



Global Technical Training Services, Inc. Newsletter



### The State of the Industry

Sid Crouch, GTTSi Chief Technical Consultant

The EIA (**Energy Information Administration**) projects electric generation to grow by 1.7% in 2026 to 4,327 billion kWh (**kilowatt hours**). Most of the growth is with ERCOT (**Electricity Reliability Council of Texas**) and the PJM (**Pennsylvania, New Jersey, Maryland**) Interconnection - 9.5% @ ERCOT and 3.3% @ PJM. This increase is primarily driven by increased demand from larger customers, such as data centers, within the ERCOT and PJM regions. According to EIA, most of the increased demand in the PJM region will be offset by growing generation from coal and solar, up 23% and 63%, respectively, from 2024 to 2026. At ERCOT, the fastest growing energy source is solar, forecast to increase by 92% from 2024 to 2026. Natural gas will still be the largest contributing generation source in both regions, increasing by 2% to almost 50% total. The result is an increase in wholesale prices, driven by increased demand, reduced supply, and an increase in natural gas prices, especially this summer in Texas, where some analysts are forecasting prices could reach \$51 / MWh (**megawatt hour**) in the ERCOT region. The PJM recently announced that prices reached a record high of \$333.44 / MW-day during the latest capacity auction. In addition, the Henry Hub spot price for natural gas is expected to increase. Although it averaged \$3.10 / MMBtu (**million British thermal units**) in 2025, it is expected to increase to \$4.00 / MMBtu in 2026. The overall result? Electric prices are expected to INCREASE!

*I welcome your comments or questions - [sid.crouch@gttsi.com](mailto:sid.crouch@gttsi.com)*

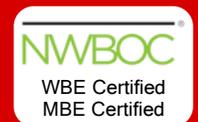
## HIGHLIGHTS

### THE MICROREACTOR EDITION

GTTSi TEAM MEMBER HIGHLIGHT: BEN BAILEN

DID YOU KNOW?

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## MICROREACTORS MOVE FORWARD TO ACHIEVE INITIAL CRITICALITY BY JULY 4

On May 23, 2025, President Trump issued four Executive Orders (**EOs**) that direct the U.S. Department of Energy (**DOE**) to take the lead in unleashing an American nuclear renaissance.

**EO 14301** reforms and streamlines the national laboratory processes for reactor testing at the DOE and directs them to start a new pilot program, called the **Reactor Pilot Program**, to expedite the testing of advanced reactor designs. This program established a new DOE pathway for advanced reactor demonstration to fast-track commercial licensing, aimed to leverage DOE's authority to expedite the research and development of advanced nuclear reactor technologies, with the larger goal of reaching criticality for at least three of these advanced nuclear reactors by July 4, 2026.

Ten companies were selected by the DOE to participate in the Reactor Pilot Program: *Aalo Atomics*, *Antares Nuclear*, *Atomic Alchemy*, *Deep Fission*, *Last Energy*, *Natura Resources*, *Oklo* (named for two projects), *Radiant Industries*, *Terrestrial Energy*, and *Valar Atomics*. In addition, *Westinghouse* was added since they received approval of their PDSA (**Preliminary Documented Safety Analyses**) for their "eVinci" micro-reactor design in June 2025 - they too are in contention to achieve initial criticality by July 4, 2026,

**Aalo Atomics reactor, Aalo-X**, is a 10 MWe (**30 MWt – megawatts thermal**) factory-fabricated, sodium-cooled (**low pressure, high efficiency**) microreactor, and will be located at the Idaho National Laboratory (**INL**). Aalo Atomics had originally planned to use Uranium Zirconium Hydride (**UZrHx**) fuel but shifted to

standard LEU (**Low Enriched Uranium**) fuel, which will be supplied by GNF (**Global Nuclear Fuels, subsidiary of GE Vernova**).

