

NFPA 855-proposed 2020 Edition
Standard for the Installation of Stationary Energy Storage Systems
TIA Log No.: 1464
Reference: Table 4.8
Comment Closing Date: September 3, 2019
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1. Revise Table 4.8 to read as follows:

Table 4.8 Maximum Stored Energy

ESS Type	Maximum Stored Energy ^a (kWh)
Lead-acid batteries, all types	Unlimited
Nickel batteries ^b	Unlimited
<u>Any type of battery that does not show the propensity for thermal runaway when tested in accordance with UL 9540A</u>	<u>Unlimited</u>
Lithium-ion batteries, all types	600
Sodium nickel chloride batteries	600
Flow batteries ^c	600
Other battery technologies	200
Storage capacitors	20

^aFor ratings in amp-hrs, kWh should equal maximum rated voltage multiplied by amp-hr rating divided by 1000.

^bNickel battery technologies include nickel cadmium (Ni-Cad), nickel metal hydride (Ni-MH), and nickel zinc (Ni-Zn).

^cIncludes vanadium, zinc-bromine, polysulfide, bromide, and other flowing electrolyte-type technologies.

Substantiation: If any battery is evaluated under testing for UL 9540A and shows no propensity for thermal runaway then the justification for a capacity constraint based on a fire propagation and explosion hazard does not make sense.

Emergency Nature: The proposed TIA intends to accomplish a recognition of an advance in the art of safeguarding property or life where an alternative method is not in current use or is unavailable to the public. The proposed TIA intends to correct a circumstance in which the revised NFPA Standard has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process or was without adequate technical (safety) justification of the action.

The narrative A.4.6 describes the rationale for limiting energy capacity to keep fires from propagating. The capacity of most batteries is constrained under Table 4.8 regardless of how they perform under large scale UL fire testing. For some batteries evaluated under UL 9540A a

thermal runaway cannot be induced because of the technology. Because of a physical separation between the energy storage and energy conversion components of a flow battery, it can be demonstrated by testing to the relevant UL standards that no propensity for thermal runaway exists and that failures can be controlled. The viability of this technology is dependent on not having constraints that are imposed because of the limitations of other technologies. The separation of energy hazard from the power conversion stage is a relatively new advancement in technology that offers a means of preventing a thermal runaway that was not previously available in commercial products. Although there is an exception provided in the proposed standard based on large scale fire testing, the standard leaves it up to the AHJ to interpret the UL9540A test results and determine how to apply them to capacity and spacing constraints. The proposed change would make it clear to the AHJ when capacity constraints apply and when they do not.

Anyone may submit a comment by the closing date indicated above. Please identify the TIA number and forward to the Secretary, Standards Council. [SUBMIT A COMMENT](#)