

Advanced Nuclear Reactor Deployment Timelines

Multiple [advanced reactor developers](#) have announced domestic demonstration projects in the 2020s (Figure 1). While these projects will not be completed until later in the decade, reactor developers are already engaging with the Nuclear Regulatory Commission (NRC) to obtain the required regulatory approvals (Figure 2). These nuclear reactors will provide the licensing, construction, and operational basis for rapid commercial expansion of advanced nuclear energy in the late 2020s and early 2030s.

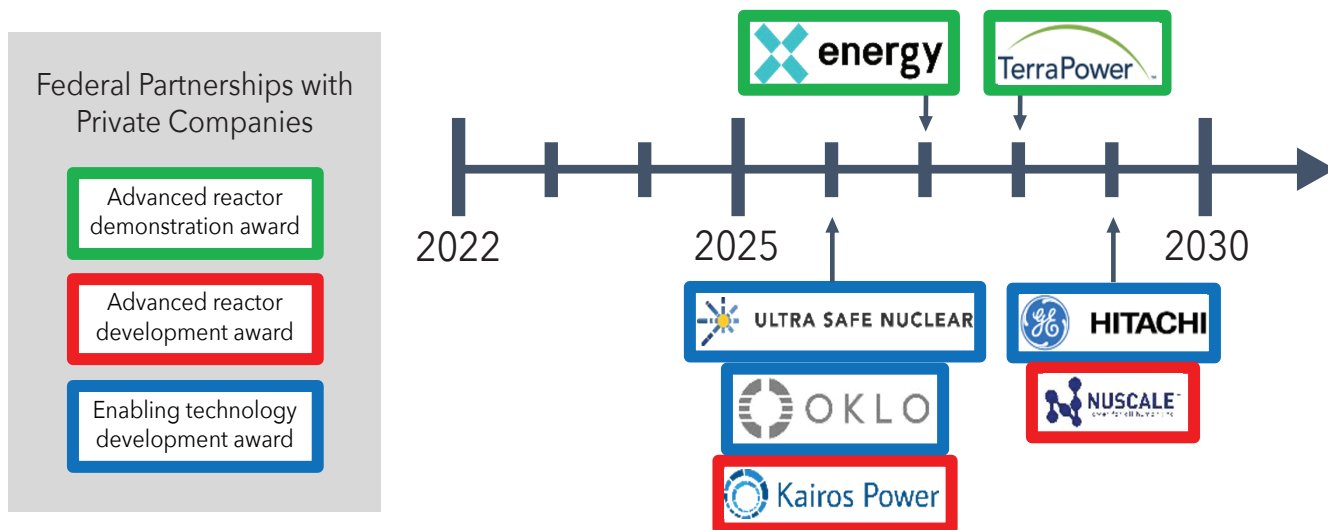


Figure 1: Announced Deployment Timeline for Selected Advanced Reactors Projects Supported by Federal Partnerships in the United States

The DOE’s flagship nuclear projects include the two major [Advanced Reactor Demonstration Project \(ARDP\) winners](#), X-energy and TerraPower. X-energy will build four Xe-100 reactors near the Columbia Nuclear Generating Station in Richland, Washington and TerraPower will build their Sodium reactor at a retiring coal facility in Kemmerer, Wyoming. Other projects supported by the DOE are planned for construction at the Idaho National Laboratory, including the NuScale Carbon Free Power Project and demonstration microreactors for Oklo and BWXT. Kairos Power and Ultra Safe Nuclear Corporation (USNC) have both announced plans for construction and operation of test reactors in preparation for a commercial power reactor. The first Kairos reactor will be sited near the Oak Ridge National Laboratory and first USNC reactor will be sited at the University of Illinois at Urbana-Champaign. GE-Hitachi announced commercial partnerships with the Tennessee Valley Authority and Ontario Power Generation to deploy the BWRX-300 reactor technology at the Clinch River Site in Tennessee and the Darlington site in Canada.

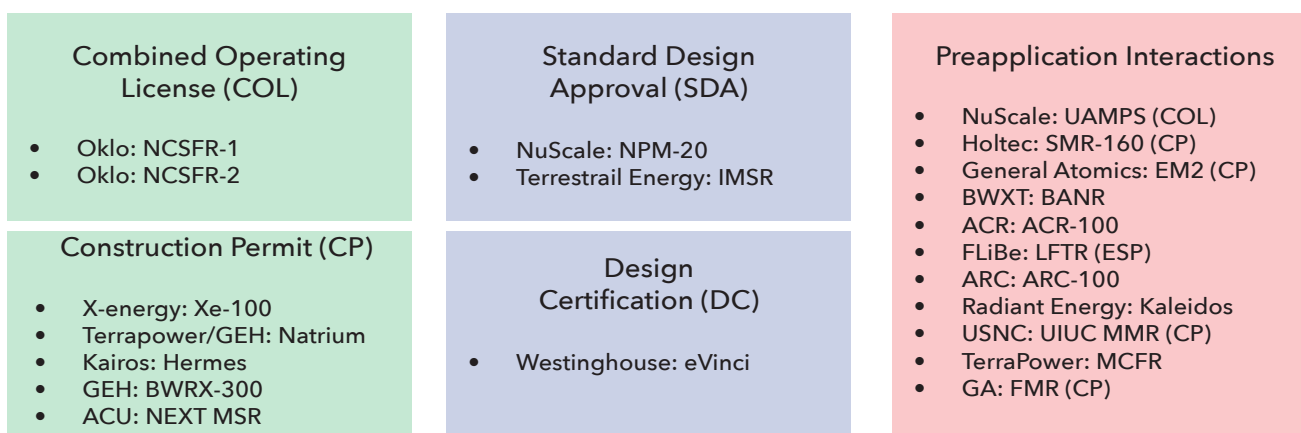


Figure 2: Expected Advanced Reactor Engagement with NRC in FY23; Source: [NRC NUREG 1100, Volume 38](#)

Technology, business, and regulatory lessons learned from first-of-a-kind (FOAK) projects will facilitate lower costs and shorter construction timelines for subsequent nth-of-a-kind (NOAK) reactors due to wide-scale deployment and technological learning. Utilities and other customers that gain early experience with FOAK or early NOAK projects will be in competitive positions to become technology leaders. For more information about advanced reactor deployment, please contact pwhite@nuclearinnovationalliance.org.