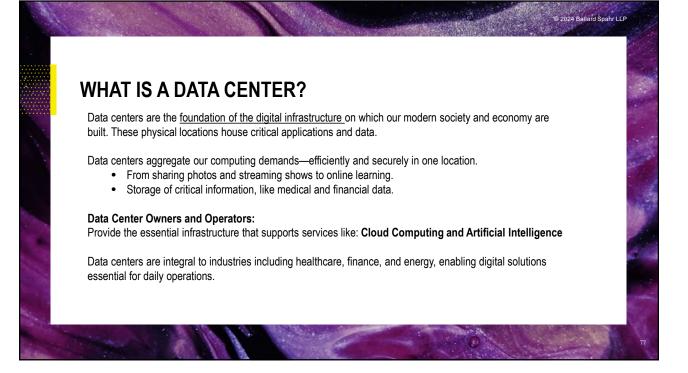


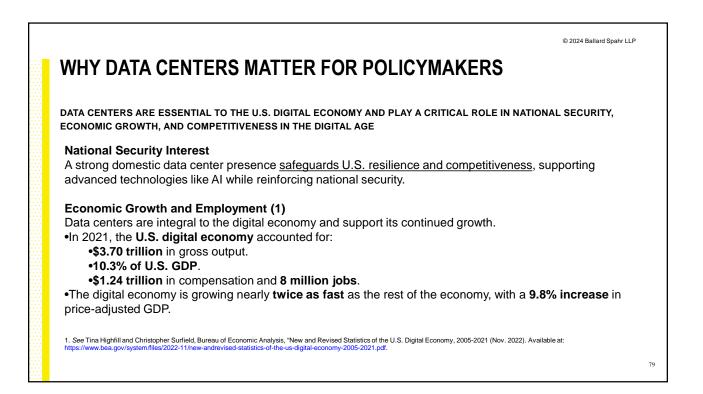
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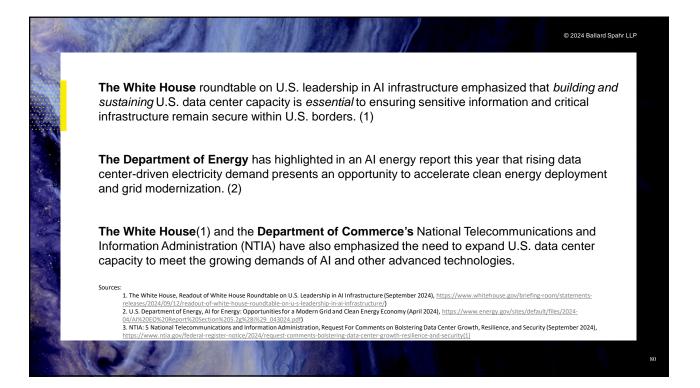


# WHAT IS DRIVING THE INCREASE IN DEMAND? THE INTERNATIONAL ENERGY AGENCY PROJECTS THAT GLOBAL DATA CENTER ELECTRICITY DEMAND WILL MORE THAN DUBLE BY 2026. To meet the growing customer demand for digital services, developers are rapidly expanding data center infrastructure across the U.S. Key Drivers: Industry Needs Across Sectors Everyday Digital Activities: Remote work, virtual meetings, and media streaming are dependent on robust data center capabilities. Healthcare: Hospitals generate vast amounts of medical data, requiring secure storage and access to ensure quality patient care. Finance: Data centers enable secure transactions and data processing critical for banking and financial markets. What about AI: While AI garners much attention, it's only one of the many critical functions that data centers support.

Data centers form the foundation of our digital infrastructure, enabling essential services far beyond the specialized needs of Al.

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# POLICY SOLUTIONS FOR A SUSTAINABLE DATA CENTER FUTURE

THE DATA CENTER INDUSTRY MUST ENGAGE WITH POLICYMAKERS TO ENSURE RELIABLE, AFFORDABLE, AND RESILIENT POWER SOLUTIONS FOR THE FUTURE

- Critical Focus Areas:
  - Transmission Capacity & Power Supply

Ensure adequate transmission and power supply for projected data center and advanced computing growth.

