

# Regulators approve nuclear reactor design for Southeast utilities

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Federal regulators on Thursday signed off on a next-generation nuclear reactor slated for Florida Power & Light's Turkey Point plant and five other utilities in the Southeast, paving the way for construction of the first new reactors in the U.S. in three decades.

The Nuclear Regulatory Commission's approval of the Westinghouse AP 1000 design was a major milestone for the nuclear power industry, which hasn't built a new reactor since the Three Mile Island accident in Pennsylvania in 1979.

It also moved FPL an important step closer in its plans to expand its sprawling nuclear plant on South Biscayne Bay with a design that the industry and regulators tout as simpler and safer than the nation's aging reactors, yet robust enough to withstand a terrorist attack or natural disaster.

"The design provides enhanced safety margins ... and also has been assessed to ensure it could withstand damage from an aircraft impact without significant release of radioactive materials," said NRC Chairman Gregory Jaczko in a statement after the unanimous approval in Washington.

Opponents of the AP 1000, which has emerged as the leading model of choice in the nuclear power industry's expansion plans, bristled at the decision.

"The NRC has presented its holiday gifts to the nuclear industry," said Rep. Edward Markey, D-N.Y., a longtime critic of the industry and its watchdog agency.

His comments echoed concerns from environmental groups, who contend the NRC "fast-tracked" the AP 1000 without thoroughly addressing potential safety concerns or incorporating lessons learned from the March meltdown of the nuclear plant in Fukushima, Japan, disabled by an earthquake and tsunami.

"Yet again, the NRC is rubber-stamping the industry's plans," said South Miami Mayor Philip Stoddard, who has campaigned against FPL's plans to add two new reactors to the two existing ones at Turkey Point. FPL has said it needs them to supply power for future growth.

In May, citing "technical issues," the NRC had delayed design approval after the commission's lead structural engineer questioned whether a reactor shield building intended to be the first line of defense from radiation release was too brittle, cautioning it might "shatter like a glass cup" under impacts from a plane strike, earthquakes, tornadoes or objects tossed by hurricanes.

Arnie Gunderson, an outside expert hired by environmental groups, also warned the design might be vulnerable to rust that could cause dangerous holes and cracks in the steel reactor containment vessel - a particular problem in the marine environment of Turkey Point. He also argued the system's "passive" emergency cooling system, which circulates outside air, could send radiation leaked during an accident into the atmosphere.

Another study, commissioned by NC Warn, a North Carolina anti-nuclear group, and Friends of the Earth, argued the safety margin for an accidental high pressure build-up inside the reactor was dangerously slim.

NRC spokesman Scott Burnell said the agency had analyzed those concerns and dozens more.

In a statement released earlier this month before the formal vote, Jaczko, who ordered the delay in May, wrote that he was satisfied that changes to the shield building had met NRC standards and the design is "sufficiently safe."

Though the NRC approved the design, the agency reserved the option of requiring additional safeguards later based on a study of the Fukushima catastrophe. A task force analyzing the Japanese plant's meltdown recommended approving the AP 1000 anyway because no major changes were likely, Burnell said.

The design, he said, is "already capable of dealing with the key issue of Fukushima, which is losing electrical power at the site."

The AP 1000's signature feature is a giant water tank holding 780,000 gallons of water atop the reactor building. In the event of accidental power loss, it is designed to automatically kick on. The "passive" system relies on gravity to deliver water, and on evaporation and condensation to re-circulate it until generators or outside power can be used.

"Even with no operator action and a complete loss of all on-site and off-site power, the AP1000 will safely shut down and remain cool for up to 72 hours, allowing significant time for restoration activities," FPL spokesman Michael Waldron said in a statement Thursday. FPL, Westinghouse Electric and industry proponents say the AP 1000 had undergone unprecedented and "arduous" scrutiny over a design approval process that originally started in 2002. Westinghouse revised the design 19 times to address NRC demands, including beefing up the shield building.

"The AP1000 is the reactor design that will set the foundation for the next generation of nuclear plants in the U.S.," said Marilyn Kray, president of NuStart Energy Development, in a statement issued by Westinghouse, which is owned by the Toshiba Corp. Nustart is a consortium of utilities and reactor vendors.

With the approval, the AP 1000 stands to be in wide use in coming decades.

China already is building four and is scheduled to flick the switch on the first new-generation reactors in 2013. In the U.S., the decision will allow utilities in Georgia and South Carolina - furthest along in preliminary construction - to formally apply for licenses to build two new reactors at each site. Projects also are planned in North Carolina and Alabama.

In Florida, Progress Energy has also applied to build two AP 1000s at a new plant in Levy County. FPL hopes to secure its license for two new reactors at Turkey Point by June 2014. If the utility decides to go ahead with a project that it expects to cost from \$12 billion to \$18 billion, the new reactors would be scheduled to go online in 2022 and 2023.

Jim Warren, executive director of NC Warn, said customers and taxpayers will now be on the hook for billions of dollars in additional costs if the NRC orders future safety changes to the AP 1000.

Similar cost overruns plagued the industry in the 1970s and derailed dozens of projects.

"If you want to move the kitchen around, you just ask the contractor," he said. "It's something else to do it with a nuclear power plant, especially an experimental model that no one has completed."

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