U.S. DEPARTMENT OF ENERGY

DOE Resources Available to Support Data Center Electricity Needs

Near-term data center driven electricity demand growth is an opportunity to accelerate the build out of clean energy solutions, improve demand flexibility, and modernize the grid while maintaining affordability. Below are the Department of Energy's programs to help with deployment, grid enhancement and expansions, energy efficiency, demand side flexibility, and technical assistance.

Contents

Grid Scale Clean Energy Deployment

Building additional clean energy is a cost-effective way to meet new loads and is necessary for meeting carbon emissions reduction goals. Tax credits such as the Clean Energy Production Tax Credit (§45Y) and Clean Energy Investment Tax Credit (§48E) also can help support clean energy investments on top of existing DOE funding.

Name	Type	Eligibility	Description
Title 17 Innovative Energy Loans (1703)	Loan; Financing Program	Project developers	Loan guarantees for projects that deploy innovative or significantly improved clean energy technologies (e.g., energy generation and storage, transmission and distribution systems, efficient end-use technologies, etc.) or employ innovative manufacturing processes or manufacture innovative technologies at commercial scale.
Title 17 Energy Infrastructure Reinvestment Program (1706)	Loan; Financing Program	Project developers	Direct loans and loan guarantees available to projects that retool, repower, repurpose, or replace energy infrastructure that has ceased operations.
Tribal Energy Financing Program	Loan; Financing Program	Federally recognized Tribes, tribally-owned developers	Direct loans and loan guarantees for energy-related projects available to federally recognized tribes, including Alaska Native village or village corporations, or a Tribal Energy Development Organization that is wholly or substantially owned by a federally recognized Indian

			tribe or Alaska Native Corporation.
Civil Nuclear Credit Program	Grant	Owners or operators of commercial U.S. reactors	Funding to help preserve the existing nuclear fleet at risk of retirement due to economic factors, which can provide carbon-free power to data centers.
Generation III+ Small Modular Reactor Pathway to Deployment Program	Notice of Intent issued to for funding opportunity	Project developers	To spur the necessary industry-wide momentum, DOE intends to offer funding for projects under this solicitation through two tiers: Tier 1 will provide up to $800 million to support up to two first-mover teams of utility, reactor vendor, constructor, and end-users/off-takers committed to deploying a first plant while facilitating a multi-reactor, Gen III+ SMR orderbook. Tier 2 will provide up to $100 million to spur additional Gen III+ SMR deployments by addressing key gaps that have hindered the domestic nuclear industry in areas such as design, licensing, supplier development, and site preparation.
Critical Facility Energy Resilience (CiFER)	Notice of Intent issued for funding opportunity	Project developers	DOE intends to issue a Funding Opportunity Announcement (FOA) seeking applications for financial assistance awards under a competitive pilot demonstration grant program, as authorized in section 3201 of the Energy Act of 2020, for energy storage projects that are wholly U.S.-made, sourced, and supplied.
Hydroelectric Incentive Programs	Grant	Owners or authorized operators of a hydroelectric facility	More than $750 million through three programs to support energy production, energy efficiency improvements, and enhancements at existing hydropower facilities.
Interconnection Innovation e-Xchange (i2X)	Technical Assistance	Interconnection stakeholders	The i2X program enables simpler, faster, and fairer interconnection of clean energy resources via stakeholder engagement, data and analysis, strategic roadmaps, and tailored technical assistance.
Non-powered Dam Development Assistance	Technical Assistance	Project developers	Holistic pre-feasibility assessments of non-powered dam retrofits supported by the best available nationwide data and a suite of online tools.

HydroWIRES Calls for Technical Assistance	Technical Assistance	Hydropower hybrids and pumped hydro power developers and other stakeholders	These recurring technical assistance calls aim to pair utilities and hydropower developers with leading national lab capabilities on pumped storage valuation, hydropower hybrid design, hydropower operations, and other grid integration topics.
Rural and Agricultural Income & Savings from Renewable Energy (RAISE) Initiative	Technical Assistance	Farmers, farm associations	Provides technical assistance, market analysis, and business model research to help farmers and communities deploy wind technologies at multiple scales for local and regional consumption with the goals of enabling farmers and small businesses to earn supplemental income, including through farm associations that could develop and own projects financed through fee-for-service models. Includes funding for technology development and commercialization of distributed wind turbines for the agricultural sector.

Grid Infrastructure Expansion and Enhancement

A variety of innovative grid solutions, including those enabled by artificial intelligence (AI), can help utilities and asset owners improve utilization of existing infrastructure. Technologies such as dynamic line ratings, grid topology optimization, and other solutions can meet growing load by more efficiently and intelligently using existing infrastructure.