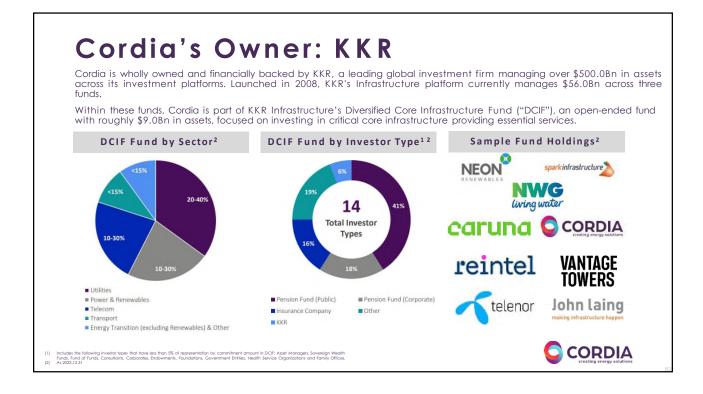
- Energy Component Availability Secure access to critical components like transformers and breakers essential to infrastructure expansion.
- o Advanced Carbon-Free Technologies Streamline licensing and regulation of nuclear and other carbon-free technologies.
- o Battery Storage & Emergency Back-up Develop large-scale battery storage and robust backup generation solutions.
- o Planning and Forecasting: The data center industry, regulators, utilities, and power generators must work together to explore innovative solutions and improve load forecasting, resource planning, and infrastructure expansion.
- Support Cost-Effective Sustainable Energy Deployment Policies should promote utility-scale renewable energy projects to power data centers sustainably.
- Modernize Transmission Infrastructure Expedite the development of modern, resilient transmission networks to support reliable data center operations.
- Expand Customer Choice & Renewable Access
  - Enable self-generation, co-location and direct energy purchasing options for data centers.
  - Foster the development of cleaner fuel technologies and commercialization of renewable resources.

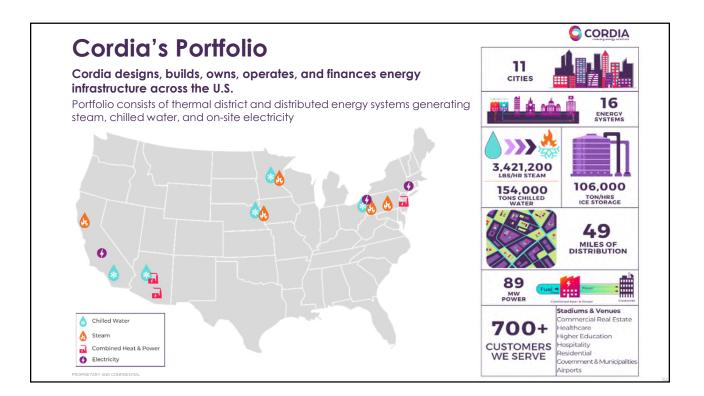


# Data Center & Energy Policy

10/30/2024

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# ESG Goals

Cordia is committed to delivering sustainable and innovative energy solutions that prioritize the safety and future of our people, customers, communities, and the planet. Our mission and vision to provide high-quality services and become a leading provider of sustainable and reliable energy solutions align with our ESG goals.

Cordia strives to create value for our customers while upholding high ethical standards and demonstrating accountability and transparency in all our operations.