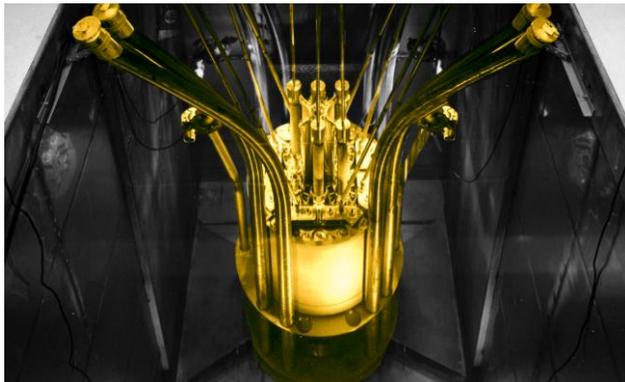


*Aalo Atomic Sodium-Cooled Micro-Reactor*  
Photo Credit: Aalo

**Antares Nuclear reactor, Antares Mark-0**, is a compact, modular, and passively heat-piped cooled microreactor - expected to generate between 100 kWe and 1 MWe. It is fueled by poppy seed-sized TRISO (**Tri-Structural Isotropic**) HALEU (**High-Assay Low-Enriched Uranium**) fuel particles, embedded in a prismatic graphite core. TRISO fuel is an advanced, highly robust nuclear fuel designed to be "meltdown-proof," capable of withstanding extreme temperatures exceeding 3,250°F without releasing radioactive material. Each poppy-seed-sized particle is a Uranium Oxycarbide (**UCO**) fuel kernel, coated in layers of carbon and silicon carbide, which act as a containment vessel. The heat pipes, which cool the reactor, contain liquid sodium, which heats up near the core, turns into vapor and flows to the other end where it is condensed by heating a secondary system. The liquid sodium then returns to the core by capillary action through a wick structure inside the pipe. Heat generated by the core is transferred by *(continued)*

the heat pipes and used to power a closed nitrogen Brayton cycle. The graphite moderates the nuclear reaction and reflects neutrons back into the core to increase its efficiency. The Mark-0 pilot program reactor will be located at INL near Idaho Falls, Idaho. The test is scheduled to take place before July 4, 2026, within Building 793 of the Materials and Fuels Complex, a site that historically housed the Army's first mobile nuclear reactor, ML-1.

**Atomic Alchemy reactor, Versatile Isotope Production Reactor (VIPR)**, is a 15 MWt, pool-type, non-power modular reactor designed for commercial radioisotope production at the Idaho National Laboratory site and features a passive, water-based, natural circulation decay heat removal system. Its design utilizes the light-water pool for both moderation and cooling of the low-enriched uranium (**LEU**) fuel, with an aim to produce over 40 different isotopes. The light-water pool also functions as part of the radioisotope transfer system. In addition, the facility is planned to house up to four reactors for efficient, high-yield production.



*Atomic Alchemy VIPR*  
*Photo Credit: Atomic Alchemy*

**Deep Fission reactor, Gravity**, is a 15 MWe PWR (**Pressurized Water Reactor**) microreactor that will utilize standard LEU fuel assemblies, like you find in a commercial grade PWR. However, the fuel assemblies are placed one mile underground in 30-inch diameter

borehole. This design uses the natural hydrostatic pressure of the water-filled boreholes to create roughly 160 atmospheres of pressure for safety and efficiency, replacing the typical large surface containment structure. It is designed for modular, clustered deployment for increased power output (**150 MWe from 10 reactors**) and operates at a core temperature of ~350°C (**599°F**). The Deep Fission Pilot Program reactor will be located in the Great Plains Industrial Park in Parsons, Kansas. Groundbreaking occurred on December 9, 2025, with plans to achieve initial criticality and begin operations by July 4, 2026.



