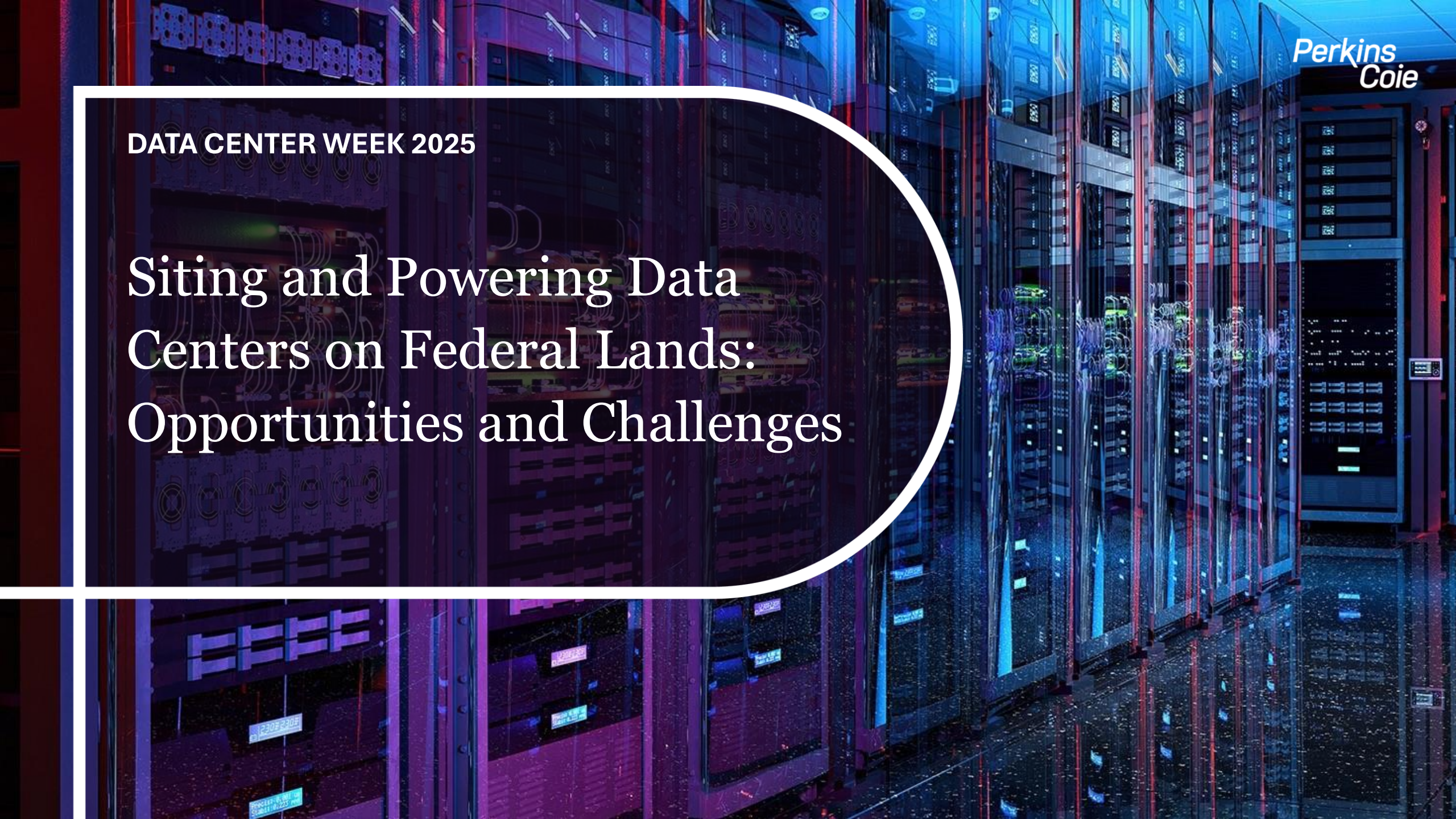


Perkins Coie

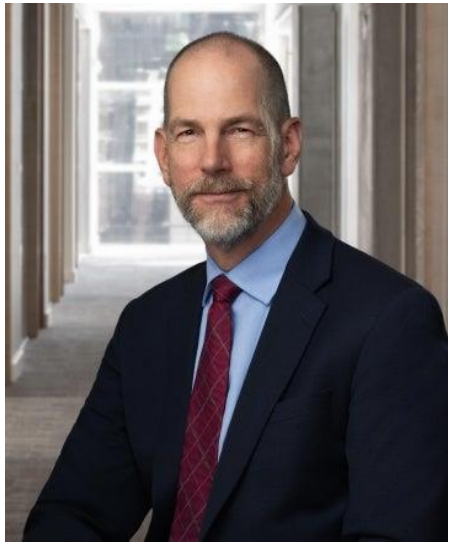
DATA CENTER WEEK 2025

Siting and Powering Data Centers on Federal Lands: Opportunities and Challenges

Presenters

Laura Morton

Partner



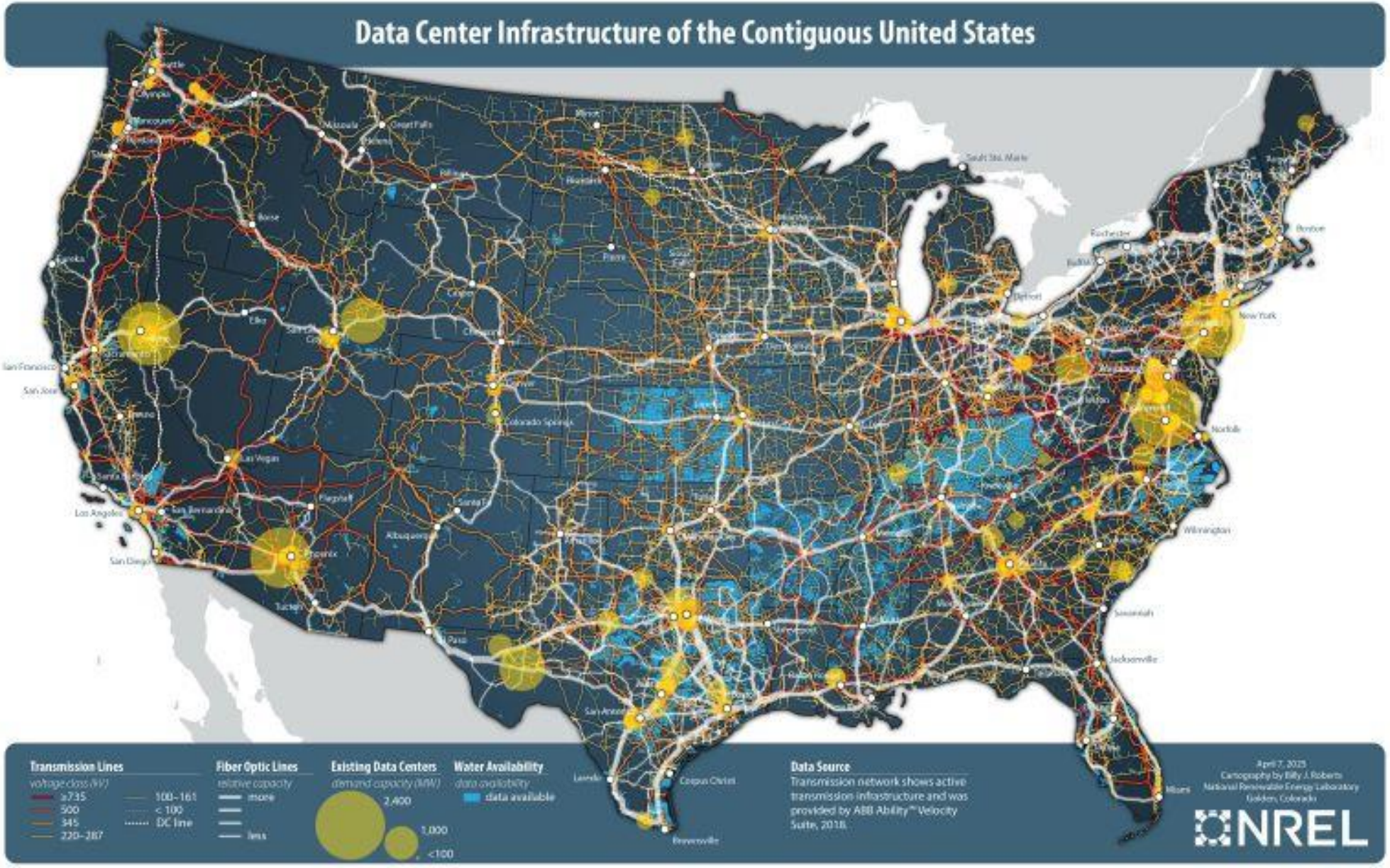
Ted Boling

Partner

Growth of Data Centers

Expected Growth in the United States

- There are well over 5,000 data centers in the United States, far more than any other country.
- The United States aims to lead in data center construction and operation over the next decade, driven largely by private investments.
- President Trump has expressed support for co-location of AI infrastructure (including data centers) and generation and the intent to fast-track such projects.


