Supplemental Project Notice

DCFLEX

Data Center Flexible Load Initiative

PROJECT HIGHLIGHTS

- Enable large data center potential to become a grid resource
- Deliver the roadmap for an equitable, efficient path to leverage load in the portfolio for decarbonization
- Deliver a tool kit for primary user groups in the utility sector impacted by the fast-paced evolution of the data center industry

Background

The demand for energy to power data centers is skyrocketing, largely driven by the rapid expansion of AI.

AI-driven data centers have the potential to transcend their traditional roles as passive electricity consumers, transforming into dynamic assets that enhance grid reliability, resilience, and affordability for all electricity consumers. The technology is already here. What is needed is a shift in mindset coupled with innovation in operations, business models, and regulation.

Objectives

Launching in the winter of 2024, EPRI's Data Center Flexible Load Initiative, DCFlex, will demonstrate how data centers can support and stabilize the electric grid while improving interconnection and efficiency. The Initiative will drive a cultural, taxonomic, and operational shift, creating a blueprint for data center stakeholders, utilities, market operators, technology innovators, and policymakers to adopt.

Learnings

The goal is to spark change through hands-on and experiential demonstrations that showcase the full potential of data center operational flexibility and facility asset utilization. The Initiative aims to deploy five to ten large-scale Flexibility Hubs, each living laboratory demonstrating innovative strategies for integrating data centers with the grid under various conditions to facilitate widespread adoption and replication.

Benefits

This initiative will enable broad public benefits as it paves the path to affordable and equitable electricity prices by identifying the program mechanisms and operational capabilities that integrate flexible data center loads to the decarbonization portfolio.

Additionally, participating funders will benefit from the following:

- Tool kit that will guide utilities, regulators, market participants and data center developers and operators to design and operate large data centers as a grid resource
- Identify pathways to efficient investment returns and deployment time
- Create collaboration between the utility industry and data center industry

Project Approach and Summary

DCFlex is structured in three workstreams to address the most pressing pain points for respective user groups.

Flexible Data Center Design workstream focuses on guiding future data centers to become grid resources

Transformational Utility Programs workstream will enable programs that complement data center flexibility

Grid Planning for Operational Flexibility workstream aims to address foundational planning elements that must capture the portfolio impacts of large flexible loads

Data Center informed Energy Supply workstream aims to address energy supply portfolio needs and readiness

Deliverables

WS1: **Flexible Data Center Design**

- Data Center design specification informed by grid needs for flexibility
- Test, validate & demonstrate DG/DS operational capabilities that enable flexibility

WS2: **Transformational Utility Programs**

- Efficient and equitable program structures that attract flexible loads to become part of the energy portfolio
- Operator dispatch software module for flexible loads

WS3: **Operational Flexibility Framework**

- Forecasting data centers to inform mid- and long-term planning practices
- Reimagined interconnection tool kit for utility practitioners

WS4: **Data Center Informed Energy Supply**

- Options comparison of energy supply technologies
- Supply chain implications across energy supply, fuel, switchgear, and workforce
- Regional portfolio readiness scorecard

Price of Project

Funder Type	Funder Subtype	Funding/Yr
Utilities	*Large	$250K
	*Medium	$175K
	*Small	$75K
	Generation only	$200K
Data Center Developers/Operators		$325K
Technology Providers		$250K
ISOs, RTOs, and Others		$50K
Mgmt Consultant		$200k

* Transmission and Distribution Throughput Basis:
Large - T> 10,000 or D>44, 000; Medium - 10,000>T>5,000 or 44,000>D>15,000; Small - T<5,000 or D<15,000

Project Status and Schedule

DCFlex is planned to be a 3-year initiative launched in late 2024 and be completed by the end of 2027.

Who Should Join

DCFlex Initiative will deliver the most value to electric utilities, energy system operators, data center owners, developers and operators, distributed generation and storage technology partners and similar energy market participants as well as regulatory bodies responsible for oversight and governance of electric utility practices.

Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

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