March 15, 2025

Submitted via the Federal eRulemaking Portal

Mr. Kirk Dohne
National Science Foundation
Networking and Information Technology Research and Development National Coordination Office
2415 Eisenhower Avenue
Alexandria, VA 22314

RE: Request for Information on the Development of an Artificial Intelligence (AI) Action Plan

Docket No. FR-2025-02305

Dear Acting Director Dohne,

Thank you for seeking input from the public on the Development of an Artificial Intelligence ("AI") Action Plan ("Plan"). The Land Trust Alliance ("Alliance") appreciates the opportunity to submit comments on priority topics for discussion within the Plan.

Founded in 1982, the Land Trust Alliance is a nonprofit corporation and national land conservation organization based in Washington, D.C., that works to save the places people need and love by strengthening land conservation across America. The Alliance represents about 950 member land trusts nationwide. Alongside our members, we harness three fundamental aspects of the American ethos: volunteerism, community spirit and connection to the land.

The Alliance applauds the National Science Foundation ("Foundation") for initiating a proactive plan for the development of AI and soliciting public input on factors to be considered. In Executive Order 14156 "Declaring a National Energy Emergency," the Administration accurately states that electricity demand is forecast to soar in the coming years that further increases the importance of "a reliable supply of energy and the integrity of our Nation's electrical grid."[1] This demand is in large part due to the growth in data centers that are estimated to consume 6.7 to 12% of total U.S. electricity by 2028, up to 580 TWh per year[2]. To maintain our Nation's electrical grid integrity, careful planning of AI data centers is needed. This includes thoughtful siting of data centers, their power source and related transmission infrastructure. In addition, such planning must seek to maximize energy and water efficiencies. Smart siting paired with energy and water efficiency will help to ensure that our grid is reliable and secure and

[1] *Declaring a national energy emergency*. https://www.whitehouse.gov/presidential-actions/2025/01/declaring-a-national-energy-emergency/

[2] Shehabi, A., Smith, S.J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M.A.B., Holecek, B., Koomey, J., Masanet, E., Sartor, D. 2024. 2024 United States Data Center Energy Usage Report. Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-2001637

can meet the needs of U.S. citizens. It will also keep costs down for ratepayers. Transmission buildout costs associated with AI data center growth are typically passed along to the ratepayer, so by minimizing that buildout through the approaches recommended herein, the Administration will fulfill its goal of establishing a more affordable supply of energy for Americans. In addition, data center and energy infrastructure projects — including linear transmission and other grid infrastructure — can put lands with high conservation, biodiversity, forestry, recreation and agricultural value at risk of development. These lands provide pure drinking water, healthy food, and clean air; protection from intensifying natural disasters; and strengthen the economy[3]. Minimizing the transmission build-out required for AI data centers will not only aid in establishing a more affordable energy supply but it will also protect all the benefits that our country's lands provide to all Americans.

Data Center and Energy Transmission Siting

Data center campuses can require hundreds of acres of land, not only for the space needed to house multiple GPU clusters but also for the advanced cooling solutions, substations and other energy infrastructure required. The demand for large swaths of open space places growing development threats to lands with high conservation, recreational and agricultural value, lands that are already at risk. In addition, poor siting and failure to maximize energy efficiencies result in the need to build costly new transmission lines. New transmission lines are particularly harmful to lands where private landowners have voluntarily exercised their private property rights and contracted for perpetual legal protections of the property's agricultural and conservation values. This form of legal protection is known as a conservation easement. As the Administration declares the development of AI data centers and their associated energy infrastructure a national interest, the Alliance urges that the AI Action Plan establish a goal to avoid any government taking of a real property right and avoid any impacts to those lands subject to a conservation easement.