*Deep Fission Reactor "Gravity"*  
*Photo Credit: The Brighter Side of News*

**Last Energy reactor, PWR-20**, is a modular 20 MWe (**80 MWt**) single-loop PWR microreactor with closed-cycle air cooling operating at 300°C (**572°F**). It uses standard full-length 4.95% enriched fuel assemblies and because the reactor is air cooled, does not need to be sited near a water source and is tailored to serve dispersed energy users. Last Energy can deliver more than one unit to scale the output that the customer needs. The design is engineered for fully modular, factory-based construction so that all the modules can be transported via trucks, then delivered as a kit onsite with a "plug-in ready" electrical system. The PWR 20 footprint will fit within a football field, less than half an acre. Its PWR design leverages established fuel (*continued*)

pathways and safety principles, minimizing technical risk and accelerating commercialization. Last Energy's pilot microreactor (**PWR-5**) will be located at the Texas A&M-RELLIS (**Respect, Excellence, Leadership, Loyalty, Integrity, Selfless-Service**) campus in Bryan, Texas. The 5 MWe reactor will be part of the university system's "energy proving ground" to demonstrate safe, low-power criticality, with operations planned for 2026.



*Photo: Last Energy PWR-20  
Photo Credit: Fundamental*

**Natura Resources reactor, MSR-1**, is a 1 MWt graphite moderated, molten-salt, microreactor that uses HALEU fuel as UF<sub>4</sub> dissolved in LiF-BeF<sub>2</sub>-UF<sub>4</sub> (**FLiBe**), which will be supplied by the DOE. It is currently under construction in Texas at a multi-use research facility on the campus of Abilene Christian University. Their molten salt coolant and liquid fuel design increases efficiency (~40%), safety (no risk of radioactive vapor release), and reduces cost (reduced quantities of concrete and steel for high-pressure containment vessel) when compared to LWRs (**Light Water Reactors**). Since Molten Salt Reactors operate at high temperatures and low pressure, they could be used for production of hydrogen for green steel without the large amounts of greenhouse gases emitted when producing hydrogen with fossil fuels.

**Oklo Inc. reactor, Aurora**, is a 75 MWe liquid metal (**sodium**) fast fission microreactor. It will use HALEU fuel supplied by the DOE and was inspired by the Experimental Breeder Reactor-II (**EBR-II**).

Its design is self-regulating, operating at near-atmospheric pressure, and can recycle used nuclear fuel to reduce waste. Construction began on September 22, 2025, at the Idaho National Laboratory site. Oklo Inc. has also achieved key regulatory milestones, including the DOE approval of their Aurora Fuel Fabrication Facility's (**A3F**) PDSA in December 2025. As part of the Reactor Pilot Program, Aurora will be licensed under the DOE rather than the NRC and is expected to reach initial criticality no later than July 4, 2026. Analysts have noted that reaching criticality by July 2026 is an ambitious target that requires navigating tight DOE approval timelines, site characterization, fuel fabrication, and the expected construction delays.

**Radiant Industries reactor, Kaleidos**, is a 1MWe High Temperature Gas-cooled Microreactor (**HTGR**) fueled by HALEU TRISO fuel particles, similar to the **Antares Mark 0** microreactor, dispersed in a graphite matrix to form fuel compacts, which are then inserted into sealed vertical holes in hexagonal graphite fuel blocks (**prismatic graphite core**). This microreactor design is transportable and will be fully contained in a single shipping container. The DOE approved its PDSA in February 2026, allowing the project to proceed toward a full-power test under the Reactor Pilot Program. The first test for Kaleidos will be conducted at NRIC's (**National Reactor Innovation Center's**) DOME Test Bed (**Demonstration of Microreactor Experiments**), located at the INL and scheduled to begin this spring. This will be the first nuclear reactor design tested in the DOME, and Kaleidos is on track to achieve initial criticality by July 4, 2026.