Achieve Net Zero Emissions by 2050



Fleet to Use

Renewable

Electricity



Achieve higher levels of Water Conservation and Quality



Increase Employee and Board A Diversity



Contractors and Suppliers Align with ESG Goals



Reduce Internal Cyber Security Risk



# POLICY **PRIORITIES Distributed Generation** Address the gaps in local power utilities and transmission companies to . meet the power demands of rapidly growing sectors, including semiconductors, data centers, biomanufacturing, advanced avionics, and next-generation medical technology. **Expansion of Thermal Energy Districts and** Net-Zero Energy Districts (NZEDs) 121 Develop and expand thermal energy districts and NZEDs to support sustainable, low-carbon energy solutions at a community scale Geothermal/GeoExchange and Thermal \*\* 149 Energy Networks (TENs) Support the development and deployment of TENs to provide clean, efficient, and reliable energy solutions for heating and cooling. +++

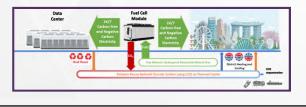
# **DISTRIBUTED GENERATION**

### OVERCOMING LIMITATIONS OF EXISTING GRID INFRASTRUCTURE:

Aging Grid Infrastructure: Many local power utilities and transmission ecosystems are based on aging infrastructure that is not equipped to handle the increased load and sophisticated energy demands of modern high-tech industries.

Grid Constraints: The current grid infrastructure often faces capacity constraints, leading to challenges in meeting peak demand, which can result in increased costs, inefficiencies, and potential disruptions.

**Resilience Challenges:** Traditional utilities may struggle to provide the level of resilience required by critical sectors, particularly during extreme weather events or other disruptions, underscoring the need for alternative, reliable energy sources.



# KEY TECHNOLOGY AREAS: MICROGRIDS

Combined Heat and Power (CHP): Promote and support CHP systems that improve energy efficiency and reliability, reducing energy costs and emissions.

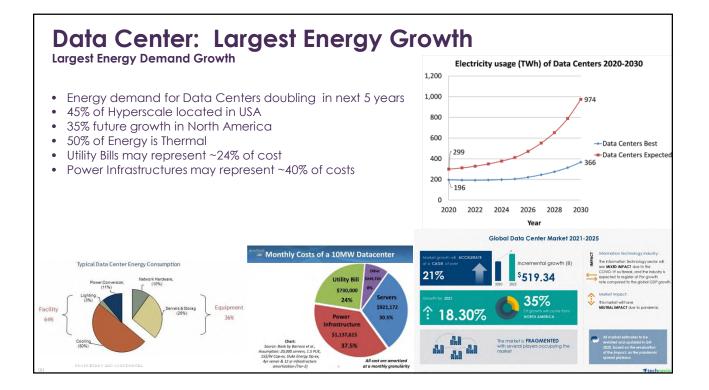
**Solar/Renewable + Battery:** Encourage the adoption of integrated renewable energy and battery storage solutions to enhance energy security and resilience.

Small Modular Reactors (SMRs): Advocate for the deployment of SMRs and specifically microreactor's to provide scalable, reliable, and lowcarbon energy. SMRs offer enhanced safety features, flexible power generation, and the ability to support grid stability and resilience









# What is **RELIABILITY**?

- Thermal District Energy system customers expect response with (five - nine), 99.999% reliability.
- The system design, equipment, staffing and training are structured and maintained with this level of uptime in mind.
- Customers on district systems include hospitals, airports, laboratories all with high reliability requirements.
- Thermal District understand mission critical reliability!

PARAMETERS	TIER 1	TIER 2	TIER 3	TIER 4
Uptime guarantee	99.671%	99.741%	99.982%	99.995%
Downtime per year	<28.8 hours	<22 hours	<1.6 hours	<26.3 minutes
Component redundancy	None	Partial power and cooling redundancy (partial N+1)	Full N+1	Fault tolerant (2N or 2N+1)
Concurrently maintainable	No	No	Partially	Yes
Price	\$	\$\$	SSS	\$\$\$\$
Compartmentalization	No	No	No	Yes
Staffing	None	1 shift	1+ shift	24/7/365
Typical customer	Small companies and start-ups with simple requirements	SMBs	Growing and large businesses	Government entities and large enterprises
The main reason why companies select this tier	The most affordable data center tier	A good cost-to- performance ratio	A fine line between high performance and affordability	A fault-tolerant facility ideal for consistently high levels of traffic or processing demands



# **Grid Power**

Grid power is the current preferred source of primary power for most data center developers, but they require onsite solutions to achieve desired levels of reliability.