Name	Type	Eligibility	Description
Grid Resilience and Innovation Partnerships (GRIP)	Grant	Varies by Topic Area; includes states, grid operators, project developers, and others.	$10.5 billion in federal funding to support projects that enhance grid resilience and deploy innovative grid technologies that improve reliability and resilience. This program seeks to support innovative partnerships or innovative technologies to transform the grid and catalyze non-federal public and private sector capital.
Title 17 Innovative Energy Loans (1703)	Loan; Financing Program	Project developers	Loan guarantees for projects that deploy innovative or significantly improved clean energy technologies (e.g., energy generation and storage, transmission and distribution

			systems, efficient end-use technologies, etc.) or employ innovative manufacturing processes or manufacture innovative technologies at commercial scale.
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Transmission Facilitation Program	Loan; Financing Program	Project developers	$2.5 billion in commercial support for qualified transmission projects through tools such as capacity contracts, public-private partnerships, and loans.
Transmission Facility Financing Program	Loan; Financing Program	Project developers	$2 billion to pay for the costs of direct loan for the construction and modification of transmission facilities.
Reconductoring Economic & Financial Analysis Tool (REFA)	Tool	Utility transmission planners and grid planners	REFA is a first of its kind tool designed to help utility transmission planners better understand the financial, environmental and economic benefits of reconductoring upgrades, using traditional or advanced conductors.
National Interest Electric Transmission Corridors (NIETC)	Other	Project developers, other stakeholders (anyone may submit information to inform NIETC designation)	Special designation that enables DOE and the Federal Energy Regulatory Commission to use financing and permitting tools to spur construction of transmission projects within a NIETC.

Maximizing Energy Efficiency of Data Centers

Energy efficiency is a key tool in reducing energy consumption from data center facilities. DOE has long been a leader in developing improved cooling technologies, including for data centers. For instance, ARPA-E has an ongoing COOLERCHIPS program focused on commercializing innovative cooling technologies for data centers. DOE national labs have built exascale computing facilities with a Power Usage Efficiency (PUE) of 1.03, demonstrating state of the art techniques for data center efficiency.[1] DOE is also leading the Energy Efficiency Scaling for 2 Decades initiative, with a goal to increase the energy efficiency of the microelectronics that are needed for computation at data centers by a factor of 1000 over 2 decades. DOE is continuing to develop programs to support data center owners in energy efficiency and

[1] Oak Ridge Frontier Supercomputer: https://science.osti.gov/-/media/ascr/ascac/pdf/meetings/202207/UpdateFrontier_ASCAC_202207.pdf
NREL Energy Integration Facility: https://www.nrel.gov/computational-science/measuring-efficiency-pue.html

industrial decarbonization. In addition, tax incentives, such as the 179D Tax Deduction, enable building owners to claim a tax deduction for installing qualifying energy efficient systems in buildings.

Name	Type	Eligibility	Description
Center of Expertise for Energy Efficiency in Data Centers	Technical Assistance	Data center operators, owners, and other stakeholders	Lawrence Berkeley National Laboratory offers assessment tools, trainings on specific technologies and best practices, and certification for data center energy practitioners.
Data Center Energy Practitioner Program (DCEP)	Training and Credentialing	Individuals, groups, organizations, federal employees	The DCEP Program training is a comprehensive program spanning 1-4 days. The DCEP program certifies practitioners as qualified to evaluate the energy status as well as efficiency and decarbonization opportunities in data centers. The curriculum includes several software tools with what-if capabilities to enhance the learning experience. Three credentials are available. • Generalist • IT specialist • HVAC specialist Best practices factsheets and other resources are available through the DCEP website.
Better Plants Initiative	Technical Assistance	Any U.S. based manufacturing company or industrial-scale energy-using organizations	Manufacturers and owners of industrial facilities (including data centers) in the Better Plants Program set energy saving goals, usually 25% over 10 years. Participants receive national recognition, technical support, in-plant trainings, energy saving resources, and other opportunities.
Data Center Accelerator	Report/Resource Collection	Data centers	The Data Center Accelerator Toolkit collects