Data Center Infrastructure of the Contiguous United States
Transmission Lines
voltage class (kV)
≥735
500
345
220–287
100–161
< 100
DC line
Fiber Optic Lines
relative capacity
more
less
Existing Data Centers
demand capacity (MW)
2,400
1,000
<100
Water Availability
data availability
data available
Data Source
Transmission network shows active transmission infrastructure and was provided by ABB Ability™ Velocity Suite, 2018.
April 7, 2025
Cartography by Billy J. Roberts
National Renewable Energy Laboratory
Golden, Colorado
NREL

Siting Data Centers

Siting presents its own challenges, particularly as data centers compete for significant quantities of power across the United States:

1

Power Supply

Data centers typically operate 24/7 to support real-time applications and services. Constant operation and the energy needed to cool the data centers, leads to high cumulative power consumption.

2

Location

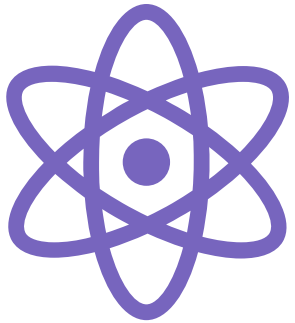
The "Goldilocks" site will be near a reliable and major power source and renewable energy sources to enhance sustainability and reduce costs. The site should also be easily accessible for construction and workforce.

3

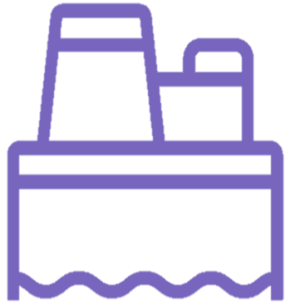
Legal

Pursuing sites on federal lands involves navigating a dizzying list of statutes that govern different federal agencies' ability to transfer or "dispose" of property by sale or by lease.

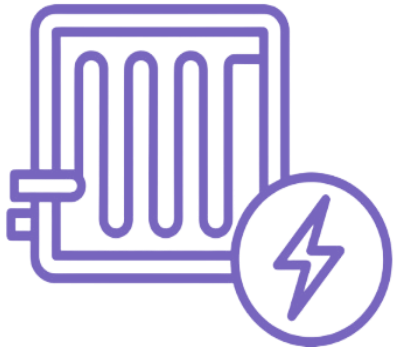
Potential Sources of Generation to Support Data Centers



