Executive Summary

Adding gigawatts of new nuclear power is not fundamentally a nuclear technology problem. Rather, it's a delivery and deployment problem. Safe, reliable reactor technology already exists. The challenge is designing, licensing, manufacturing, financing, and deploying new plants at the speed, cost, and scale the market requires.

Forge Atomics Inc. ("Forge") was formed to solve that challenge. Rather than pursuing highly novel reactor technology, Forge is applying proven engineering, advanced manufacturing, digital engineering, and vertically integrated production to fundamentally improve how nuclear plants are designed, licensed, manufactured, and deployed. The objective is straightforward: reduce cost, compress schedules, lower execution risk, and enable repeatable commercial deployment.

Forge's strategy is based on five core pillars:

1. **Proven Reactor Technology.** The Forge Ember design is intentionally based on proven light-water reactor technology and existing nuclear fuel infrastructure. Ember utilizes conventional pressurized water reactor technology and industry-standard 17×17 fuel assemblies enriched to less than 5% U-235. By leveraging technologies that are already well understood by regulators, suppliers, and operators, Forge minimizes technology development risk, utilizes established supply chains, and streamlines the regulatory review process.
2. **Manufacturing-First Design.** Ember has been designed from inception for factory production rather than traditional field construction. Major components and systems are manufactured, assembled, and tested as modular skid-based units before shipment to the project site, allowing facilities to be assembled rather than constructed. The 25 MWe size further supports this approach by enabling unrestricted highway transportation of major components, reducing logistical constraints, shortening construction schedules, and expanding potential deployment locations.
3. **Vertical Integration.** Forge's business model extends beyond reactor design to include manufacturing of major components and assembly of key systems within Forge-owned facilities. This vertically integrated approach improves schedule certainty, enhances quality assurance, reduces dependence on fragmented supply chains, and lowers overall project costs by eliminating multiple layers of subcontracting while enabling continuous improvements across successive deployments.
4. **Digital Engineering and Artificial Intelligence.** Forge has developed proprietary digital engineering and artificial intelligence capabilities to accelerate reactor design, factory development, licensing, deployment planning, and operations. These tools are intended to automate repetitive engineering tasks, strengthen configuration management and requirements traceability, improve design quality, and significantly reduce engineering and licensing timelines while maintaining rigorous technical and quality standards.
5. **Repeatable Commercial Deployment.** The Forge approach enables high-volume, repeatable deployment. Standardized reactor designs, factory manufacturing, vertically integrated production, and modular deployment create a pathway to serial production rather than one-off construction projects. This approach reduces capital costs, shortens delivery schedules, improves project predictability, and provides customers with scalable, reliable nuclear generation that can be deployed incrementally to match demand.

Forge's leadership team complements this strategy with extensive experience designing and manufacturing complex, safety-critical systems in highly regulated industries, including large-scale greenfield manufacturing facilities. That experience brings proven approaches for managing complex engineering programs, accelerating production, and reducing execution risk — capabilities that have transformed other advanced manufacturing sectors and can similarly transform nuclear deployment.

Forge's key personnel comprise:

- Matt Khudari, CEO – Former President at Starpath; GNC Engineer at Astra
- Rex Serpe, COO – Former Electrical Engineer at SpaceX and Reflect Orbital
- Chris McPherson, VP of Production – Former Senior Manager of Production at SpaceX
- Bob Coward, Nuclear Advisor – Former President of MPR, Former President of American Nuclear Society
- Will Heltsley, Engineering Advisor – Former VP of Propulsion at SpaceX
- Amy Roma, Legal Counsel – Nationally recognized nuclear industry legal counsel

Although Forge was only recently established, the company has already made significant progress in advancing both the Ember design and the broader delivery platform. Through the DOE Launch Pad program, Forge intends to validate not only the reactor technology itself, but also the manufacturing, licensing, and deployment model that underpins its commercialization strategy. Specifically, Forge intends to:

- **Complete Ember Mini**, a non-nuclear test platform that will validate key systems and mature lower technology readiness level (TRL) technologies before nuclear deployment.
- **Design, construct, and operate the Ember Pilot Plant under DOE authorization** — a full-scale 25 MWe facility that will demonstrate both reactor performance and Forge's integrated manufacturing and deployment model while generating operational data to support NRC licensing.
- **Transition to commercial deployment** by obtaining NRC design approval for the Ember platform, establishing the foundation for serial commercial deployment and, potentially, NRC licensing for commercial operation of the pilot plant itself.

The DOE Launch Pad program is uniquely positioned to accelerate this strategy by providing the environment needed to demonstrate not only a new reactor, but a fundamentally different model for delivering nuclear power. Forge's goal is to establish a repeatable pathway for deploying safe, reliable, commercially competitive nuclear facilities at the speed and scale needed to meet growing U.S. energy demand.

Date	Milestone
June 2027	Demonstrate operation of Ember Mini (non-nuclear thermal prototype)
November 2027	Complete Ember Preliminary Documented Safety Analysis (PDSA)
November 2028	Complete Ember Documented Safety Analysis (DSA)
December 2028	Achieve Criticality
March 2029	Begin full power operations at 25 MWe
2029 – 2049	Complete 20 years of full-power operation at 25 MWe (two years under DOE authorization, 18 under an NRC license), exercising ten refueling cycles and shutting down the reactor in 2049.
2052	Complete all decommissioning activities and return the site as brownfield to DOE