



NFPA 855

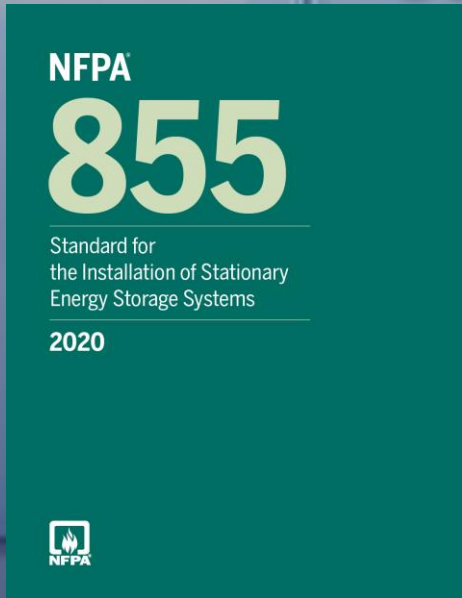
Standard for the Installation of Stationary Energy Storage Systems

August 11th, 2021

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NFPA

NFPA 855, *Standard on the Installation of Energy Storage Systems*



NFPA 855 – Scope

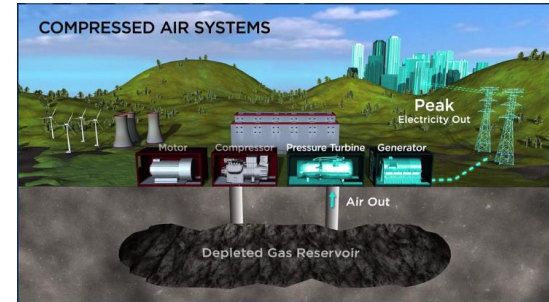
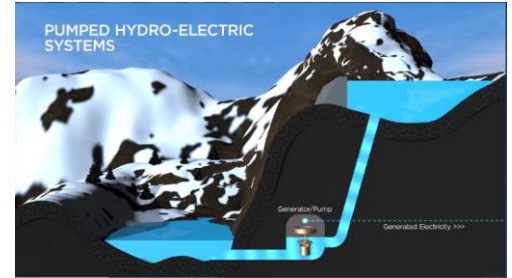
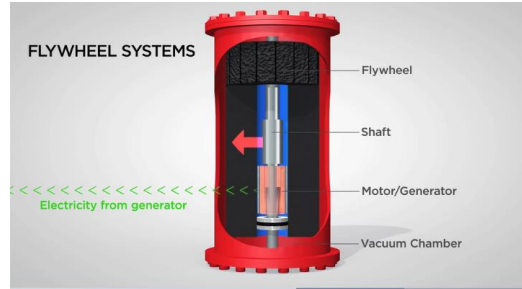
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NFPA 855 – Application

ESS TECHNOLOGY	Aggregate CAPACITY ^a
BATTERY ESS	
Lead acid	70 KWh
Nickel cadmium	70 KWh
Lithium-Ion	20 KWh
Sodium	20 KWh
Flow batteries	20 KWh
Other battery technologies	10 KWh
Batteries in residential occupancies	1 KWh
CAPACITOR ESS	
Capacitors, all types	3 KWh
OTHER ESS	
All other ESS	70 KWh



Types of ESS



NFPA 855 – Emergency Planning

- Emergency Operations Plan
 - Safe shutdown
 - Emergency procedures
 - Response considerations (SDS)
 - Removal of damaged ESS
 - Annual staff training
- Hazard Mitigation Analysis (HMA)
- Fire Mitigation Personnel



4.1.3

4.1.4

4.16

NFPA 855 – Equipment

- System listed to UL 9540
- Charge Controllers
- Inverters & Converters
- Energy Storage Management System
- Reused and Repurposed Equipment



NFPA 855 - Electrical Installations

- NFPA 70 or IEEE C2
- ESS Signage
- Separation (Fire Rating)
- Impact Protection
- Security
- Elevation
- Open Rack