Conservation easements are a unique legal tool used to keep land in private ownership and on the tax rolls while preserving resources vital to the public interest. For private landowners, conservation easements are an opportunity to protect land from development and to keep working agricultural lands in production. Landowners also received the added benefit of income from the sale of the easement or tax savings from the conveyance of the easement. Landowners and their successors retain the right to possess and use the land consistent with the conservation purposes of the easement. Land trusts and government holders of conservation easements enter into a voluntary and legally binding agreement with the landowner where the land trust holds a real property interest in that land and agrees to perpetually monitor and enforce the conservation easement's provisions. This constitutes a major financial commitment by a land trust. Because of the perpetual and costly nature of holding a conservation easement, land trust easement holders don't enter lightly into these agreements. Instead, land trusts have a thorough process for strategic conservation planning, evaluating and selecting conservation easements that are consistent with the land trust's conservation priorities and provide public benefit. Through this process, land trusts work in partnership with the landowner to identify the

[3] Seidl, A., Crossett, C., Greenwell, A, Bennett, D., and Menefee, M., 2023. Public return to private lands conservation in Colorado: The Conservation Easement Tax Credit Program. Colorado State University, Fort Collins, Colorado.

important resources for protection, understand the landowner's conservation goals and desired future uses of the land, and finally, to create a plan that best meets the needs of the land trust, the landowner and the land itself.

Through this strategic process, land trusts have worked with landowners to collectively conserve more than 61 million acres of land. Recognizing the public value of this investment, the acquisition of such conserved lands by land trusts has been incentivized by billions of dollars in state and federal tax incentives and grants. At the federal level, conservation easements are recognized as a critical tool to protect environmentally important forest, farm, ranch, wetland and grassland areas threatened by conversion to other uses. Such programs include the U.S. Forest Service Forest Legacy Program, U.S. Department of Agriculture Agricultural Conservation Easement Program and the U.S. Department of Defense Readiness and Environmental Protection Integration Program.

In addition, Congress enacted Internal Revenue Code Section 170(h) and the accompanying Treasury regulations to provide significant tax benefits to individuals who donate (or who receive a portion of the purchase price for the conservation easement and then donate the remaining value) a qualified conservation easement to tax-exempt organizations. States have also prioritized the preservation of conservation and agricultural lands by establishing state tax credit programs and grant programs. Forty-nine states have created enabling legislation allowing for the use of conservation easements in response to increased alarm at the rate of farmland, working forest and undeveloped land conversion. Conservation easements are key to these policy efforts. Furthermore, they allow landowners to exercise their private property rights, ensuring that their land is conserved as they wish while also providing other benefits like clean air, clean water and food security. In sum, protecting conserved lands is a shared priority nationwide.

Irresponsible siting of AI data centers and energy sources, and the associated buildout of transmission infrastructure, threaten and undermine the billions of public dollars invested by federal and state agencies in our natural and working lands and the economic returns associated with those investments. Smart siting paired with energy and water efficiencies avoids squandering this enormous prior public appropriation of taxpayer funds and instead harmonizes our nation's shared goals of conserving land while supporting the buildout of AI data centers. As such, the Alliance urges the Foundation to include a land siting section in the Plan that calls out the need for explicit protections for lands subject to a conservation easement and avoids any build-out on such lands.

Energy and Water Usage and Efficiency

According to the Department of Energy, in 2023 data centers consumed 176 TWh of power, representing 4.4% of total U.S. electricity consumption. With the rapid growth of AI data centers, the Department predicts that data center energy consumption could grow to up to 580 TWh by 2028. A

single AI data center can require 50-100+ MW, enough energy to power approximately 16,400 homes.[4][5] The Foundation wisely included energy consumption and efficiency as a potential topic for its Plan, and we urge the Foundation to include water consumption and efficiency within that topic as well. As discussed in further detail below, AI data centers consume significant amounts of water that exacerbates regional water scarcity and shortages. It also increases the need for costly and energy-intensive wastewater treatment. By increasing energy and water use efficiency, not only will the operations of AI data centers be more cost-effective and maintain America's global competitiveness, but it will also lessen the load on the nation's energy needs and transmission grid, passing savings along to all citizens.

The Plan should detail recommendations, initiatives and incentives for new technologies to keep AI data center energy competitive. The Alliance recommends the Plan detail possible incentives for the co-location of data centers within close proximity to existing energy sources to minimize the costs and impacts of new transmission infrastructure. Additionally, incentives should be outlined for AI data centers to co-locate with renewable energy and battery energy storage systems. These types of energy are often quicker and cheaper to site and construct than other energy sources and will allow for developers to meet the energy and data needs of America quickly and efficiently.