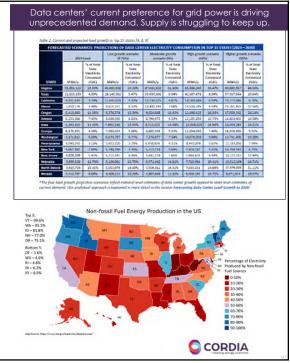
- In the US, on-site solutions are often deployed as a bridge to grid power or as backup power, but rarely as a primary power solution.
- Some active markets for data center development are draw that activity because they have a comparatively large amount of immediately available grid power compared to other, more established markets.

### Advantages to Grid Power as a Primary Power Source

- Grid power may be cheaper than operating an on-site primary power solution.
- When used with an on-site backup power system featuring UPS and N+1 generation capacity, it is a reliable source of power.

### Disadvantages to Grid Power as a Primary Power Source

- On its own, grid power is not reliable enough to meet the needs of this industry. Onsite backup solutions are a requirement to achieve industrystandard reliability.
- Grid power is also still comparatively "dirty" in most parts of the US. A grid connection is rarely a low-carbon power solution.
  - In some cases there may be additional carbon impacts from the onsite bridge solutions used by some data center developers, including the fuel and materials used to manufacture, ship and install the temporary equipment.



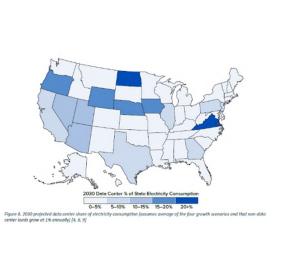
# **On-Site Solutions and the Grid**

What happens to temporary on-site solutions for primary power when the data center connects to the grid?

Some assets will become redundant

•

- Fewer prime movers required for backup
- Asset additions may be required for heating/cooling
  - An efficient on-site solution might use cogeneration equipment and generate steam or hot water for use in chillers.
  - When grid power arrives and prime movers are reserved for backup use, that steam or hot water is not available for the chillers.
  - This scenario would require asset additions to meet cooling requirements, which is costly and carbon-intensive. This may be why some data center developers have been reluctant to consider cogen or other thermal energy solutions.
- Replacing an on-site system with grid power may create an
  opportunity for power and or redundant ancillary equipment



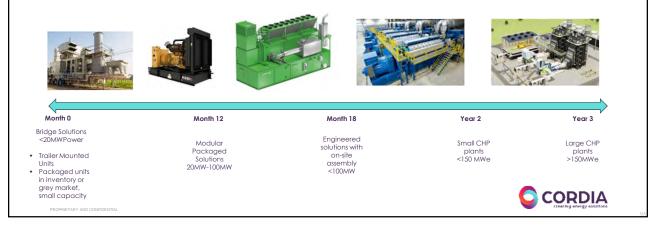


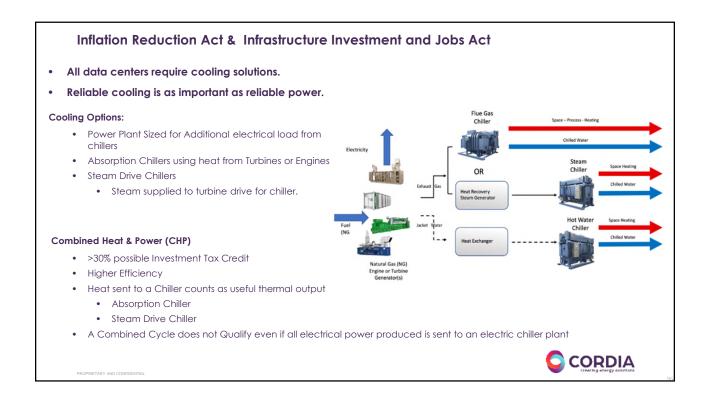
Full Grid Power + On-site Backup	Fully Islanded Solution – (No grid interconnection)	Hybrid Solution – Limited Grid Power with On-Site Generation	
Grid provides all primary power On-site solution only used during emergencies and testing No cogeneration	<ul> <li>On-site solution provides all primary and backup power</li> <li>Power generated by on-site traditional and renewable sources (microgrid)</li> <li>Cogeneration possible</li> </ul>	<ul> <li>On-site solution provides some of all primary power.</li> <li>Grid is secondary source of power.</li> <li>Cogeneration possible.</li> </ul>	
	Electro-Thermal Energy Networks	the first of the f	

# **Global Supply Chain Challenges**

Phasing the schedule is key.