Nuclear Reactors

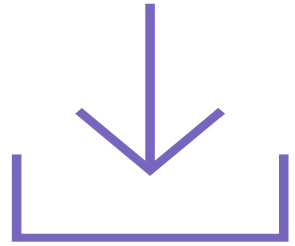


Enhanced Geothermal Systems



Fuel Cells

Carbon Capture

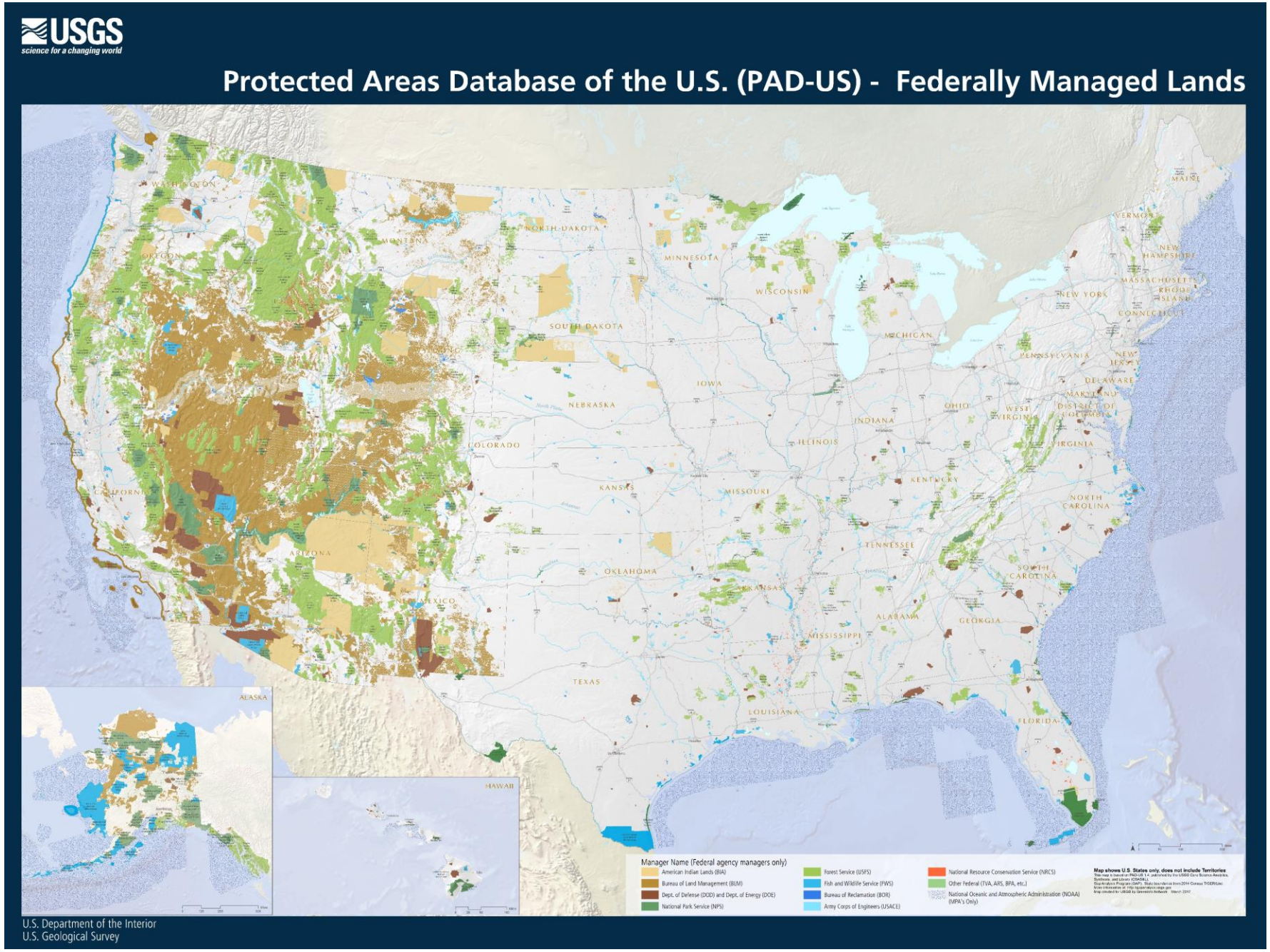


Energy Storage Systems

Natural Gas

The Trump Administration's Priorities

- President Biden's Executive Order 14141 directed:
  - DOD and DOE to select sites for large-scale data centers based on accessibility to high-capacity transmission infrastructure and ability to minimize effects on communities, natural resources, and the environment.
  - DOI to identify priority sites suitable for clean energy that can support data centers on DOE and DOD sites, focusing on priority zones for geothermal power and thermal storage.
- The order is consistent with many of the goals of the current administration, including accelerating development of AI infrastructure, shortening timelines for permitting and review, and developing geothermal and nuclear energy.


