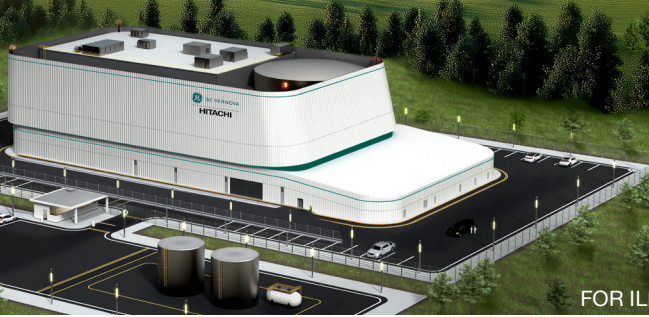




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# TVA is leading in the exploration of new nuclear technology

TVA is pursuing advanced nuclear technology and is ready to launch the American nuclear renaissance.

## Benefits of New Nuclear

### SAFETY

New nuclear technologies offer advanced, passive safety systems for enhanced safety and security.

### 24/7 RELIABLE POWER, 100% CARBON-FREE

Advanced nuclear energy is carbon-free and has the versatility to serve as a baseload power or as a complement to intermittent energy technologies. Amid growth in energy-intensive sectors such as artificial intelligence, quantum computing and datacenters, TVA is exploring a diverse range of advanced nuclear technologies to shape the most effective and scalable solutions for the region's growing economy with the reliability to provide the energy security America needs.

### JOB CREATION

Construction of new nuclear technologies, like a small modular reactor, will create thousands of highly-skilled jobs and bring capital investment to the region. TVA is looking at the possibility of multiple small modular reactors (SMRs) deployments beyond the Clinch River Nuclear Site.

### RESILIENCE

Resilient energy sources are critical to the businesses and services that rely on them. Having a resilient power source during energy disruptions can save billions in costs, maintain critical services, and save lives.

## TVA's New Nuclear Program

TVA's Board of Directors have authorized an investment of up to \$350 million to advance reactor development and licensing since the launch of the New Nuclear Program in February 2022.

- The New Nuclear Program provides a disciplined, systematic roadmap for TVA's exploration of advanced nuclear technology, both in terms of various reactor designs being proposed and potential locations where such facilities may be needed in the region to support future energy needs—as outlined in [TVA's Strategic Intent and Guiding Principles](#).
- TVA is uniquely positioned to support America's energy goals at the national level and provide energy security to the federal facilities it serves across the Tennessee Valley, without adversely affecting generation reliability or unreasonably raising energy costs for our customers.
- TVA can leverage recent and ongoing experience in constructing and operating large-scale energy projects, including completing Watts Bar Nuclear Unit 2 in 2016.

## Clinch River Nuclear Is Ready

- TVA has the nation's first early site permit for small modular reactors from the Nuclear Regulatory Commission (NRC) for the Clinch River Nuclear Site in Roane County at Oak Ridge, Tenn.
- TVA continues to evaluate both light-water and non-light-water cooled reactors and has begun site improvements to prepare for future generation. TVA has issued the Final Supplemental Environmental Impact Statement that addresses potential environmental effects of one GE Vernova Hitachi (GVH) Nuclear Energy BWRX-300 at Clinch River.
- TVA is the first utility to submit a construction permit application to the NRC for an SMR. TVA's CPA for the first BWRX-300 unit in the U.S. is currently under review with the NRC with a potential timeline for issuance in December 2026 or early 2027.
- TVA's efforts are supporting a path from first-of-kind technology deployment to cost effective commercial deployment at scale. TVA is developing a technology, a supply chain and a delivery model that can build an industry to unleash American energy.

## Advanced Nuclear Technologies

TVA's New Nuclear Program is looking at a variety of advanced nuclear technology options that might help meet both our near- and long-term generation needs including SMRs. Some SMR designs, such as the BWRX-300, use elements of proven technology and new innovations that simplify construction, maintenance, and operations to achieve a cost efficient and reliable design. These designs can also leverage the existing nuclear supply chain, including fuel supply, to increase cost effectiveness and reduce risk.