- Early solutions will be driven by availability (supply chain). Grey market used equipment solutions may be part of the solution.
- Request only the Power necessary to advance the project in phases.
- Select and purchase the equipment for later phases at the start of the project.





# System Configuration Scenarios

### Potential Scenario - A

Green and improve reliability on an existing 300 MW site that is currently grid connected with traditional generator and diesel fuel backup.

- Evaluate site location for on-site renewable opportunities.
- Evaluate existing site for thermal energy solutions for cooling demands.
- Evaluate site for on-site energy management solutions (BESS, TES) to add redundancy and balance utility demand.
- \*Battery Energy Storage System (BESS)
- \*Thermal Energy Storage System (TES)

### Potential Scenario - B

Site a datacenter on an existing 1.5GW solar + storage development, to help firm up the power.

- Evaluate on-site utilities.
- Select technology
- Design, Build, Own, Operate Finance solution.

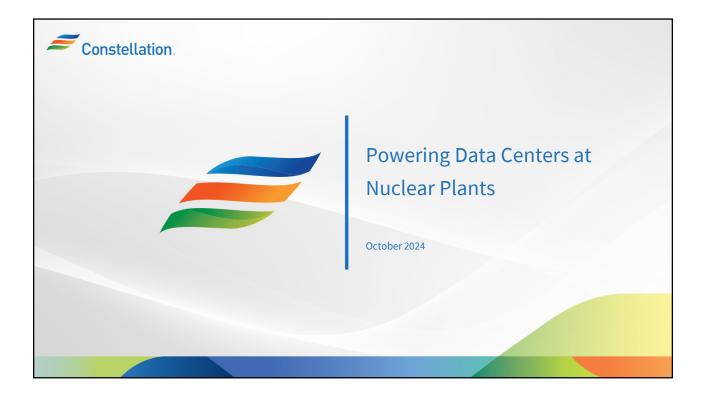
## Potential Scenario - C

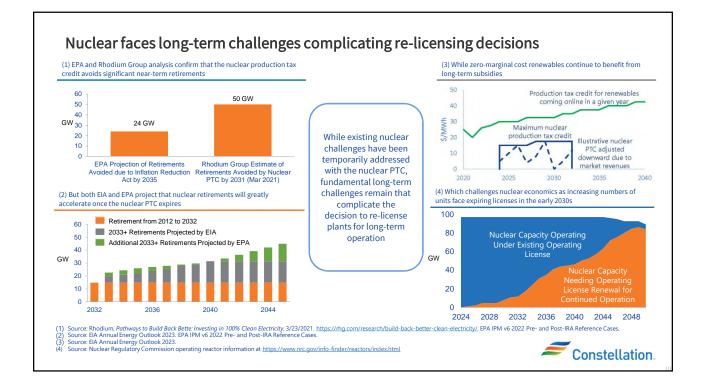
Greenfield development on a desirable DC site – get ramped quickly, with a now state and then a future state

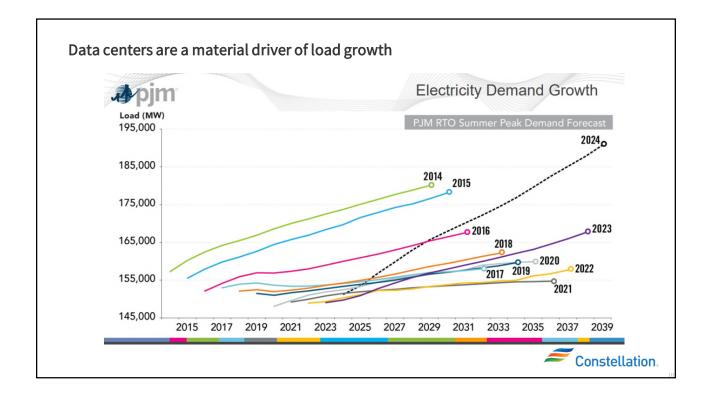
- Project Timeline will determine the technology selection.
- Deploy bridge power solutions while executing on permanent future state solutions.

