

# GUIDING PROJECTS FROM RESEARCH TO REALITY

TerraPower, LLC is a nuclear innovation company headquartered in Bellevue, Washington. TerraPower was founded by Bill Gates and a group of like-minded visionaries that decided the private sector needed to take action in developing advanced nuclear energy to meet growing electricity needs, mitigate climate change and lift billions out of poverty.

Now marking 15 years of innovation, TerraPower continues to grow and diversify. The multidisciplinary team of over 400 full-time professionals has made progress on advanced reactor designs, modeling interfaces and future isotope applications. Their dedication and talent help TerraPower pursue its vision to be a world leader in new nuclear technologies that bring the world sustainable, affordable and safe energy, and other innovative products. The company has assembled an impressive aggregate of American suppliers, universities, laboratories and consultants. These partnerships yield significant breakthroughs and shape the foundation of modern supply chains that use nuclear science and technology to the benefit of humanity.



## TERRAPOWER FAST FACTS

**Founded:** 2008

**Location:** Bellevue, Washington

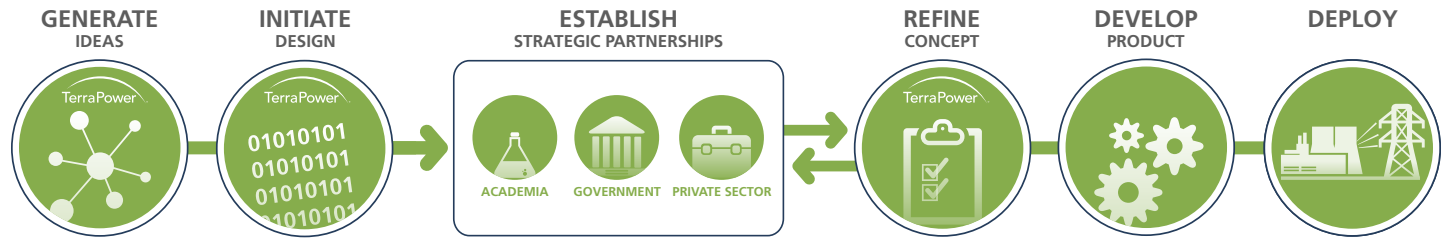
**Full-time employees:** 400+

**Supply chain:** 80+ contracts worldwide

**Technologies:**

- Natrium™ Reactor and Integrated Energy Storage<sup>1</sup>
- Molten Chloride Fast Reactor
- Traveling Wave Reactor
- TerraPower Isotopes® technology

## INNOVATIVE INDUSTRIAL APPLICATIONS



## CREATING A CULTURE THAT INNOVATES

TerraPower’s agile business approach leverages the world’s best capabilities and expertise to design and develop nuclear science and technology.

Private-sector management, flexibility, funding and efficiency enable TerraPower to accelerate its product deployment. Looking creatively at legacy material in the nuclear sector and the physics of advanced designs for energy production, TerraPower has been able to expand operations in the areas of energy systems, radiochemistry and advanced modeling and simulation.

*Transformative innovation is at the heart of TerraPower’s mission. Behind each of its innovations, technologies and programs, TerraPower brings together diverse strengths and experiences of talented experts. Together, multidisciplinary professionals explore new approaches to answer the world’s toughest problems in energy, climate and human health.*

<sup>1</sup> A TerraPower and GE Hitachi technology.

## BETTER OPTIONS FOR ADVANCED ENERGY SYSTEMS

TerraPower is committed to bringing sustainable, affordable and safe energy to address global issues. The company believes it will be able to achieve this goal through the development of high-benefit products like the Natrium™ reactor and integrated energy system and the Molten Chloride Fast Reactor (MCFR) design.

**The Natrium™ reactor and integrated energy system redefines what nuclear technology can be: emissions-free, competitive and flexible.**

It features a 345MWe reactor and can be optimized for specific markets. Its innovative, gigawatt-hour-scale thermal storage has the potential to boost the system's output to 500MWe of power for more than five and a half hours when needed. This allows for a nuclear design that follows daily electric load changes and integrates seamlessly into grids with high levels of renewables. In October 2020, the U.S. Department of Energy (DOE) awarded TerraPower funding, as part of the Advanced Reactor Demonstration Program (ARDP), to demonstrate the Natrium technology. In 2021, TerraPower announced that the Natrium demonstration plant would be located near a retiring coal facility in Wyoming.

**TerraPower's Molten Chloride Fast Reactor (MCFR) project also continues to advance.** Southern Company and TerraPower have completed installation of the Integrated Effects Test, marking a crucial milestone in the development of TerraPower's first-of-a-kind MCFR.

In February 2022, TerraPower and Southern Company finalized a subrecipient agreement to design, construct and operate the Molten Chloride Reactor Experiment (MCRE).

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**By 2030, the world's population is expected to reach 8.5 billion.**

**With approximately 770 million people without access to electricity today, the market for better energy options exists now.**

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The Molten Chloride Reactor Experiment will be the world's first fast-spectrum, salt-fueled nuclear fission reactor to go critical, meaning that it is operating on a self-sustaining nuclear chain reaction. The MCRE project represents a significant inflection point in the technology demonstration roadmap for TerraPower's MCFR, as the project will inform the design, licensing and operation of a MCFR demonstration reactor.

Serving markets for electricity production as well as industrial applications, these advanced reactors will improve the options for U.S. leadership in clean energy and the deployment of next-generation technologies globally.



## NUCLEAR INNOVATION TO ADVANCE NEW CANCER TREATMENTS

TerraPower Isotopes (TPI) is transforming the fight against cancer by advancing the next generation of isotopes. The TPI™ team is utilizing proven methods to extract research grade<sup>2</sup> Actinium-225, free of the isotopic impurities of Actinium, which may be applied to new medical applications that potentially target and treat cancer.

TPI is actively working to increase the availability of research-grade Actinium-225. Through an innovative public-private partnership, TerraPower has acquired isotopes from existing legacy nuclear materials that are stored and monitored by the U.S. Department of Energy (DOE).

By working with its partners to recover Thorium-229, harvest Actinium-225 and supply the pharmaceutical industry with isotopic starting materials, which drug developers will then further manufacture for targeted alpha therapy research and development, TPI's innovative technologies will support the potential development and availability of a diverse suite of cancer treatments.

<sup>2</sup> TPI produced Actinium-225 is intended to be used as starting materials for further manufacturing processes and, as starting materials, is not manufactured in accordance with current good manufacturing practices.