May 7, 2025
U.S. Department of Energy
Washington, D.C. 20585

Subject: NIA Response to the Department of Energy Request for Information on Artificial Intelligence Infrastructure on DOE Lands (FRN 90 FR 14972)

Dear U.S. Department of Energy Staff:

The Nuclear Innovation Alliance appreciates the opportunity to provide input to the Department of Energy (DOE) "Request for Information on Artificial Intelligence (AI) Infrastructure on DOE Lands" (FRN 90 FR 14972).[1] The Nuclear Innovation Alliance (NIA) is a non-profit, non-partisan "think and do" tank working to help create the conditions for success for new nuclear energy so it can play a major role as an energy security and climate solution. Through policy analysis, research, outreach, and education, NIA is catalyzing the next era of nuclear energy. We focus on regulatory modernization, federal and state policy, and enabling private investment to support new reactor commercialization while meeting national environmental and energy security goals. Drawing on our expertise in engineering, science, policy, economics, finance, law and social sciences, and the input of other stakeholders and experts, we produce valuable analysis and work with decision makers to catalyze positive change.

As the U.S. faces a rising need for electricity to serve data centers, industrial loads, and electric vehicles, nuclear power has gained renewed attention as a technology that provides a consistent and reliable energy supply with a small footprint and no emissions. The rapid deployment of new nuclear technology can support the expansion of data centers to support AI and other technologies, but recent experience has not yielded the speed of deployment required. By leveraging its land assets, the U.S. Department of Energy (DOE) could accelerate new nuclear technology commercialization to meet the growing demand for AI infrastructure and have lasting impacts on U.S. AI leadership and energy security.

[1] "Request for Information on Artificial Intelligence Infrastructure on DOE Lands." U.S. Department of Energy. April 7, 2025. Link: https://www.federalregister.gov/documents/2025/04/07/2025-05936/request-for-information-on-artificial-intelligence-infrastructure-on-doe-lands.

While nuclear energy has the potential to advance U.S. energy goals, its contribution has been hampered by decades of inactivity followed by first-of-a-kind challenges, fuel source issues, and supply chain immaturity. Moving from demonstration projects to deployment at scale is challenging, especially for large complex construction projects. This DOE AI infrastructure program, if designed with this in mind, could support the achievement of the two related goals of U.S. AI leadership and U.S. energy leadership. By accelerating and supporting the deployment of gigawatts of energy capacity in strategically important technologies like nuclear energy, DOE can advance these to a state of commercial competitiveness so that they can scale up to meet U.S. needs. By demonstrating the direct coupling of advanced energy technologies with industry through data center partnerships, DOE can also encourage future collaborations that extend that model towards integrated energy systems and take full advantage of our diverse energy resources.

To promote the success of co-locating data centers with new nuclear technologies on DOE land, it is imperative to streamline the siting process, making it faster and more efficient than it would be on private land. This includes expediting all related processes and approvals to prevent bureaucratic delays, as well as providing site data and addressing and resolving key questions and concerns. For example, implementing limited categorical exclusions and other risk-informed, performance-based options for accelerating compliance with the National Environmental Policy Act (NEPA) can enhance the efficiency of this initiative. Proactive measures to address utility interconnection and any behind-the-meter needs are also essential to ensure seamless integration and operational efficiency.

DOE and NRC should collaborate over the next 60 days to consider and implement options that would accelerate reviews to meet the timeline in the RFI, lay a strong foundation for future projects, and adequately promote the common defense and security and protect the health and safety of the public. DOE should incorporate lessons learned from its recent experience in authorizing nuclear energy research projects on DOE land and from the Nuclear Regulatory Commission's (NRC's) progress in improving its commercial licensing processes. DOE and NRC should closely evaluate what improved efficiency is possible under their existing authorities in view of the public benefit of scaling up the immature nuclear energy supply chain for the U.S. economy, environment, and national security. If necessary, Congress should request input from NRC and DOE to evaluate opportunities to further increase the efficiency of nuclear safety oversight for these projects with additional resources and staff and/or adjustments to authorities.

Specific input from NIA for selected categories and questions of the request for information follow in the text below.

Category 3: On-Site Energy Development: DOE anticipates that some sites may be suitable for co-located development of data centers and innovative energy technologies and approaches such as nuclear reactors, enhanced geothermal systems, fuel cells, carbon capture, energy storage systems, and portfolios of on-site technologies.

