU-9XFK] (outlining how Microsoft uses chip-level cooling for some data centers to lower water consumption).

[120] Anjali Kaur, *From Divide to Delivery: How AI Can Serve the Global South*, CTR. FOR STRATEGIC & INT'L STUD. (Oct. 8, 2025), https://www.csis.org/analysis/divide-delivery-how-ai-can-serve-global-south [https://perma.cc/9P8W-U2LX].

developed one of the world's first energy efficiency standards for data centers, recommending running the data centers at higher temperatures to save 30% in energy consumption from equipment.[121] Similarly, Kenya's support of geothermal power attracted foreign investment from Microsoft and the United Arab Emirates to build a data center with a renewable energy source and "state-of-the-art water conservation technology."[122] This project, however, highlights some of the challenges of placing data centers in the Global South, as the project would consume one-third of the country's energy supply.[123]

C. Solutions to Redress Social Impacts

Beyond the environmental impacts, there is growing consensus around social costs to the communities hosting emerging technologies. As human health is interwoven into the health of our environment, it is not surprising that actions discussed to reduce environmental impacts also improve social outcomes. Reducing the amount of water used, particularly in water-stressed areas, helps give communities access to a life-critical resource.

Another consideration is the economic cost of technology advancements to people. Communities, utilities, and policymakers must evaluate the energy infrastructure financing underpinning data centers. As it stands, communities are financing the energy infrastructure needed to power the data centers.[124] Contrary to other infrastructure projects that create economic value for the community, the benefit here is primarily reaped by the private companies. Communities providing subsidies in addition to the increased energy costs are also facing a second economic burden due to the increased utility bills.

Lastly, communities are also dealing with unsafe noise exposure, as previously discussed. Data center developers could incorporate noise pollution management into their build-out by using noise absorbing materials, double-layered walls, natural sound barriers, and silent cooling systems. In locations where noise pollution is not

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[121] Press Release, Gov't Sing.: S.G. Press Centre Singapore IT Energy Efficiency Standard for Data Centres Launched (Aug. 22, 2025), https://www.sgpc.gov.sg/detail?url=%2Fmedia_releases%2Fimda%2Fpress_release%2FP-20250822-1&page=%2Fdetail&HomePage=home [https://perma.cc/36EP-7QZD].

[122] *Microsoft and G42 Announce $1 Billion Comprehensive Digital Ecosystem Initiative for Kenya*, MICROSOFT (May 22, 2024), https://news.microsoft.com/source/2024/05/22/microsoft-and-g42-announce-1-billion-comprehensive-digital-ecosystem-initiative-for-kenya/ [https://perma.cc/K27J-M8XP].

[123] Segun Adeyemi, *Kenya Suspends $1 Billion Microsoft Data Centre as Energy Shortfall Raises Doubts over Africa's AI Ambitions*, BUS. INSIDER AFR. (May 6, 2026, at 13:46 PT), https://africa.businessinsider.com/local/markets/kenya-suspends-dollar1-billion-microsoft-data-centre-as-energy-shortfall-raises/hdtfmxz [https://perma.cc/AL7J-VGML].

[124] Michael Copley, *Data Centers Are Booming. But There Are Big Energy and Environmental Risks*, NPR (Oct. 14, 2025, at 06:00 ET), https://www.npr.org/2025/10/14/nx-s1-5565147/google-ai-data-centers-growth-environment-electricity [https://perma.cc/E4PF-CBCU].

addressed, places such as Judson Township, North Dakota, plaintiffs are bringing nuisance and trespass claims over the constant noise.[125]

CONCLUSION

Overall, it is clear why intelligence-led technology is moving ahead and experiencing a large influx of investment. Societal benefits continue to grow; however, it is also clear that these benefits come at a steep cost throughout the technologies' operations and life cycle. Communities shouldering the financial burdens of data centers during a time of high inflation and affordability concerns do so with little reprieve in sight or rationalization of these costs. Data center expansion comes at a time when the current Administration is loosening restrictions that could further worsen adverse effects on people and the environment. That said, there are opportunities for stakeholders to come together to demand better transparency, efficiency, and planning from data center and AI operators.

[125] Michael Anthony, *Judson Township Residents File Lawsuit Against Atlas Power, Williams County Over Data Center Noise*, KFYR TV (Nov. 29, 2023, at 10:11 PST), https://www.kfyrtv.com/2023/11/29/judson-township-residents-file-lawsuit-against-atlas-power-williams-county-over-data-center-noise/ [https://perma.cc/2KSN-VQB9].