The Plan should call for the transmission needs of AI data centers to be met through the most efficient and cost-effective methods to ensure an affordable and reliable domestic energy supply is possible, as called for in the Executive Order "Declaring a National Energy Emergency." Before new transmission infrastructure is built, the Plan should incentivize the reconductoring of existing transmission lines with higher-performance wires ("advanced conductors"), which can rapidly increase transmission capacity at a low cost. Advanced conductors have also been shown to reduce transmission losses between 10-30%[6], ensuring more of the energy we produce is provided to consumers. Other ways to maximize the transmission potential of the existing grid include grid-enhancing technologies, storage as transmission, and identifying underused interconnections.

Other electricity and transmission initiatives, technologies, and research and development that are recommended for the Action Plan include:

- Incentives for industry to share its data on energy use. There is little publicly available data on data center energy consumption. As a result, there are many uncertainties as to data center energy use now and in the future, making it difficult to predict future energy consumption and to plan accordingly. For these reasons, the Alliance recommends initiatives for the industry to share its data on energy use, such as power performance standards, reporting incentives and requirements, and stronger partnerships for better knowledge sharing. This will help to resolve the planning challenges that follow from the current data gaps.

[4] IEA (2024), What the data centre and AI boom could mean for the energy sector, IEA, Paris https://www.iea.org/commentaries/what-the-data-centre-and-ai-boom-could-mean-for-the-energy-sector, Licence: CC BY 4.0

[5] *100 Megawatts Per Day: Solar Power on the Rise*. https://law.lclark.edu/live/news/28453-100-megawatts-per-day-solar-power-on-the-rise#:~:text=To%20put%20that%20number%20in,to%20power%2016%2C400%20U.S.%20homes.

[6] *SUPPORTING ADVANCED CONDUCTOR DEPLOYMENT: BARRIERS AND POLICY SOLUTIONS* https://www.2035report.com/wp-content/uploads/2024/05/5.3-Reconductoring-policy-report.pdf

- The use of microgrids to increase grid reliability and resilience while also allowing data centers to come online more quickly.
- The use of virtual power plants to optimize data center energy usage to reduce electricity costs, stabilize the grid, and reduce the land use impact of data center energy needs.
- Direct the Department of Energy to set ambitious goals for energy-efficient AI algorithms and software and to then collaborate with the private sector to realize these goals, similar to the Exascale Computing Project, where "the DOE partnered with industry to successfully achieve a 200x improvement in energy efficiency for high-performance computing."[7]

Innovation in data center water consumption is also needed. AI data centers use large amounts of water for cooling and humidification systems. AI data centers can require 550,000 gallons of water per day or 200 million gallons per year.[8] The majority of data centers get their water from municipal or regional water utility companies, directly competing with other community water needs.

While data centers demand a large amount of water, on average less than 5% of a data center's water supply is currently made up of alternatives to potable utility water, such as greywater (treated sewage) or recycled water[9]. The Action Plan should provide recommendations on how to increase the utilization of alternative water supplies, including the use of stormwater retention ponds that address water use needs while also providing improved water quality. Data centers should also consider the water requirements of the energy providers they utilize and opt for energy production with the lowest water needs. The cooling systems that help power AI data centers are ripe for innovation for efficiencies in water usage. There are tremendous opportunities for federal and private sector collaboration on research and development and innovation of water-efficient cooling systems.

By investigating and incentivizing the implementation of these initiatives and innovative technologies to decrease energy and transmission infrastructure construction and increase energy and water usage efficiency, the AI Action Plan will help minimize the impacts of AI data center development on lands with high conservation, biodiversity, forestry, recreation and agricultural value, while also reducing the transmission costs passed onto ratepayers through more efficient electricity and water usage.

Advancing Administrative Orders

The Foundation should take the opportunity to use the Plan to advance the Administration's goals around energy reliability, stability and costs to consumers as stated through Executive and Secretarial Orders.

As stated in Secretary of Energy Wright's Secretarial Order "Unleashing the Golden Era of American Energy Dominance," the Administration has identified the need to "Strengthen Grid Reliability and

[7] https://www.energy.gov/topics/artificial-intelligence#:~:text=DOE%20has%20a%20track%20record,investments%20in%20high%2Dperformance%20computing.
[8] *Data center water Usage: A Comprehensive guide*. Dgtl Infra. https://dgtlinfra.com/data-center-water-usage/#Where_Do_Data_Centers_Get_their_Water
[9] *Data center water Usage: A Comprehensive guide*. Dgtl Infra. https://dgtlinfra.com/data-center-water-usage/#Where_Do_Data_Centers_Get_their_Water

Security."[10] Our recommendations for the Action Plan to include strategies to reconductor existing transmission lines, establish microgrids in data centers and utilize virtual powerplants for data centers are all strategies that will both increase the baseload of our grid while also increasing reliability without prohibitive costs.