USGS
science for a changing world
Protected Areas Database of the U.S. (PAD-US) - Federally Managed Lands
WASHINGTON
OREGON
MONTANA
NORTH DAKOTA
MINNESOTA
WISCONSIN
MICHIGAN
SOUTH DAKOTA
IOWA
NEBRASKA
COLORADO
ILLINOIS
INDIANA
OHIO
KANSAS
MISSOURI
KENTUCKY
ARIZONA
OKLAHOMA
TENNESSEE
TEXAS
LOUISIANA
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
NEW JERSEY
DELAWARE
MARYLAND
ALASKA
HAWAII
Manager Name (Federal agency managers only)
American Indian Lands (BIA)
Bureau of Land Management (BLM)
Dept. of Defense (DOD) and Dept. of Energy (DOE)
National Park Service (NPS)
Forest Service (USFS)
Fish and Wildlife Service (FWS)
Bureau of Reclamation (BOR)
Army Corps of Engineers (USACE)
National Resource Conservation Service (NRCS)
Other Federal (TVA, ARS, BPA, etc.)
National Oceanic and Atmospheric Administration (NOAA) (MPA's Only)
Map shows U.S. States only; does not include Territories
U.S. Department of the Interior
U.S. Geological Survey

DOE Authority to Transfer Property, by Sale or Lease

Atomic Energy Act, 42 U.S.C. § 2201 (g)

- DOE can sell, lease, grant, and dispose of real property originally acquired in connection with AEA purposes, which include the promotion of nuclear energy for peaceful purposes while ensuring public health and safety, national security, and environmental protection.

DOE Organization Act, 42 U.S.C. § 7265

- DOE can transfer certain real property that is "excess" to public or private entities.
- Limited to a term of 10 years or less, with the option to renew where such a renewal would promote national security or the public interest.

Section 3158 of the National Defense Authorization Act for Fiscal Year 1998

- DOE may also transfer, by sale or lease, real property at defense nuclear facilities for economic development purposes.
- Some DOE legacy-managed sites and assets that no longer serve a DOE mission after remediation have been used for "beneficial reuse," including for energy-related purposes or commercial or industrial use.

Case Study: Hecate Energy, LLC

- In July 2024, DOE entered negotiations with Hecate Energy, LLC to construct a 1 gigawatt (GW) solar project with battery storage on DOE-owned land.
- The Hanford nuclear waste site in Washington state was previously established as part of the Manhattan Project in 1943 and is subject to DOE's authority under the Atomic Energy Act.
- Negotiations were part of the broader Cleanup to Clean Energy initiative, which aimed to repurpose parts of DOE-owned lands to support clean energy.

DOD Authority to Transfer Property, by Lease or Sale

10 U.S.C. § 2667

- Authorizes leases of DOD non-excess real property
- Typically for a term less than five years, unless the U.S. Secretary of the Defense determines a longer term is in the public interest, which could present a pathway for data centers

Enhanced Use Lease Program (EUL)

- Long-term use lease (up to 55 years) of property to a private developer in exchange for cash or in-kind services
- The prospective use of the asset must be compatible with the installation's uses.

10 U.S.C. § 2668

- DOD is authorized to grant easements for rights-of-way over, in, and upon public lands under the control of the Secretary of Defense, provided that the easements will not be against the public interest.
- Easements could be used for transmission lines, substations, pipelines, and pumping stations, among other required associated infrastructure.

Case Study: Terra Gen LLC

- In February 2023, a new solar and storage facility was built by Terra Gen LLC on Edwards Air Force Base (Edwards) in California under the Air Force (EUL) program.
- 4,000 acres of non-excess, underutilized property at Edwards and surrounding private property.
- Almost two million solar panels installed and can supply up to 1,300 megawatts (MW) of power to CAISO.
- Estimated to power over 238,000 homes, displacing more than 320,000 tons of CO2 emissions annually.
- Air Force estimates the project could yield cash rent consideration of over $75.8 million throughout the expected 35-year lease.

DOI Authority to Lease, Grant, or Issue Easement or Right-of-Way

Federal Land Policy and Management Act (FLPMA), 43 U.S. Code § 1701, et seq.

