

NUCLEAR ENERGY IN NEW JERSEY



How has the Nuclear Regulatory Commission (NRC) adapted its Reactor Oversight Process (ROP) that has been used for light-water reactors for use with Advanced Nuclear Reactors?

To adapt the Reactor Oversight Process (ROP) for advanced reactors, the NRC shifted from prescriptive, light-water-focused regulations to a flexible, technology-inclusive, risk-informed framework. This incorporates modern Probabilistic Risk Assessments (PRAs) and is tailored to the smaller scale and passive safety features of advanced designs.

The NRC has systematically adapted its oversight mechanisms for these next-generation facilities through several key initiatives:

Advanced Reactor Construction Oversight Program



Replacing the former construction oversight process, the Advanced Reactor Construction Oversight Program (ARCOP) is a scalable framework explicitly designed to oversee diverse designs like small modular reactors (SMRs) and non-light-water reactors.

Technology-Inclusive Rulemakings



The NRC finalized a new rule in the Code of Federal Regulations (10 CFR 53), establishing an optional, risk-informed, and performance-based framework to evaluate facilities without relying on traditional light-water parameters. This accommodates non-water coolants, such as molten salt or liquid metal.

Tailored Inspection Procedures



Inspection guidelines under the ROP have been revised to account for factory-fueled reactor modules and alternative siting criteria. This has shifted oversight responsibilities away from historical on-site construction models.

Streamlined Security Requirements



The NRC revised physical security regulations and transitioned from heavily prescriptive, force-on-force drills to licensee-developed, NRC-observed exercises scaled to the risk profile of individual reactor sites.