> ***Question 1: What type of co-located energy technologies are of highest interest in being developed with AI data centers? What type of site information would need to be provided to inform use of a given energy technology (e.g., subsurface data, solar resource potential)?***

The growing interest in using nuclear energy to power data centers is driven by its potential to provide a reliable and carbon-free energy source. Utilizing DOE sites for this purpose offers several advantages, including the potential for streamlined siting processes, expedited approvals, and access to established infrastructure and expertise in nuclear energy projects. These benefits can significantly enhance the efficiency and feasibility of deploying new nuclear technologies to support data center operations, contributing to national energy security and climate resilience goals.

Site information is of critical and early importance to evaluating potential siting of nuclear energy. Key types of site information needed for nuclear energy include: seismology; vulcanology; hydrology; geology; characteristics of flood and other external hazards; proximity to airports, chemical facilities, or other major activities of importance; access to transmission, cooling water, roads/rail; presence of meteorological data; and considerations around endangered species or protections or special accommodations required for other sensitive species. Additional considerations are provided in NIA's response to Category 3, Question 3, below.

> ***Question 2: What information would you need about DOE's progress to date on nuclear siting (e.g., for the National Reactor Innovation Center) to determine necessary further steps?***

DOE could provide guidance on many key questions and could also seek to resolve unanswered questions for interested users for each potential site. Key considerations include:

- Utility connections: What transmission is accessible to potential users? Who does the potential user need to contact? Does the utility's arrangement with DOE allow lessees on the site to generate power "behind the meter" and use it for the data center, or does the arrangement between DOE and the utility prevent that? DOE should address utility interconnection and/or behind the meter needs proactively, rather than simply leaving it up to industry partners to address.
- Infrastructure: What existing nuclear or security-related infrastructure would be available to a user, if any?
- Spent Fuel: Would spent fuel storage be permitted on the site? In the case of a DOE-authorized reactor, would the DOE be able to store spent nuclear fuel? At

Idaho National Laboratory, would the 1995 Settlement Agreement[2] impact spent fuel storage for any new nuclear generation?

- DOE Site-Office: For each candidate site, does the DOE site-office have experience authorizing and/or siting nuclear energy projects or other nuclear projects? If not, are they able to collaborate with a site-office that does have experience? Does the DOE site-office have established coordination with the U.S. Nuclear Regulatory Commission (NRC) for any current nuclear projects? Does the DOE site-office have any specific requirements for an NRC-licensed project on the site, such as any required distance from operating DOE facilities? Has the DOE site-office confirmed acceptability of any sites identified for nuclear energy development? What is the location of those sites?
- Security and Entry: What requirements would each DOE site have for people entering the site to work on or visit the data center or co-located power source? Are there special badging, training, or security requirements for those individuals?

Question 3: What information regarding topography, soil, seismicity, water availability, adjacent facilities, transportation infrastructure, security, potential exclusion zones, and other topics would you need to assess site suitability for nuclear energy?

In most cases, nuclear energy siting requires a highly characterized site, so any information that can be shared would be useful to a potential lessee. For greater detail on characteristics important for nuclear siting, refer to the Electric Power Research Institute document: *Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide)-2022 Revision*.[3] For potential users, the National Reactor Innovation Center "Siting Tool for Advanced Nuclear Development"[4] can provide information about adjacent facilities, transmission, transportation infrastructure, and other characteristics.

Some additional specific useful information that DOE could provide for each of the candidate sites includes:

- Cooling water: What cooling water is available, if any? For locations where federal water rights are required, what is the process/timeline for acquiring them? Does DOE have any water rights that can be available to lessees? Can DOE make water rights available if a project is DOE-authorized rather than NRC-licensed?
- Transportation: What roads or rail are available to access the site and specifically identified development areas? What are the clearance and weight limits? Are there other access or operating restrictions?

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[2] "1995 Settlement Agreement." Link: https://www2.deq.idaho.gov/admin/LEIA/api/document/download/14673.

[3] "Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide)-2022 Revision." Electric Power Research Institute. 2022. Link: https://www.epri.com/research/products/000000003002023910.

[4] "Siting Tool for Advanced Nuclear Development." National Reactor Innovation Center, U.S. Department of Energy. Link: https://nric.inl.gov/stand-tool/.

- Site activities: What, if any, special air traffic considerations exist on the site? Are there any activities on the site that require special consideration or a specific exclusion zone for a nuclear safety case?
- Security: Does the site have any special security requirements? What requirements would each DOE site have for people entering the site to work on or visit the data center or co-located power source? Are there special badging, training, or security requirements for those individuals?