Toolkit			guidance, factsheets, best practices, and other resources to help navigate these dynamics, based on the work of DOE's Better Buildings Data Center Accelerator. This toolkit addresses specific barriers and solutions for energy management in 5 primary data center types, including real-world examples for each.
Better Climate Challenge	Technical Assistance	Organizations, such as data center owners or operators, committed to reducing GHG emissions	Owners and operators of commercial and industrial facilities commit to a target of at least 50% reduction in scope 1&2 GHG emissions within 10 years. Participants receive national recognition, direct technical assistance, resources, and opportunities for peer exchange.
Onsite Energy Program	Technical Assistance	Industrial facilities and other large energy users	Provides technical assistance, market analysis, and best practices to help large energy users, including data centers, increase the adoption of onsite clean energy technologies.
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	Direct Support; Technical Assistance	States	$250 million in federal funding to provide capitalization grants to States to establish a revolving loan fund under which the state provides loans and grants for energy efficiency audits, upgrades, and retrofits to increase energy efficiency and improve the comfort of buildings.
50001 Ready	Resource	Facilities and organizations	Energy management program provides guidance and resources for implementing best practices and standard operating procedures aligned with the

			ISO 50001 energy management system standard.

Demand Side Flexibility

Demand flexibility can help avoid increasing peak demand. Distribution resources, such as virtual power plants, have the potential to increase the efficiency of existing and new grid infrastructure. DOE is accelerating the use of virtual power plants to support grid needs. For example, the Office of Clean Energy Demonstrations Distributed Energy Systems' program provided $50 million for projects that design and operate distributed energy systems that integrate high levels (>25% of peak demand) of variable clean energy resources.

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Connected Communities 2.0	Grant	Governments, industry stakeholders, communities	$65 million in federal funding to validate grid-edge technology innovations in real-world situations and provide new tools for utilities, grid planners and operators.
Distributed Energy Systems Demonstrations	Financial Assistance	Project developers	$50 million in federal funding to support a portfolio of projects that demonstrate and validate reliable operations and financial value from a range of grid topologies with diverse energy resources and distributed energy systems ownership models.

Technical Assistance Programs for State and Local Officials, Energy Professionals, Communities, and Large Energy Users

DOE and the National Laboratories can provide technical assistance to states to help develop specific solutions and projects to address growing electricity demand.

Name	Type	Eligibility	Description
State Technical Assistance Program	Technical Assistance	Public utility commissions and state energy offices	For State Regulators, offered through a multi-lab consortium including Lawrence Berkeley National Laboratory, National Renewable Energy Laboratory, and Pacific Northwest National Laboratory. This program provides regulators targeted support in addressing regulatory challenges, including developing innovative tariffs structures and regulatory environments to enable efficient deployment of resources for data centers, and in developing regulatory strategies to enable data center operational flexibilities and behind-the-meter resources.
State Energy Program Technical Assistance	Technical Assistance	States, territories, and the District of Columbia	For State Energy Offices, to provide national lab and 3rd party expertise in support of state-led energy initiatives. This can include supporting development of regional plans and solutions for states that want to plan for data center development.
Clean Energy Innovator Fellowship Program	Technical Assistance/Capacity Building	Recent graduates and energy professionals	The program supports recent graduates and energy professionals to spend two years working with eligible Institutions including electric

			cooperatives, grid operators, municipal utilities, public utility commissions, state energy offices and Tribal entities.
National Association of Regulatory Utility Commissioners (NARUC)-National Association of State Energy Officials (NASEO) Advanced Nuclear State Collaborative	Technical Assistance	Public utility commissions and state energy offices	Provides state energy officials access to DOE and national lab nuclear expertise to inform regulatory and policy questions surrounding the consideration and deployment of new nuclear generation.
The Interagency Working Group (IWG) on Coal and Power Plant Communities and Economic Revitalization	Technical Assistance	Energy communities	Provides technical assistance, resources, and funding guides to support economic revitalization in Energy Communities. The IWG houses resources such as the Coal Power Plant Redevelopment Visualization Tool, which serves as a public database and map to enable state and local economic development officials, project developers, and power plant owners to identify clean energy generation and data center siting opportunities in fossil energy communities.
Renewable Energy Siting through Technical Engagement and Planning (R-STEP)	Technical Assistance	State and local governments, communities	Helps communities better plan for and meaningfully engage in the development of large-scale renewable energy and energy storage projects.
Onsite Energy Technical Assistance Partnerships (TAPs) | Better Buildings Initiative	Technical Assistance	Industrial facilities and other large energy users	DOE's regional network of Onsite Energy Technical Assistance Partnerships helps facilities across the nation integrate the latest onsite energy technologies by providing specialized technical assistance, including initial screenings for multi-technology solutions, more advanced analysis to support project installations, and more.

Supercharging the Electric Grid	Technical Assistance	Industry Stakeholders	Enhances internal and external coordination in the energy industry through resources and best practices, analytical and capacity support, and field validations.

If you have questions on the DOE resources listed above, please feel free to submit them through the businesshub@hq.doe.gov mailbox with the subject “Load Growth”.