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The Digital Power Network, an affiliate of The Digital Chamber, is a trade association that represents the bitcoin mining data center industry. The Network's members include both publicly traded and privately held bitcoin mining companies that own and operate data centers, and companies that provide services and equipment to these data centers. We request that the Department of Energy's (DOE) Office of Science (OS) funding increase from the FY2024 enacted \$8.1 billion to \$8.5 billion in FY2025.

On behalf of our membership, we seek to provide justification for increased funding of OS to facilitate additional funding opportunities for small business research and development. In particular, we seek to explain why additional research and development (R&D) funding for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs can fund innovation at data centers and address electricity demand growth in real time while creating a skilled workforce.

Increased funding of DOE's OS, specifically its extramural R&D programming, will result in increased funding for SBIR/STTR programs as a set aside percentage of the extramural R&D budgets.¹ With these set aside funds, OS funds SBIR/STTR programs focused on energy production and use designed by the Offices of Fossil Energy, Fusion Energy Sciences, Nuclear Energy, and Energy Efficiency & Renewable Energy. As a result, grants are available to support research to catalyze the deployment of novel energy technology and increase efficiency in the private sector.

Energy Efficiency and Renewable Energy

Demand for electricity is projected to grow throughout the next decade more than initially anticipated. In 2023, the forecast of cumulative electricity growth over the next five years

¹ <https://science.osti.gov/sbir/About>

increased from 2.6% to 4.7%.² According to the North American Electric Reliability Corporation, “Sharp increases in peak demand forecasts and the potential for higher generator retirements are raising concerns for electric reliability over the next 10 years.”³ In addition, the development of transmission facilities and deployment of generation resources necessary to ensure reliable electricity service are subject to regulatory review and interconnection queues that lead to delay.

Load growth will in part be driven by increased demand for data centers. Electricity consumption is the largest operational cost incurred by Bitcoin data centers. In turn, Bitcoin mining data centers seek to develop technological solutions in-house to, for example, reduce energy consumption or utilize waste heat generated by the operation of computers.

The bitcoin mining data center industry’s innovations include increasingly efficient cooling systems that not only draw heat away and ensure computing performance but also utilize heat for novel applications. Similarly, development of energy efficient hardware, such as application specific integrated circuits, creates domestically designed specialized microprocessors.⁴ Such technological developments not only directly address the tension created by electricity demand growth in coming years but also strengthen domestic supply chains, promote economic development in local communities, reduce potential greenhouse gas emissions and contribute to energy security.

Innovations in materials and processes that result in these novel technologies require significant investment by the many small businesses of the bitcoin mining industry. DOE’s SBIR/STTR funding is critical to ensure that R&D undertaken to provide bespoke solutions by innovators can become commercialized and widely adopted.

² <https://gridstrategie.sllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf>

³ <https://www.nerc.com/news/Pages/Future-Electricity-Demand-and-Energy-Needs-Rising-Rapidly;-Transmission-Hurdles-Impact-Future-Reliability.aspx>

⁴ <https://auradine.com/auradine-unveils-worlds-first-4nm-bitcoin-mining-systems-with-highest-performance-and-breakthrough-energytune-technology/>