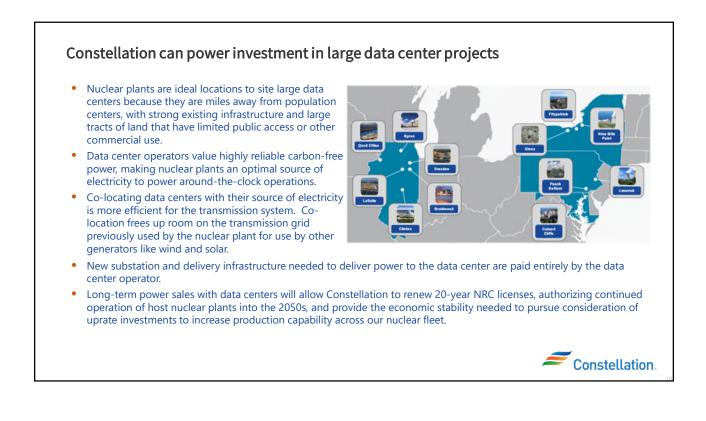


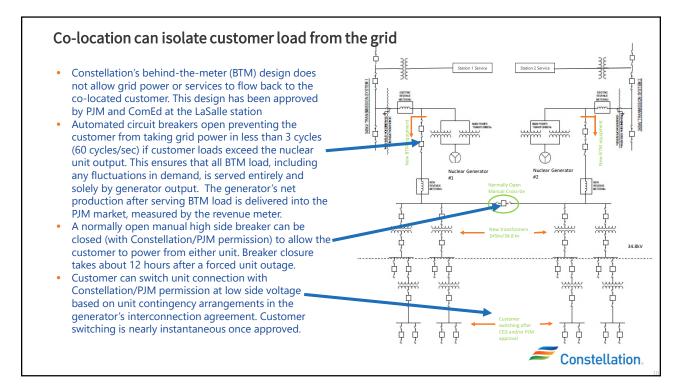












### Dispelling myths about co-location at nuclear plants Like any form of economic development, data center investment requires electricity to power **Co-Located Configuration:** operations. That new demand will be served regardless of whether it co-locates with a host New Lines and Substation Paid 100% by Data Center power plant or uses the utility's transmission system to take delivery of electricity produced remotely or in a neighboring state. For a new large data center to take power from the grid, it needs a new substation that costs \$150 million to \$250 million. Those costs - plus the utility's return on investment - are socialized across all customers, with the data center paying only a portion through its utility bill. Upgrades across the broader transmission network also are typically needed to get power to the new substation, with costs again spread across all families and businesses. On the ComEd system, for example, customers have paid more than 90% of the infrastructure costs incurred to connect and provide distribution service to data centers. Co-locating the data center at a nuclear plant requires the data center to pay for 100% of its substation costs, since it has no ability to take power from the grid. Co-location also reduces Grid-Connected Configuration: the need for surrounding grid upgrades by freeing up room for deliveries from other New Lines and Substation Paid For by All Customers on Utility System generation, like wind and solar. Overall costs to the grid customers are therefore lower when the data center takes power only from the nuclear plant. Efficient use of the transmission grid is increasingly important as various states transition from fossil generation to a cleaner fuel mix with additional renewable generation. Utilities are opposing co-location as a customer option because it reduces the utility's own infrastructure investment and profit opportunities by reducing the amount of transmission going into their ratebase. The sale of power from Constellation to the co-located data center ultimately remains subject to the state's authority, including how states assess charges used to fund infrastructure and social programs. Constellation.