Conflict between solar power generation and energy storage discharge

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Should solar energy be combined with storage technologies?
Coupling solar energy and storage technologies is one such case. The reason is that solar energy is not always produced at the time energy is needed most. Peak power usage often occurs on summer afternoons and evenings,when solar energy generation is falling.

When does energy storage discharging occur?
Red indicates storage discharging,which mostly occurred winter mornings and early summer evenings. Fig. 4 shows examples of these operational outputs for select days,with load (red),net load with solar PV (orange),and net load with both solar PV and 2 GW/8 GWh energy storage (dashed blue).

Does energy storage provide more capacity value under higher penetrations of solar PV?
We found that energy storage provides more capacity valueunder higher penetrations of solar PV because the solar generation shortens the duration of peak net load,allowing the energy-limited storage to better reduce the remaining peak.

Can solar PV and energy storage be used together?
When used concurrently on a power system, we found that the total capacity value provided by solar PV and energy storage consistently exceeds the sum of the capacity values for the two technologies when used separately.

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