ADVANCED REACTORS

Advanced reactors are a new generation of nuclear technology. They come in a range of shapes and sizes and offer enhanced safety and efficiency over current technology. They are also more flexible to deploy and operate, providing important energy options for communities.

Advanced Reactor Types

Advanced reactors use various fuels and materials to create abundant clean energy. Some designs will use molten salt as both a fuel and a coolant, allowing them to operate at higher temperatures. Other designs will use gas, such as helium, to generate high-temperature heat. Despite differences in designs, advanced reactors share several key features:

Cost Savings

Reactor components are assembled in a factory and delivered to the site, reducing construction costs.

Enhanced Safety

Passive safety features allow reactors to shut down and remove excess heat without human intervention.

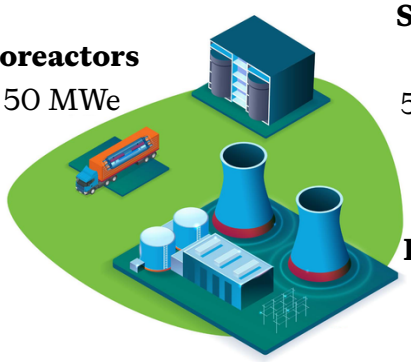
Reduced Waste

Advanced reactor fuels optimize uranium and extend the time between refueling, reducing nuclear waste.

Advanced Reactor Sizes

Microreactors
1 to 50 MWe

Small Modular Reactors
50 to mid-100s MWe



Large Reactors
Mid-100s to 1,000+ MWe

Advanced reactor sizes. Graphic courtesy of U.S. Department of Energy.

Microreactors are efficient, compact reactors that can generate up to 50 megawatts of thermal energy. Their small sizes and portable designs make them well-suited to power remote and isolated communities or support military bases.

Small modular reactors (SMRs) are slightly larger in size, ranging from 50-300 megawatts electric per module. Their modular design allows for easy scaling up to meet energy demand.

Large-scale advanced reactors are similar in generating capacity to existing light water reactors, but leverage different fuels, materials, coolants, safety features and other design elements to generate electricity more efficiently and expand applications of nuclear energy.