Question 5. What information would you need to determine the suitability of various energy storage systems (e.g., subsurface thermal energy storage, flow battery, metal anode battery) as a means for supporting data center cooling or other operations?

The NIA recommends that DOE consider opportunities to pair nuclear energy projects with energy storage, such as molten salt thermal storage, and evaluate whether that would require special siting arrangements. The TerraPower Natrium® energy storage system is one example of a design that uses molten salt as a thermal energy storage medium; approaches like this could be useful for accommodating ramping requirements of data center loads.

Category 9: Challenges and Any Additional Information Required for Potential Solicitations: Potential concerns associated with siting AI infrastructure on DOE sites (e.g., site security, accessibility). Additional information that would be required from DOE for a respondent to comprehensively respond to a potential future solicitation.

Question 1: What potential challenges, including but not limited to timeline, physical security, and cybersecurity, could be associated with siting AI infrastructure on DOE sites?

For any private-sector project, particularly in an area as rapidly developing as AI and computing, speed is a top priority, as is cost. To maintain safe operations and safeguard the use of taxpayer funding, projects within DOE and other government agencies often have additional procedures and policies that can be more drawn out than a business might expect. While the potential for impact is enormous when the public sector and private sector work together effectively, key differences in how the sectors operate can cause a mismatch in timelines that must be addressed and managed proactively. The following suggestions address options for accelerating projects under this program and supporting successful public-private partnerships.

- Efficient approach to NEPA:
  - The NRC and DOE should establish a categorical exclusion under NEPA for microreactors, including on federal land, with specific parameters linked to minimal environmental impact as recommended in the April 2025

NIA report: *Improving Environmental Reviews through a Categorical Exclusion for Microreactors.*[5]

- For reactor projects not covered by a categorical exclusion, the NRC and/or DOE should adopt a risk-informed, performance-based approach, to include the use of environmental assessments (EAs) to evaluate impact rather than environmental impact statements (EISs) whenever sensible. Only when an EA proceeding finds the potential for significant impact is an EIS necessary.
- The NRC's new reactor generic environmental impact statement (NR GEIS) effort could provide another mechanism for accelerated NEPA compliance.
- The DOE could prepare for potential projects by developing a generic EA based on a plant parameter envelope that would encompass anticipated proposals from lessees under this program. This would mirror the approach taken for the National Reactor Innovation Center Demonstration of Microreactor Experiments and the approach in the NR GEIS.
- DOE and NRC should explore developing an agreement to enable NRC to accept DOE NEPA determinations, so that DOE could begin this work, with the expectation that it could be used in NRC proceedings in the future.
- NRC should share lessons with DOE from its environmental reviews of Kairos Power LLC's Hermes 1 and Hermes 2 reactors.

- Acceleration of safety evaluations and licensing:
  - DOE and NRC should collaborate over the next 60 days to consider options that would accelerate reviews to meet the timeline in the RFI, lay a strong foundation for future projects on private as well as federal land, and adequately promote the common defense and security and protect the health and safety of the public. NRC and DOE should first closely evaluate what is possible under existing authorities, including both section 103 and section 104 of the Atomic Energy Act for NRC. If necessary, Congress should request input from NRC and DOE to evaluate what would be possible with additional resources and staff and/or adjustments to authorities. Options to consider could include:
    - What lessons can DOE glean from recent and ongoing NRC licensing efficiency improvements, such as what occurred between Kairos Power LLC's Hermes 1 and Hermes 2 reactors?
    - What approaches would enable NRC licensing to have a similar timeline and process to recent DOE authorizations (e.g., the Pele project at INL)? Feedback from some participants suggests that the DOE authorization process offers advantages for new reactor designs in enabling design finalization and safety review to occur on a coinciding timeline that enables feedback and iteration between the two processes. This can be more efficient overall for

[5] Weed, J.M. and Lutz, B. "Improving Environmental Reviews through a Categorical Exclusion for Microreactors." April 2025. Link: https://nuclearinnovationalliance.org/index.php/improving-environmental-reviews-through-categorical-exclusion-microreactors.

some projects and is likely less relevant for designs that are mature.

