

## **1,800-MW-class Next-generation LWR Being Developed in Japan as International Standard Reactor**

**On August 17, the Institute of Applied Energy (IAE) presented the Atomic Energy Commission of Japan (JAEC) with a report on its interim evaluation of the development of next-generation light water reactors (LWRs). In anticipation of the need to replace current nuclear power plants (NPPs), both in Japan and around the world, starting around 2030 – a process that involves sorting out the requirements and international standards of future international markets – both Japan's public and private sectors have been working jointly to finalize concepts for next-generation LWRs, both boiling water reactors (BWRs) and pressurized water reactors (PWRs), in the 1,700-1,800-MWe class.**

Japan's next-generation LWR development project was launched in FY08, the first such national project in 20 years.

Total NPP replacement demand in Japan, the United States and Europe is estimated at 270 units between 2030 and 2050. In addition, demand can also be expected from countries newly introducing nuclear power for the first time. A standard design for international application was sought in deciding development targets, focusing on (1) reducing construction and generation costs, (2) achieving the highest level of safety in the world, and (3) allowing easy operation and use.

In both BWRs and PWRs, for example, economy ought to be improved thanks to cutting-edge construction methods and a 30-month construction period – the shortest in the world – while seismic isolation systems will provide a maximum level of safety. Other aims include: (1) a 24-month operating cycle, (2) an 80-year design life, and (3) plant management, operation, and maintenance that boasts a 97% availability factor per hour.

In the next-generation BWR, new materials will eliminate the need to replace the shroud during the plant's entire 80-year life. The next-generation PWR, meanwhile, will deliver higher electric output by achieving the world's highest level of thermal efficiency of about 40%.

According to the report, the basic design will be completed by FY15, with a feasible roadmap expected to be available by the end of FY24 (i.e., March 31, 2025). Efforts over the past two years have produced the expected results so far.

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