- Authorizes BLM to issue rights-of-way authorizations as authorized under land management plans
  - Projects include, among others, transmission, renewable energy generation, fiber-optic lines, communications towers, and pipelines.
- Authorizes USDA to grant rights-of-way under Forest Service management (subject to National Forest Management Act)

Mineral Leasing Act of 1920, 30 U.S.C. § 181 et seq

- Authorizes BLM to lease public lands for oil, natural gas, and coal production defined in a land management plan
- Excludes National Parks and monuments, lands within a designated Wilderness Preservation System, and lands in incorporated cities, towns, and villages
- BLM may lease sub-surface rights to land in USDA's National Forest System, unless Secretary of Agriculture objects

Geothermal Steam Act, 30 U.S.C. § 1001 et seq.

- Authorizes BLM to lease lands on lands administered by DOI (included public and acquired not withdrawn from use), and by USDA with its concurrence, those conveyed by the US where resources are reserved to the US, and certain lands subject to section 24 of the Federal Power Act with the concurrence of the U.S. DOE (hydroelecric)
- Exclusions include National Parks, National Recreation Areas, Indian Trust lands, and wildlife management areas

Withdrawn Public Lands

Department of Interior

- Authority under FLPMA under 43 U.S. Code § 1714 to grant land withdrawals.
- Facility-specific issue that requires studying of the purposes and limitations of the withdrawal.
- Projects on withdrawn lands require approval from both the agency managing the land and the jurisdictional agency within DOI

Department of Defense

- Authority under the Engle Act
- DOI processes DOD applications for withdrawals aggregating 5,000 acres or more for any one project or facility.
- Military withdrawals of less than 5,000 acres are done by DOI Secretarial Order.
- Can only be made by an act of Congress, except in times of war or national emergency declared by the President.

Department of Energy

- Withdrawn by DOI following DOE application
- Used for specific purposes
- Facility-specific issue that requires studying of the purposes and limitations of the withdrawal.
- Projects on DOE withdrawn lands require approval from both the agency managing the land and the jurisdictional agency within DOI

Siting on Federal Lands: Benefits

- Constructing AI infrastructure and energy facilities on federal lands or could provide multiple benefits:
  - Increased security and potentially accelerating development approvals.
  - Opportunities for co-location with generation
  - Cost-efficient if the federal government is the user of that data center, as the cost of land is no longer an issue, and property tax payments are no longer a factor.
  - Economic development by creating jobs for the local community and providing an additional tax base.

Siting on Federal Lands: Challenges

- Consistency with land management plans
- Requirements for assessment of impacts to ecological resources, cultural and historic properties
- Noise
- Remediation
- Potential impacts to local communities;
- Interconnection and grid infrastructure needs
- Disparate timelines between developing and completing a data center project and a generation project

Legal Requirements

Multilayered and technology- and project-specific and governed by numerous federal statutory and regulatory requirements, including:

- National Environmental Policy Act (NEPA);
- Section 106 of the National Historic Preservation Act;
- Tribal government-to-government consultation;
- Consultations with and permits issued by the U.S. Fish and Wildlife Service, under the Endangered Species Act (ESA) and the Migratory Bird Treaty Act, and the National Marine Fisheries Service under the ESA;
- Section 120(h)(3)(A) of CERCLA.

State and Local Requirements

Outlook in 2025

Opportunities

- Administration Focus on Accelerating AI Deployment
- AI Infrastructure covered by FAST-41
- Executive Action: Updating Permitting Technology for the 21st Century (April 15, 2025)
- Streamlining Environmental Review for Certain Types of Infrastructure
- DOE RFI for Siting on Federal Lands

Potential Challenges

- Executive Order 14270: Zero-based Regulatory Review
  - Includes Regulations Authorizing Use of Federal Lands and other key environmental statutes.
- Rescission of CEQ NEPA Regulations
  - Shifting requirements across multiple agencies
- Staffing and Litigation

RECENT DEVELOPMENTS –

DOE Request For Information (RFI)

April 7, 2025 – Request for Information (RFI) on Artificial Intelligence Infrastructure on DOE Lands

- The Department of Energy (DOE) is now exploring opportunities to leverage its land to support the growing demand for AI infrastructure by soliciting information from entities with experience in the development, operation, and management of AI infrastructure.
- DOE is also seeking information from grid operators, technology developers, the public, and potentially affected entities on areas that should be considered or further evaluated for potential solicitations.
- The RFI seeks information on the type of energy technologies that might be of highest interest for co-location, including nuclear reactors, enhanced geothermal systems, fuel cells, carbon capture, energy storage systems, and portfolios of on-site technologies.
- Responses are due May 7, 2025.

