Peak regulation of solar energy storage power station

Is a capacity optimization for BES based on peak regulation characteristics?
On this basis,a capacity optimization for BES is proposed considering peak regulation characteristics of thermal power units. Extensive case studies on a modified IEEE system compared and analyzed the impacts of grid integration of different renewable mixes on the power system flexibility from thermal power units and energy storage.

Can renewable accommodation be met by peak regulation capacity in thermal power units?
Through case studies,the following conclusions can be drawn. When the renewable penetration rate of the system is lower than 18 %,renewable accommodation can be met by peak regulation capacity in thermal power units,leaving no requirement for deploying energy storage providing flexibility.

Can a concentrated solar power plant with an electric heater join peak regulation?
Therefore,a concentrated solar power (CSP) plant equipped with an electric heater (EH) is implemented to join the peak regulation,and the joint peak regulation strategy between thermal power units (TPUs) and a CSP plant is proposed. Firstly,the peak regulation principle of a CSP plant with EH is analyzed in detail.

How does peak regulation affect the operating state of thermal power units?
While at the phase of normal peak regulation,the operation cost increases as the power output increases. Therefore,for economic operation,the optimal operating state of thermal power units better be maintained near the lower limit of normal peak regulation. Fig. 3. Deep peak regulation cost of thermal units.

What is the load mode of peak regulation?
In the load mode of peak regulation,EH needs to meet operational constraints. The energy storage of TES should be within a reasonable range.

What is the peak load and Valley load of energy storage system?
The load data was extracted from the historical data of typical daily load,as shown in Table 3. The peak load and valley load are 3475.94 MW and 2595.70 MW,respectively. The parameters of the energy storage system are shown in Table 2 .

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