LAW360

Portfolio Media. Inc. | 230 Park Avenue, 7th Floor | New York, NY 10169 | www.law360.com
Phone: +1 646 783 7100 | Fax: +1 646 783 7161 | customerservice@law360.com

# Nuclear Power Can Help Industrial Plants Get To Net-Zero

By **Alex Polonsky, Ryan Lighty and Michael Müller** (August 13, 2024, 4:44 PM EDT)


Alex Polonsky


Ryan Lighty


Michael Müller

In the race to mitigate climate change and achieve net-zero emissions, the industrial sector currently faces immense challenges. One promising solution is the integration of nuclear energy into industrial operations.

While nuclear power plants have traditionally been owned by utilities and merchant generators, new technology is opening the door for certain companies to explore co-location and local offtake agreements with nuclear power plants, to provide carbon-free energy directly to their operations.

Indeed, we are already seeing such options being explored with both existing reactors and future advanced reactors.

In March, Amazon Web Services agreed to purchase a Pennsylvania data center built by Talen Energy along with energy supplied from a nearby Susquehanna nuclear power plant. The deal is currently being reviewed by the Federal Energy Regulatory Commission.

Below, we explore the potential of nuclear energy to revolutionize industrial practices, focusing on the financial and regulatory considerations, opportunities, and risk-mitigating factors.

**The Promise of Nuclear Energy for Industrial Uses**

Nuclear energy offers a reliable, low-carbon alternative to fossil fuels. Its application in industrial settings — such as large-scale data centers and manufacturing plants — can significantly reduce carbon footprints.

The interest in nuclear energy for these uses is driven by the urgent need to replace aging coal infrastructure and meet increasing energy demands, while adhering to environmental, social and governance criteria.

**Existing Operating Reactors vs. Not-Yet-Built Advanced Nuclear Technologies**

There are just shy of 100 operating nuclear power plants in the U.S. Offtake agreements with these existing reactors are a potential efficient option for high-load customers seeking 24/7 clean power now.

Existing reactors can provide immediate benefits without the extensive regulatory, financial and logistical challenges associated with new builds.

However, emerging reactor technologies — such as small modular reactors, or SMRs, and microreactors — offer flexibility for on-site or behind-the-meter electricity and, uniquely, industrial heat generation.

These advanced reactors come in various sizes and configurations, catering to specific needs of industries requiring large amounts of electricity, process heat or both, such as chemical manufacturers, data centers, cryptocurrency mining facilities and raw material extraction operations in remote areas.

For these newer technologies, timing is a particularly relevant consideration, as SMRs, microreactors and similar new technologies may not come online until the end of the decade.

However, large energy and industrial heat users can help ensure these advanced reactors are broadly deployed by signing power purchase agreements, or PPAs, or entering into other financial teaming arrangements.

**Financial Considerations: Historical Challenges and Modern Solutions**

In the past, investing in nuclear energy infrastructure has presented several financial challenges.

***Investment Risk***

Large-scale nuclear projects are capital-intensive. They typically involve high initial investment and long development timelines, leading to potential financial risks.

***Rising Construction Costs***

Inflation and supply chain issues can escalate construction expenses, particularly for projects with extended construction schedules and limited deployments. This presents challenges to establishing and maintaining accurate and realistic project budgets.

***Economies of Scale***

Achieving cost efficiencies requires large-scale deployment, which can be a barrier for initial projects.

Despite the above challenges, there are several strategies for mitigating financial risks.

***Government Funding and Incentives***

Funding from legislation such as the Inflation Reduction Act, and from various U.S. Department of Energy programs, can offset initial costs and provide financial stability.

***PPAs***

These agreements can hedge against long-term market fluctuations — providing predictable costs for purchasers, and predictable revenue streams for suppliers.

***Technological Advancements***

Improved technologies with smaller and scalable designs, and construction techniques that allow for greater use of manufactured components, as opposed to on-site builds, can reduce initial capital outlays, construction risks and construction timelines, making nuclear projects more financially viable.

It should be noted that securing a long-term PPA for power from a microreactor or an SMR can significantly mitigate perceived risks for lenders and local stakeholders.

**Regulatory Considerations: Navigating the Complex Landscape**

Regulatory issues are a critical component of nuclear energy projects, including the following.

***Nuclear Regulatory Commission Licensing***

For new facilities, understanding the timeline and requirements for obtaining construction permits and operating licenses, and renewing such operating licenses, is crucial.

***Site-Specific Issues***

For co-locating near an existing nuclear power plant, projects must consider the location within the nuclear plant's owner-controlled area or exclusion area.

Project developers must ensure that any backup power sources do not pose additional risks to the safe operation of the nuclear plant.

***Fuel Procurement***

The type of nuclear fuel required varies between existing reactors and advanced designs, affecting procurement strategies.

***Merchant Generator vs. Public Utility***

The project's classification affects regulatory oversight and compliance requirements.

***Transmission Planning***

New nuclear projects may necessitate extensive transmission infrastructure, triggering Federal Energy Regulatory Commission processes.

**Opportunities and Risk-Mitigating Factors**

While the financial and regulatory landscapes are complex, several factors favor the integration of nuclear energy in industrial uses.

***Climate Change and ESG Goals***

The push for sustainable practices and reducing carbon emissions is a significant driver for adopting nuclear energy.

***Public Perception***

As public awareness of climate change grows, support for nuclear energy as a clean alternative is increasing.

***Demand for Reliable Energy***

Industries with high energy demands, such as data centers, benefit from the stable and continuous power supply that nuclear energy provides.

To leverage the above opportunities, it is essential to address potential risks through the following.

***Government Support***

Securing government funding and support can alleviate financial burdens, and provide regulatory guidance.

***Innovative Technologies***

Embracing new technologies such as SMRs can streamline construction and operation processes, reducing both costs and risks.

A crucial selling point for financing partners is the demonstrated demand for new or existing nuclear generation, with long-term offtake commitments from industrial users making projects more attractive.

**Conclusion**

Nuclear energy holds substantial promise for transforming industrial energy use, contributing to the global effort to reach net-zero emissions. By understanding and navigating the financial and regulatory landscapes, and leveraging available opportunities, the industrial sector can successfully integrate nuclear energy into their operations.

The road to net-zero is challenging. But with nuclear energy, a sustainable and reliable future is within reach.

---

*Alex Polonsky, Ryan Lighty and Michael Müller are partners at Morgan Lewis & Bockius LLP.*