# **TERRAPOWER:** BRINGING AMERICAN INGENUITY TO A GLOBAL NUCLEAR SECTOR

**TerraPower, LLC is a nuclear innovation company** headquartered in Bellevue, Washington. The company originated with Bill Gates and a group of like-minded visionaries who evaluated the fundamental challenges to raising living standards around the world. They recognized energy access was crucial to the health and economic well-being of communities and decided that the private sector needed to act and create energy sources that would advance global development.

Now marking more than 10 years of innovation, TerraPower continues to grow and diversify. The multidisciplinary team of approximately 150 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 high-benefit products. The company has put together 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

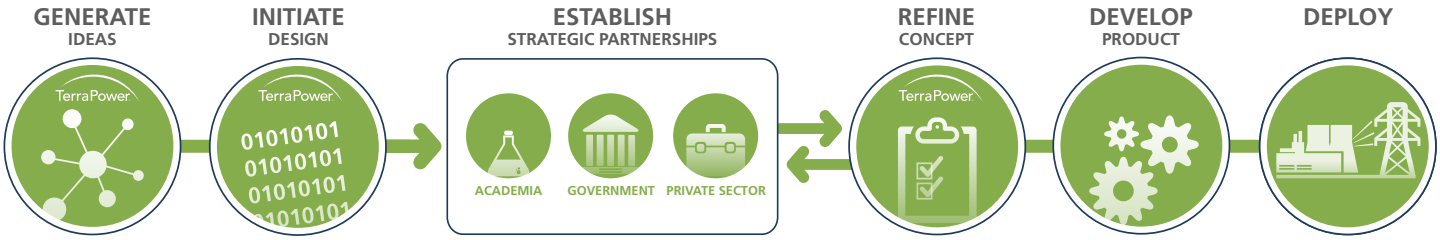
**Founded:** 2008

**Location:** Bellevue, Washington

**Full-time employees:** 150

**Supply chain:** 80+ contracts worldwide

**Products:**
Traveling Wave Reactor
Molten Chloride Fast Reactor
Medical Radiochemistry Applications
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 waste 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.

## 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 Traveling Wave Reactor (TWR) and the Molten Chloride Fast Reactor (MCFR) designs.



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The TWR design is TerraPower's flagship project, with a high technology readiness level. Among its attributes, the TWR technology is a baseload, non-carbon-emitting source of electricity, has added safety enhancements, reduces waste and provides greater proliferation resistance. The ability of the TWR technology to use depleted uranium as fuel will simplify the traditional nuclear fuel cycle. The reactor can operate with higher thermal efficiency and utilize uranium resources in a more efficient, clean and safe manner than previously possible. It requires no fuel reprocessing and, eventually, no enrichment. After an initial load of low-enriched and depleted uranium, the TWR technology both produces and consumes its own fuel and thus does not require additional enriched uranium after startup. TerraPower's conceptual design for a TWR demonstration reactor is nearly complete. This first demonstration plant will be a key stepping stone to commercialization.

*By 2030, the world's population is expected to increase by 1.4 billion to 8.3 billion, and electricity demand is expected to increase 67 percent. With nearly 1.3 billion people without access to electricity today, the market for better energy options exists now.*

Complementing the significant progress on the TWR technology, the MCFR project recently expanded into design and testing activities. This reactor design aims to increase efficiency and improve on clean energy options for industrial uses. It uses a molten chloride salt that will act as both the fuel and coolant. With a high output temperature, the MCFR program opens new markets for process heat applications such as making high-value products from low-cost feedstocks.

Serving markets for electricity production as well as industrial applications, these advanced reactors will improve the options for U.S. leadership in the future expansion of nuclear energy around the world.

## SEEKING SOLUTIONS FOR HARVESTING ISOTOPES

TerraPower's vision is to explore innovative approaches to solve the world's most complex problems. In the company's new radiochemistry laboratory, the team supports isotopic harvesting and distribution, as well as other radioisotope development initiatives. These innovation efforts have the potential to cut across diverse health and industrial applications.

Opportunities to revolutionize cancer prevention and treatment options have emerged with new approaches to medical application of radioisotope technology. Materials stored by the U.S. Department of Energy (DOE) contain extremely rare and unique isotopes that may help treat cancer and other illnesses. Studies by TerraPower validate the potential of recovering important isotopes from the DOE-managed material while accelerating its disposition. TerraPower's commitment to do work that is challenging and important to humankind led these studies. With positive results to date, TerraPower is very interested in advancing this potential medical capability.

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 most vexing problems, inventing new processes and products that can find commercial application. Whether focused on energy, environmental or other nuclear science possibilities, TerraPower will continue to foster this scientific progress and make a positive impact around the world.