# The Benefits of Co-Locating Data Centers at Nuclear Energy Facilities



#### Data centers are the backbone of the internet and power a large share of the American economy.

Data centers are critical infrastructure that power the internet. Expanding data center capacity is essential to maintain U.S. competitiveness on a global scale, support national security, generate jobs and economic investments in local communities, power innovation, and promote healthier, safer, and more prosperous lives.

#### "Behind the Meter" Explained: A Direct Connection to 24/7, Carbon Free Nuclear Energy

Powering data centers "behind the meter" by co-locating and connecting them directly to existing nuclear energy generation facilities avoids the need to transport power long distances over high-power transmission lines. This reduces the need for local utilities to undertake multi-year and potentially costly transmission infrastructure upgrade projects and ensures data centers have direct access to a reliable supply of energy. It also frees up room on existing transmission lines for other types of generation - like wind and solar - to increase output. Data centers located at and powered by our nuclear energy facilities will be among the most environmentally friendly data centers in the U.S., as nuclear energy does not generate greenhouse gas emissions. A nuclear facility connected directly to a data center continues to serve the same amount of energy load, just with a different commercial arrangement - one that will help ensure the nuclear facility's long-term operation, while also helping the technology sector meet its energy needs and environmental goals.

#### **Data Centers Drive Economic Investment**

Data centers bring economic growth to host communities. Construction and operation of a single, large campus data center is a sustainable community investment that creates high-paying jobs that stay within the community and generates potential for long-term community development. A large, multi-campus data center project co-located at an existing nuclear site is anticipated to produce:

- ~500 permanent, high-paying STEM careers
- \$30M+/year indirect and follow-on jobs in host communities
- 3,000-4,000 construction jobs over 3-5 years
- o \$20-\$30M in annual state and local tax revenue

#### **US Data Center Industry Job Creation**

Number of direct jobs created, 2017–21





## **Additional Benefits & Attributes**

In addition to the economic and environmental benefits of co-locating data centers at our nuclear sites, multi campus data centers typically will:

- Be designed to match their aesthetic surroundings
- Be environmentally conscious, further reducing carbon emissions by incorporating sustainable design features, such as solar panels, green roofs, or rainwater harvesting systems
- Have negligible impact on waste, noise, or traffic to surrounding residential communities
- Prioritize operators and tenants who pursue best-in-class methods to improve energy efficiency
- Be focused on exploring innovative cooling solutions that reduce overall water consumption, such as air-cooling or use of gray water

## Frequently Asked Questions



## If data centers connect to existing nuclear energy plants behind the meter, will the decrease in power supplied to the rest of the grid result in higher energy prices for other utility customers?

All economic development and growth results in new energy demand and those market signals spur energy suppliers to secure additional resources to keep prices stable. These market dynamics are the same regardless of whether the data center plugs into the power grid or connects directly to a power plant. At the same time, data centers - regardless of how they are configured - bring tax revenues, jobs, and other economic benefits that are essential for economic growth. The contribution to the GDP, direct and secondary jobs, and tax revenues are all offsets to any impact on power prices, which is the same with any economic development.

#### Will data centers directly connecting to existing nuclear energy plants impact electric reliability?

Regardless of where a data center locates, PJM (the grid operator) studies the data center's proposed configuration to ensure continued reliability. Illinois has sufficient excess energy supplies to handle economic growth without compromising energy security or reliability. Historically, ComEd exports electricity in over 99% of hours with average exports exceeding 5,000 MW. Long-term commitments to serve data centers will ensure the continued operation of nuclear plants without government support, keeping Illinois an electricity exporter while also expanding the state's economy.

## Will behind the meter connections allow data centers to escape paying for their fair share of the power grid?

Connecting a new data center to the grid requires construction of a new substation, which can cost more than \$250 million, and typically involves upgrades to the surrounding transmission network. The transmission upgrades vary by site but can cost as much as \$500 million. These costs, including the utility's return on its investment, would be borne by Illinois families, small business, and other ratepayers. While the data center does pay for transmission service, which partially offsets the incremental costs incurred by other Illinoisans, the fees typically only offset a portion of the costs. On the other hand, a data center co-located at a nuclear plant would pay 100% of the more than \$250 million required to build a new substation in addition to avoiding or reducing the need for surrounding grid upgrades. Furthermore, the co-located data center would create more room on the transmission grid for new wind and solar projects. Efficient use of the transmission grid is increasingly important as Illinois transitions from fossil generation and works to achieve its ambitious climate goals. The sale of power from Constellation to the co-located data center ultimately remains subject to the state's authority, including how Illinois assesses charges used to fund infrastructure and social programs.

#### Are data centers taking clean power off the grid?

#### No one is taking megawatts off the grid. This energy demand is coming to the grid and the only question is how it will be configured. Our carbon-free generating assets will be serving the data center customer either way, whether directly to the data center behind the meter or indirectly through the transmission system. Serving that new demand behind the meter has the added benefit of making more room on the transmission system available for use by other generators, like the wind and solar plants being built to meet the state's clean energy targets.

#### Will data centers connecting directly to existing nuclear plants impact our climate goals?

Co-locating data centers at nuclear facilities does not mean sacrificing progress on climate change - in fact, it can accelerate that progress and lead to technological solutions to complex problems that will improve quality of life and even save lives. Tapping the power of Big Data and generative AI has enormous potential to help the grid run more efficiently and will accelerate climate action. Led by tech companies, corporate buyers have contracted for more than 160 GW of carbon-free energy - more than half of the wind and solar operating today - and are continuing to drive innovation in the technologies needed to meet our climate goals.

#### Why do some local electric utilities oppose locating data centers behind the meter at nuclear power plants?

#### Some utilities view behind-the-meter configurations as a threat to their monopoly because they reduce the need for them to build additional large transmission lines or new substations when the data center is served directly by a power plant. When a data center instead locates at a power plant and connects directly to that energy source, only the data center - and no others - pay for the facilities used by the data center, avoiding the assignment of costs to local residents and businesses.

#### Won't building more data centers disturb nearby communities?

Locating data centers adjacent to a nuclear plant actually helps alleviate concerns about noise or other community impacts. Nuclear plants by their nature are located in mostly rural areas and are typically surrounded by a buffer zone. That leaves room for data centers to co-locate, away from population centers, resulting in fewer impacts on surrounding communities.

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