

Nuclear Project Financing Options Report

Executive Summary

Nuclear power plants have been providing a reliable zero-emissions power supply to the United States power grid since 1954. Over the last 70 years, nuclear power plants have been funded using a traditional rate-based finance approach, offering a reliable source of capital that is aligned with the beneficiaries of the power that is generated. Over the last 20 years, an additional model for financing energy generation has emerged using a combination of private capital, federal tax credits and loan guarantees, and power purchase agreements to add hundreds of gigawatts of renewable energy to the US grid. As we enter a new era of developing nuclear power generation with the emergence of advanced reactors, including Small Modular Reactors (SMRs), there is an opportunity to consider a mix of financing options that have not previously been available to nuclear plants.

The financing industry has demonstrated significant interest in the advanced nuclear power sector in the past two years, with record amounts of private equity being invested in the industry; \$800 million in 2024. The growing demand for reliable power, and projections that nuclear power can produce commercially competitive energy (\$76-141/MWh) are driving strong market interest. However, with only one advanced nuclear project completed in the U.S. new nuclear projects in the U.S. cannot be financed by commercial lenders. Successful financing of nuclear projects today will most likely involve leveraging the support of the federal government, appropriately risk-sharing across various project stakeholders and investor-types and working collaboratively across projects.

As with past nuclear projects, new advanced nuclear projects will continue to include rate-based investments. Traditional utilities, including TVA, Duke, Dominion and AEP, are currently moving forward with new nuclear projects. However, several projects have been announced are led by private developers. The developer-led efforts are formulating private and public financing mechanisms that significantly reduce or remove the use of rate-payer financing during the development and construction phase or, in some cases, during operations. The idea of developer-led, privately-financed power plants is not new; it is the method most renewable and many natural gas power plants have been financed over the past two decades. But the higher upfront costs and increased regulatory requirements associated with nuclear are driving financiers to adapt the existing financing models for early projects.

In line with this movement, many flavors of nuclear project developers are emerging: traditional large publicly traded developers with existing nuclear portfolios (Constellation, NextEra and Vistra), are entering this space at the same time as venture-capital backed-startups (Elementl, The Nuclear Company) and private equity backed startups (e.g. Entra1, NVisions, mid-sized solar developers). Long-term, energy off-takers, especially AI data center operators, site owners, reactor technology developers, EPC firms executing the project and special interest investors may all be asked to join the financing stack as minority shareholders and share some project risk.

Commercial bank lending to new nuclear projects is not currently feasible given banking regulations and the level of risk in nuclear projects. Therefore, only two options for debt financing exist today: loans/loan guarantees from DOE's Energy Dominance Financing Office (EDF), or structured private debt. The DOE EDF loan guarantees, with loans up to 80% of total project costs and interest rates of about 5%, can significantly mitigate the risks and costs associated with the project finance. Further, the federal government's Investment Tax Credit (ITC) that can cover up to 50% of project costs, offers a critical incentive that makes nuclear power economic and, because it is tied to total costs, can absorb up to 50% of the risk of cost overrun.