

# Can energy storage be greater than transformer capacity

Which scheme has the best effect on energy storage and transformer capacity?

Therefore, scheme 3 (coordinated planning of energy storage and transformer capacity) has the best effect.

## 5.3.2. Economic benefit analysis of DES economic dispatching model

Does energy storage capacity allocation enhance economic benefits?

It can be seen that appropriate energy storage capacity allocation highlights economic benefits. Therefore, the scheme of coordinated configuration of DES and transformer capacity is the optimal overall economy.

How much energy does a transformer add to a ZNE case?

For the area-constrained ZNE case, transformer constraints add 631kW of PV (5.6% increase), 2,259kWh of EES (12 fold increase), and 10,844kWh of REES (inexistent beforehand).

What is the difference between rated power capacity and storage duration?

Rated power capacity is the total possible instantaneous discharge capability (in kilowatts [kW] or megawatts [MW]) of the BESS, or the maximum rate of discharge that the BESS can achieve, starting from a fully charged state. Storage duration is the amount of time storage can discharge at its power capacity before depleting its energy capacity.

How are energy storage capacity requirements analyzed?

First, the energy storage capacity requirements is analyzed on the basis of the transformer overload requirements, and analyzing the correspondence between different capacities of energy storage and transformer expansion capacities.

How to calculate capacity expansion cost of transformer?

Capacity expansion cost of transformer  $F_{ex T}$ , it can be expressed by Equation (28). Capacity expansion cost of transformer include two parts, one part is the transformer investment cost  $F_{ex}$ , it can be expressed by Equation (29), the other part is the transformer operation and maintenance cost  $F_{T,OM}$ , it can be expressed by Equation (30).



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