In the Executive Order "Unleashing American Energy," the Administration states that it is its policy to "protect the United States's economic and national security and military preparedness by ensuring that an abundant supply of reliable energy is readily accessible in every State and territory of the Nation."[11] Our recommendations above, including that the Plan include strategies for AI data centers to co-locate with renewable energy and battery storage sites, will directly further this policy. By ensuring that AI data centers maximize energy and water efficiencies and cheaply produce their own energy with battery backup, the Plan will minimize the impacts of data centers on the reliability and availability of energy across the country.

Public Engagement

One of the greatest barriers to expediency in the siting and permitting of energy production and transmission infrastructure is the failure of authorities to avoid disturbance of valuable conservation or agricultural lands, which sometimes triggers public opposition that in turn can create delays and potentially halt the siting process. Similarly, AI data centers run into public opposition when they are approved without robust public engagement and consideration of the communities' concerns around impacts to electricity and water usage, as well as the impacts to local viewsheds and conservation and agricultural values.

It is widely acknowledged that "[l]ocal efforts to oppose large infrastructure projects [are] increasing as, among other things, the country becomes more densely populated and land use assumes greater and greater importance. Proposed transmission lines in particular are frequently delayed for months or years as a result of public opposition, driving up costs to developers and, ultimately, to consumers."[12] The Action Plan should develop recommendations on how developers should meaningfully engage with the public on proposed AI data centers and related infrastructure to address community concerns and reduce the costs and timelines for projects to be completed.

Additionally, the Plan should recommend that AI data center developers reach out to land trusts serving the communities they wish to develop in. Land trusts welcome the opportunity to share their extensive knowledge of the location of conserved properties and lands that are priorities for future conservation acquisition. Land trusts, as experts in reading the landscape, could facilitate finding an alternative siting location as well as assist in identifying mutually agreeable offset measures such as funding for the acquisition of alternative conservation lands of equivalent quality and type.

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[10] *"Unleash golden era of American energy dominance."* Energy.gov. https://www.energy.gov/articles/secretary-wright-acts-unleash-golden-era-american-energy-dominance

[11] *Unleashing American energy*. https://www.whitehouse.gov/presidential-actions/2025/01/unleashing-american-energy/

[12] Americans for a Clean Energy Grid, *Recommended Siting Practices for Electric Transmission Developers* (2023) https://cleanenergygrid.org/wp-content/uploads/2023/02/Recommended-Siting-Practices-for-Electric-Transmission-Developers-February-2023-Americans-for-a-Clean-Energy-Grid.pdf.

Reliability and High Integrity of U.S. Artificial Intelligence

As the use of AI continues to rise in the United States, there is a tremendous need for federal leadership to promote integrity amongst AI systems and to prevent bias in AI algorithms. As stated in the Executive Order on Removing Barriers to American Leadership in Artificial Intelligence, "we must develop AI systems that are free from ideological bias or engineered social agendas." Ethical principles must be established and followed to ensure integrity and trustworthiness of American AI technologies. In addition, reliability and accuracy are critical to the success of American AI. For these reasons, we urge the Foundation to provide federal leadership to protect against negative impacts from AI by insuring reliability, integrity and bias prevention.

Conclusion

We applaud the Foundation for initiating a proactive plan on the development of AI and soliciting public input on factors to be considered. We look forward to a Plan that calls for smart siting of AI data centers and associated energy and transmission infrastructure, as well as initiatives for innovative technologies and efficiencies to minimize the strain on the grid and increase electricity and water efficiency. By following this plan, AI data center developers will contribute to the Administration's stated goals through its Executive and Secretarial Orders to provide an affordable and reliable domestic supply of energy that is readily accessible in every state. Thank you for your attention to this matter.

Sincerely,

Lori Faeth
Government Relations Director
Land Trust Alliance

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