- Under current authorities, could NRC license advanced reactors on federal land using the approach provided under section 104 of the Atomic Energy Act? Section 104 directs NRC to "impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public." This approach is described in more detail in the April 2025 Idaho National Laboratory report: *Recommendations to Improve Nuclear Licensing.*[6] Section 104 was initially applied to projects with significant public benefit, including medical therapy reactors, research and development reactors, and demonstrations under the Cooperative Power Reactor Demonstration Program, which included projects producing commercial electric power. The nuclear energy projects envisioned under a program to site AI infrastructure on federal lands would similarly have significant public benefit in supporting new U.S. energy technology deployment, AI leadership, and national security. If it is not possible under current authorities, would it make sense for Congress to authorize this approach?
- How could DOE and NRC best coordinate their activities on DOE land under this proposed program with respect to commercial nuclear power plants producing electricity for the grid?
- DOE should partner with NRC to ensure learning from any DOE authorizations is available to NRC, and that DOE learns from NRC licensing activities.

- NRC should permit applicants to use existing meteorological data, when available, instead of requiring applicants to collect it immediately prior to application.

- Efficient contracting and process execution:
  - In the event that government grants are used to support this effort, DOE should permit the use of performance milestone-based funding (i.e., "payments based on payable milestones" or "payment-for-milestones approach") through DOE's Other Transaction Authority (OTA). This can be a highly effective alternative to conventional cost reimbursement models (i.e., expenditure-based funding), and can incentivize rapid progress. More detail is available in NIA's March 4, 2025, public comments on DOE's Interim Final Rule Regarding Other Transaction Agreements, in NIA's July 2021 memo on the topic, and in NIA's May 2019 report *In Search of a SpaceX for Nuclear Energy.*[7]

[6] Burdick, S.J., Wagner, J.C., Gehin, J.C. "Recommendations to Improve Nuclear Licensing." April 2025. INL/RPT-25-84292.

[7] Cothron, E. "NIA Public Comments on DOE's Interim Final Rule on Other Transaction Agreements and Performance Milestone-Based Funding." March 4, 2025. Link:

    - DOE projects with a total project cost greater than $50 million are subject to the direction provided in DOE Order 413.3b ("Program and Project Management for the Acquisition of Capital Assets").[8] This order provides oversight to protect from cost overruns in capital projects using public funds. It does not apply to some cooperative agreements with industry, and DOE should confirm that it would not apply to activities undertaken by, or on behalf of, a private company in the execution of this initiative. This order imposes lengthy timelines on DOE capital asset acquisition projects and is inconsistent with the stated timeline of this RFI.
    - To meet the stated schedule goals of the RFI of enabling construction of AI infrastructure to begin by the end of 2025 and operation by the end of 2027, DOE will likely need to expedite or prioritize decisions on land use agreements, arrangements for provision of access or services, cultural resource assessments under section 106 of the National Historic Preservation Act, and other elements of the process that arise in the course of siting, constructing, and operating these facilities.
    - DOE should increase staff in order to expedite these processes and meet the timeline provided in this RFI.
- Security requirements: If security requirements of the DOE site are more stringent than those of the data center, they could create constraints on data center employees and activities. These considerations should be evaluated as soon as possible, and DOE should evaluate how to minimize the impact on industry partners.

By simplifying and facilitating the siting and partnership process, DOE can accelerate the deployment of innovative energy solutions to meet U.S. compute needs, thereby accelerating progress toward national energy security and climate resilience goals.

NIA would like to thank DOE for the opportunity to provide input to this RFI. If you have any questions, please contact me at jgreenwald@nuclearinnovationalliance.org.

Sincerely,

Judi Greenwald
President & CEO
Nuclear Innovation Alliance

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https://nuclearinnovationalliance.org/index.php/nia-public-comments-does-interim-final-rule-other-transaction-agreements-and-performance-milestone.
"Memo on Milestones Approach to Advanced Reactor Demonstration Projects." Nuclear Innovation Alliance. July 15, 2021. Link: https://nuclearinnovationalliance.org/memo-milestones-approach-advanced-reactor-demonstration-projects.
Bowen, M. "In Search of a SpaceX for Nuclear Energy." May 19, 2019. Link: https://nuclearinnovationalliance.org/search-spacex-nuclear-energy.

[8] DOE Order 413.3B "Program and Project Management for the Acquisition of Capital Assets." Chg 7 (LtdChg): 06-21-2023. Link: https://www.directives.doe.gov/directives-documents/400-series/0413.3-BOrder-B-chg7-ltdchg/@@images/file.