NE-26-37863 AI-Guided Fuel Management for a 12-Unit Small Modular Nuclear Plant

NuScale Power, LLC, is headquartered in Corvallis, Oregon. Its mission is to deliver scalable, advanced nuclear technology for producing electricity, heat, and water, aiming to enhance the quality of life globally.

Fuel contributes about 20% to the levelized cost of generating electricity with a Light Water Reactor (LWR). While nuclear fuel management optimization is well-known for a single reactor, NuScale is looking at options for reducing overall fuel costs on the front end and back-end with efficient fuel utilization in a 12-pack reactor configuration. NuScale's design offers a unique opportunity to look at this optimization given potential for 12-reactors with a single shared fuel pool and a significant number of fuel options.

NuScale will partner with Oak Ridge National Laboratory (ORNL) to utilize the artificial intelligence (AI) enabled nuclear design framework for the 12-reactor design challenge by strategically exploring the vast design space and reducing the computational time required for the reactor simulations. ORNL has significant expertise in AI, fuel management, and computational resources. Reduced front end and back-end fuel costs can make nuclear energy more competitive in the marketplace.