Nuclear power storage peak load regulation

How to regulate peak demand of nuclear power?
As the use of clean energy such as wind power and nuclear power has been increasing, the base load operation of nuclear power units usually means huge pressure for local power systems in regulating peak demand. In order to use more regulation resources, a multi-area joint optimization model involving peak regulating of nuclear power is proposed.

What is the peak load regulating mode of the nuclear power system?
In Mode 2, the nuclear power system runs in "12-3-6-3" load tracking mode for peak load regulating. The load valley output period is from 3:00 to 9:00, the peak load regulating depth is 50%, and the power of peak shaving is 2000 MW. The valley-to-peak difference is reduced from 9648 MW to 7648 MW, which is reduced by 20.7%.

Why is the demand for nuclear power plants to implement peak shaving?
So far, the nuclear power has been expanding its presence in the regional power grid, and China's nuclear power units in operation usually operate at full power as base load, which creates great challenge for the regional power system in peak load regulation. Therefore, the demand for nuclear power plants to implement peak shaving is increasing.

What is the joint operation mode of nuclear power and battery energy storage?
The joint operation mode of nuclear power and battery energy storage power station depends on the peak load regulation demand,and the typical daily peak shaving gap curves in 2026 and 2027 are shown in Fig. 2 (a) and (b),respectively.

Can battery energy storage power station solve the peak shaving problem?
When building a battery energy storage power station to solve the peak shaving problem caused by the large-scale nuclear power construction, the safe operation of nuclear power and the comprehensive economic benefits between nuclear power and battery energy storage power station should be fully analyzed.

Can battery energy storage and nuclear power combined peak shaving solve grid stability problems?
In view of the peak shaving problems caused by nuclear power construction, this study proposes a solution framework of battery energy storage and nuclear power combined peak shaving, which is also applicable to the grid stability problems caused by the construction of other large-scale power stations.

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