**Terrestrial Energy reactor, IMSR (Integral Molten Salt Reactor) 400**, is a 442 MWt (**195 MWe**) Small Modular Reactor (**SMR**). However, due to its modular and compact design it can also serve as a microreactor. It operates at high temperature and low pressure, with (*continued*)

vertical graphite elements in the core as its moderator, which slows down neutrons, enabling a thermal-spectrum interaction with the low-enriched uranium fuel. The graphite is a permanent, non-replaceable component of the sealed, seven-year operating core-unit. It uses molten salt as both fuel (**FLiBe**) and coolant. The low-enriched uranium fuel is a liquid mixture of standard assay uranium fuel dissolved into a carrier salt, which also functions as the primary coolant. This eliminates the need for solid fuel rods which allows for a more efficient and potentially safer nuclear reaction process when compared with conventional reactors with a graphite moderator. It is also designed for high-temperature industrial cogeneration. Terrestrial Energy chose the molten salt fission technology because it has been researched, developed, and demonstrated for over 65 years. The company claims that an IMSR cogeneration plant can be constructed and operational within four years. While the exact location for the reactor has not been specified, the project aims for deployment in the mid-2020s.

**Valar Atomics reactor, Ward 250**, is a transportable, 5 MWe graphite moderated, High Temperature Gas-cooled Microreactor (**HTGR**) designed for rapid deployment to remote military bases and data centers. It will utilize TRISO HALEU fuel with a helium coolant. The unfueled nuclear unit was airlifted via C-17, from March Air Reserve Base in California to Hill Air Force Base, Utah in February 2026. It was then moved to the Utah San Rafael Energy Lab (**USREL**) in Utah for testing. The reactor achieved "cold criticality" in late 2025 and is scheduled to achieve initial criticality and power operations by July 4, 2026. Valar Atomics is working with the DOE to support the fabrication of fuel for the Ward 250. Analysts have noted that reaching criticality by July 4, 2026 is an ambitious target that requires navigating tight timelines for DOE approvals, site characterization, fuel fabrication, and expected construction delays.



*Ward 250 On Boarding a C-17  
Photo Credit: The Aviation Geek Club*

**Westinghouse reactor, eVinci**, is a 5 MWe / 15 MWt microreactor "nuclear battery", designed for rapid deployment in remote, off-grid locations and expected to achieve initial criticality and power operations by July 4, 2026. Fueled by HALEU TRISO fuel particles, embedded into cylindrical compacts, which are then placed into a solid, heat-pipe cooled graphite-based matrix, with an 8+ year core life. It is a compact (smaller than a school bus) transportable design that features passive safety systems, requiring no operator intervention and operates without water, utilizing the alkali metal heat pipes for the transfer of heat. The eVinci pilot program microreactor will be located at Penn State University's University Park Campus where the university is working with the Nuclear Regulatory Commission (**NRC**) on a specific siting. A scaled-down version is scheduled for testing at NRC's DOME Test Bed at the INL to expedite commercialization, with the first tests scheduled for 2026.

As of the last update, in March 2026, the DOE confirmed that 4 of the 11 projects have received approval of their safety designs, via PDSA or its equivalent PSDR (**Preliminary Safety Design Report**) which places these four projects on target to achieve initial criticality by July 4, 2026 - *Antares Nuclear, Radiant Industries, Oklo, and Westinghouse.* 🌐

## GTTSi TEAM MEMBER HIGHLIGHT: BEN BAILEN

This month we are excited to shine the spotlight on GTTSi team member, Ben Bailen, a Professional Engineer (**PE**), certified Project Management Professional (**PMP**), and a Mechanical Engineering graduate of the U.S. Naval Academy as an USNA Trident Scholar.

Ben served onboard the nuclear fast attack submarine, the USS Toledo (**SSN 769**).

Lieutenant Ben Bailen was selected as the Junior Officer of the Year (**2020**) out of 12 Junior Officers and earned special recognition from the Admiral, based on his advanced qualification as Engineer Officer.

Ben is currently supporting General Electric as a Root Cause Analysis (**RCA**) Project Manager, while pursuing a Master of Science Degree in Mechanical Engineering at Georgia Tech University.