Information Sought

- Industry interest in any of the locations identified.
- Potential data center designs, technologies, and operational models that could be deployed.
- Potential power needs, timelines, and approaches to co-locating energy sources with data centers or sources for surplus interconnection capacity.
- Financial and contractual considerations related to leasing DOE owned or managed land for data center development.
- Potential benefits and collaboration opportunities associated with siting AI infrastructure on DOE sites.
- Economic, realty, and environmental information.
- Engagement strategy with local communities and other stakeholders, as well as Tribes
- Potential challenges associated with siting AI infrastructure on DOE sites, and any additional information required for potential solicitations.

16 Initial Sites Identified

(1) Idaho National Laboratory

(2) Paducah Gaseous Diffusion Plant

(3) Portsmouth Gaseous Diffusion Plant

(4) Argonne National Laboratory

(5) Brookhaven National Laboratory

(6) Fermi National Accelerator Laboratory

(7) National Energy Technology Laboratory

(8) National Renewable Energy Laboratory

(9) Oak Ridge National Laboratory

(10) Pacific Northwest National Laboratory

(11) Princeton Plasma Physics Laboratory

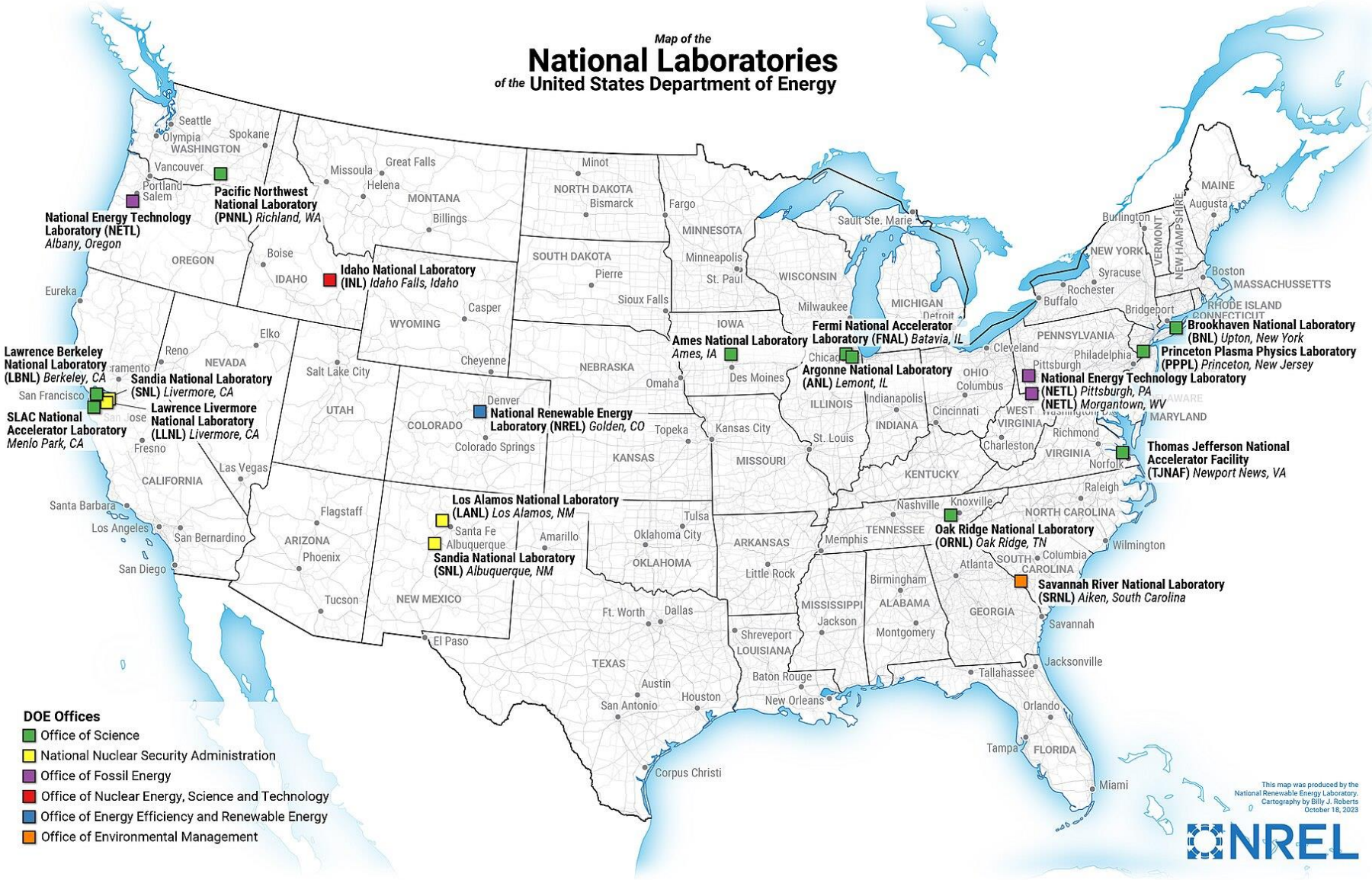
(12) Los Alamos National Laboratory

(13) Sandia National Laboratories

(14) Savannah River Site

(15) Pantex Plant

(16) Kansas City National Security Campus


Map of the
National Laboratories
of the United States Department of Energy
National Energy Technology Laboratory (NETL) Albany, Oregon
Pacific Northwest National Laboratory (PNNL) Richland, WA
Idaho National Laboratory (INL) Idaho Falls, Idaho
Lawrence Berkeley National Laboratory (LBNL) Berkeley, CA
Sandia National Laboratory (SNL) Livermore, CA
Lawrence Livermore National Laboratory (LLNL) Livermore, CA
SLAC National Accelerator Laboratory Menlo Park, CA
National Renewable Energy Laboratory (NREL) Golden, CO
Los Alamos National Laboratory (LANL) Los Alamos, NM
