UTAH OFFICE OF ENERGY DEVELOPMENT

Types of Nuclear Reactors

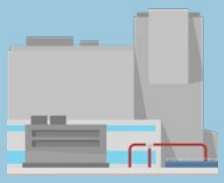
Nuclear reactors harness nuclear fission to produce heat, which is used to generate steam that drives turbines. This emission-free energy contributes nearly 20% of the U.S. electricity supply, enhances national energy security, reduces emissions, and supports local economies.

Conventional Reactors

Conventional reactors, such as Pressurized Water Reactors (PWRs) and Boiling Water Reactors (BWRs), typically generate 1,000+ megawatts (MWe) of electricity, **enough to power 896,000 homes.** These large-scale facilities require approximately **1–1.3 square miles of land per reactor,** making them the most land-efficient energy source — using 31 times less land than solar and 173 times less than wind for equivalent output.

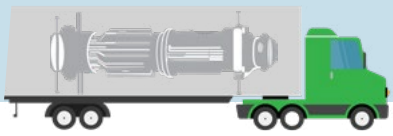
Small Modular Reactors (SMRs)

SMRs are advanced nuclear reactors generating up to 300 MWe per module, **enough to power 268,800 homes.** SMR design allows for shipping of completed units or parts, small enough to be transported by truck, reducing construction time and costs. SMRs require less land than traditional reactors—a proposed 920 MWe NuScale SMR, for example, would occupy **~35 acres** compared to ~500 acres for a conventional plant of similar output. The smaller footprint enables flexible siting in areas unsuitable for larger reactors, such as remote regions or industrial zones. SMRs offer scalable, clean energy with much less land use.



Microreactors

Microreactors are small nuclear reactors producing up to 20 MWe of heat for electricity, **enough to power 17,960 homes.** They can operate on the grid, off-grid, or in microgrids, and most are portable—**transportable by semitruck.** At 100–1,000 times smaller than traditional reactors, they provide unmatched reliability and flexibility. Designed to run years without refueling, they're ideal for remote areas, military bases, or disaster recovery. Microreactors are gaining renewed interest due to their ability to deliver resilient, compact power to sites where larger systems are not feasible.



ENERGY INSIGHTS

As of August 2023, 94 nuclear reactors were operating at 54 power plants in 28 states. The U.S. nuclear energy industry has supplied about 20% of total electricity in the U.S. annually since 1990.