As RCA Project Manager, Ben specifically supports the Gas Turbine Product Service Engineering Team, which requires him to work closely with other RCA Leaders to ensure each unique RCA milestone has a clear path to completion and all RCA team members receive the support they need to develop solutions. This includes the development of detailed schedules with buy-in from all required stakeholders and the facilitation of clear and effective communication between RCA Leaders, cross-functional action item owners, and Product Service leadership. Working with his GTTSi and customer team, Ben removes roadblocks in the execution of RCAs and improves RCA on-time delivery for our client's customers across the globe.

We are proud to have Ben on our team and to be partnering with General Electric. Ben is just one of the many industry experts at GTTSi - check us out at [www.gttsi.com](http://www.gttsi.com) or on LinkedIn at [www.linkedin.com/company/gttsi](https://www.linkedin.com/company/gttsi). If your organization could use an experienced professional consultant like Ben Bailen, please let us know at [ginfo@gttsi.com](mailto:ginfo@gttsi.com). 



## DID YOU KNOW?



*Artist conception of the Groves Isotope Test Reactor*

*Photo Credit: Getty Images*

Oklo Inc. has received Department of Energy (**DOE**) approval for their Groves Isotopes Test Reactor's Nuclear Safety Design Agreement (**NSDA**). Unlike traditional nuclear facilities that provide electrical generation, the Groves Isotopes Test Reactor is intended to produce vital radioisotopes. Approval of their NSDA allows the company, through its subsidiary Atomic Alchemy, to move forward with detailed safety design work under the DOE's Reactor Pilot Program and represents meaningful progress as the project transitions from early planning into technical development.

The UK has made a significant turning point for the Spherical Tokamak for Energy Production (**STEP**) program, a shift from years of research into the delivery phase. They are currently planning to build a STEP reactor at the former coal-fired West Burton Power Station near Gainsborough (commissioned in 1966 and ran until 2023). The prototype plant, expected to operate in the 2040's, will demonstrate how fusion, which has long been considered the holy grail of energy, can be harnessed for reliable, low-carbon power generation - a step towards clean, virtually limitless energy for the future.



*West Burton Power Station: UK site for STEP*  
*Photo Credit: West Lindsey District Council*



*1st Unit Reactor Vessel for Kursk II Nuclear Plant*  
*Photo Credit: Rosatom Mechanical Engineering*

The 1st of 4 LWRs (**Light Water Reactors**) at the Kursk II Nuclear Power Plant has reached full power as part of its commissioning. These VVER-TOI reactors are a third-generation design and boast a 100-year service life. Kursk II Nuclear Power Plant, located in western Russia, is 37.5 miles (60 km) from the Ukrainian border. It derives its name from the previous nuclear facility, the Kursk Nuclear Power Plant, which housed four RBMK-1000 reactors. The VVER-TOI (**Water-Cooled Water-Moderated Power Reactor – Universal Optimized Digital**) is a third-generation PWR (**Pressurized Water Reactor**) designed by Rosatom and based on the VVER-1200, but it features a capacity of 1,255 MWe, a 100-year lifespan, increased efficiency, enhanced passive safety, and a 72-hour autonomous emergency response time.

# APRIL 2026

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## GTTSi Job Board

GTTSi has been providing professional services to the energy and nuclear industry since 1980. We are an MWBE (*minority woman-owned business enterprise*) and have served over 80% of the US commercial nuclear facilities, 8 Federal agencies and prime contractors, and one foreign government. If you are qualified and interested in any of the job opportunities listed below, please contact us at [ginfo@gttsi.com](mailto:ginfo@gttsi.com) or call **864.882.3111**.



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- **Electrical Task Manager 3**
- **B&W PWR Instructor**
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- **Mechanical Engineer, Remote**
- **Electrical Engineer, Remote**
- **BESS Commissioning Manager, Remote**

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