Sandia National Laboratory (SNL) Albuquerque, NM
Ames National Laboratory Ames, IA
Fermi National Accelerator Laboratory (FNAL) Batavia, IL
Argonne National Laboratory (ANL) Lemont, IL
Brookhaven National Laboratory (BNL) Upton, New York
Princeton Plasma Physics Laboratory (PPPL) Princeton, New Jersey
National Energy Technology Laboratory (NETL) Pittsburgh, PA
(NETL) Morgantown, WV
Thomas Jefferson National Accelerator Facility (TJNAF) Newport News, VA
Oak Ridge National Laboratory (ORNL) Oak Ridge, TN
Savannah River National Laboratory (SRNL) Aiken, South Carolina
DOE Offices
Office of Science
National Nuclear Security Administration
Office of Fossil Energy
Office of Nuclear Energy, Science and Technology
Office of Energy Efficiency and Renewable Energy
Office of Environmental Management
This map was produced by the National Renewable Energy Laboratory. Cartography by Billy J. Roberts October 18, 2023
NREL

DOE Planned Actions Following RFI

- Prioritize areas for potential future solicitations,
- Gather additional site information to inform proposal development,
- Identify potential use conflicts and mitigation measures
- Develop terms and conditions to operate on DOE owned or managed lands.

Additional Information in Future Solicitations

- acreage
- access to water
- environmental sensitivities
- geotechnical and flood information
- hazards
- land use plans
- power access and energy infrastructure
- security
- thermal management infrastructure
- existing compute infrastructure
- site access restrictions

RFI: Potential Advantages of Siting on DOE land

- Public-private partnership utilizing DOE capabilities
- Opportunities to accelerate deployment of key technologies like nuclear, geothermal and energy storage through existing site characterization work
- Existing energy infrastructure like microgrids and transmission availability
- Opportunities for co-location
- Potential to power federal infrastructure
- Ability to support permitting
- Supportive communities

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