**Small modular reactors (SMRs) are advanced reactors, such as the BWRX-300, with an electric generating capacity of up to 300 MW, in contrast to an average of about 1,000 megawatts for existing commercial reactors.**

## Government and Policy Support

Government and policy support is needed to realize the benefits of new nuclear. First-of-a-kind nuclear technology, like any innovative technology, carries financial and technical risks better shared by multiple partners. Key national, regional and industry leaders have partnered with TVA and are supportive of its plans for advanced nuclear technology. Federal government support is also essential to the advancement of first-of-a-kind technology deployment, due to the risks and additional costs that are inherent to the technology deployment process. The world is looking for American leadership. TVA can provide clean, reliable energy to power our economy, advanced manufacturing and AI technologies. Government support will be critical to timely deployment of reliable SMR technologies in the United States.

## Technology Collaboration

We cannot pursue new nuclear technology alone; this must be a national effort that we do in partnership with other utilities, research institutes, and state and federal governments.



**HITACHI**

Developer of the BWRX-300 design being evaluated for deployment. TVA also has a two-party agreement with GE Vernova Hitachi as an early step, not a design selection, to support planning and preliminary licensing for a potential deployment of a BWRX-300 small modular reactor at the Clinch River Nuclear Site. This agreement will help inform a future decision about deployment and enable the refinement of cost and schedule estimates to support a future decision on project authorization.



Participating in the BWRX-300 SMR design being evaluated for deployment at Clinch River Nuclear Site or potential future sites.

**ONTARIOPOWER  
GENERATION**

Participating in the BWRX-300 SMR design for deployment in Canada; two years ahead of TVA's proposed deployment timeframe. OPG and TVA have a collaboration agreement that facilitates sharing of experiences that could reduce the financial risks of innovating new technology while taking advantage of both companies' extensive nuclear energy experience.

**synthos**  
green energy

Participating in the BWRX-300 SMR design being evaluated for deployment in Poland. Orlen Synthos Green Energy and TVA have a collaboration agreement that facilitates sharing of experiences that could reduce the financial risks of innovating new technology.

## PROJECT PARTNERS

TVA announced [project planning and evaluation partners](#) in January 2025. Bechtel, Sargent & Lundy and GE Vernova Hitachi are serving as collaborative partners to prepare a schedule and cost estimate for a potential SMR at TVA's Clinch River Nuclear site. The team is using an Integrated Project Delivery (IPD) model to optimize organizational strengths and to share risks and rewards. This model incentivizes the parties involved to deliver quality while working together to resolve problems to keep the project on budget and on schedule.



Marking the first agreement to purchase electricity from an advanced GEN IV reactor by a U.S. utility, TVA will purchase electricity from Kairos Power's 50 MW Hermes 2 plant, scheduled to begin operations in 2030 in Oak Ridge, Tenn. As part of a separate agreement through Kairos Power, Google will procure clean energy attributes from the plant through TVA to help power data centers in the region with locally sourced clean energy. TVA has been working with Kairos Power since [May 2021](#) to provide engineering, operations and licensing support for deployment of its low-power demonstration reactor, Hermes, - a fluoride salt-cooled, high-temperature reactor (KP-FHR) technology.



TVA and ENTRAI Energy have a collaboration agreement to explore potential deployment of up to six ENTRAI plants (multiple packs of NuScale SMRs) providing approximately 6 gigawatts of new nuclear generation in TVA's seven-state region.



TVA and Oklo signed an agreement to collaborate on fuel supply by evaluating the recycling of TVA's used fuel at Oklo's newly planned facility in Oak Ridge. The agreement also includes exploring pathways for TVA to purchase clean electricity generated from Oklo's powerhouses.



TVA and ORNL [announced](#) a partnership in March 2022 to promote, pursue, evaluate, and demonstrate the feasibility, operability, and affordability of utility-scale carbon-free technologies. Under the agreement, the entities will explore light water SMRs and fourth-generation advanced nuclear reactors, building on the partners' 2020 advanced reactor technology MOU.



TVA and UT [announced an agreement](#) in April 2020 to explore new nuclear technologies with the support of UT's advanced modeling and simulation tools. This collaboration supports the evaluation and potential demonstration and operation of light-water or non-light-water fission reactors that build on the success of the current generation of reactors and will also leverage the expertise of UT's nuclear engineering department. This partnership also provides a unique opportunity to engage with students and prepare the nuclear workforce of the future.