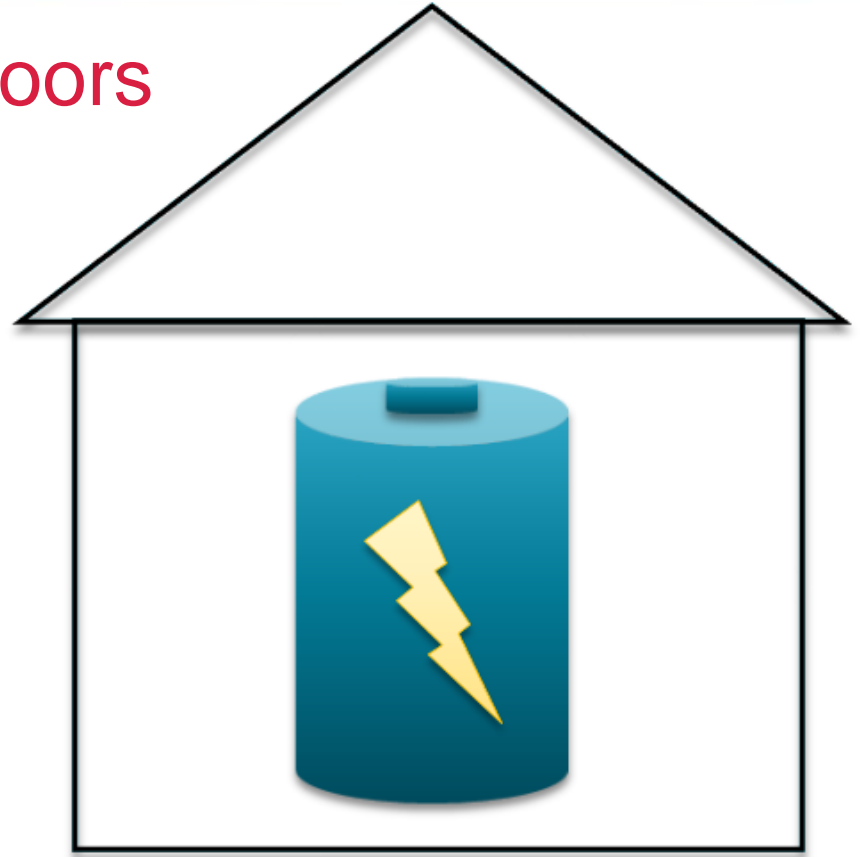
ENERGY STORAGE
SYSTEM



TYPE OF TECHNOLOGY: **Lithium-Ion Batteries**
SPECIAL HAZARDS: **Reignition Possible**
EMERGENCY NUMBER: **1-(732)-867-5309**
SUPPRESSION SYSTEM: **Automatic Sprinkler System**

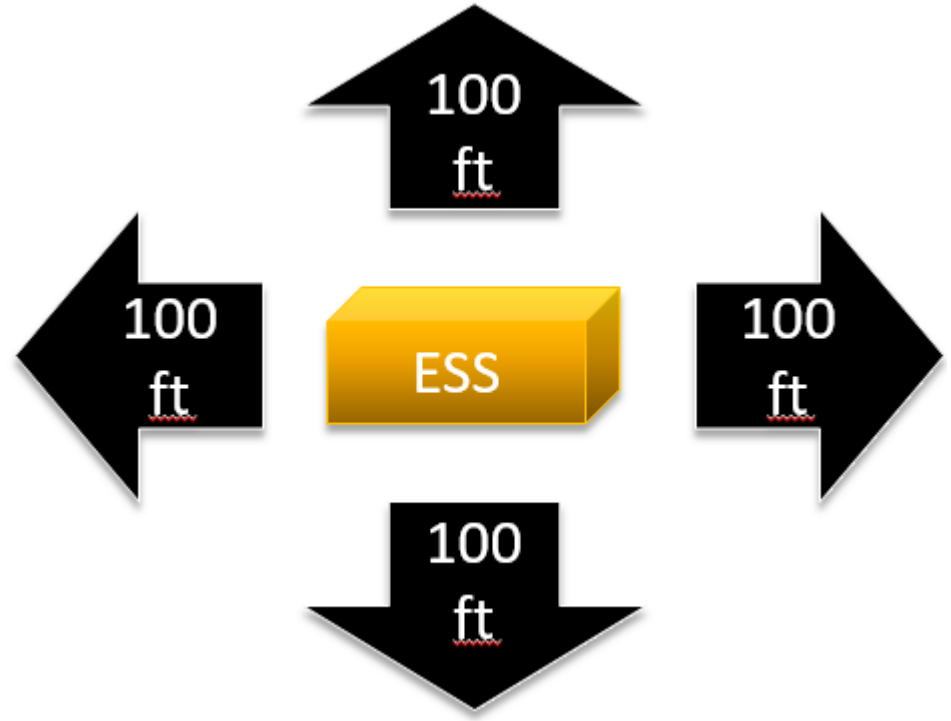
NFPA 855 – Location: Indoors

- Dedicated Use Buildings
- Non-dedicated Use Buildings
- Dwelling and Sleeping Units



NFPA 855 – Location: Outdoors

- Remote
- Near Exposures
- Rooftop & Open Parking
Garage



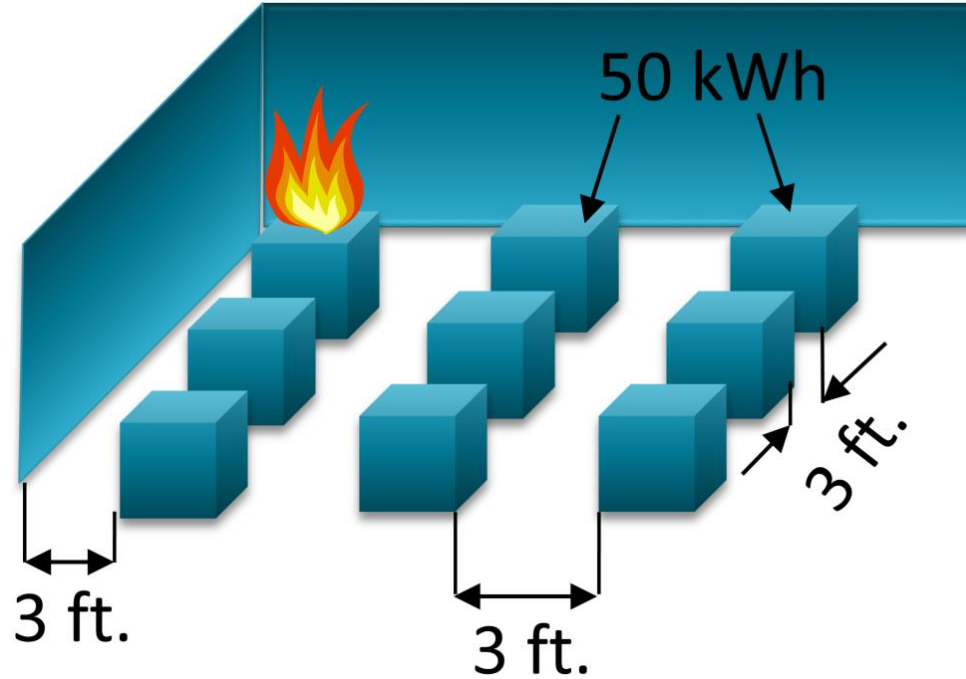
NFPA 855 - Mobile ESS Equipment and Operations

- Charging and Storage
- Deployed



NFPA 855 - Size and Separation

- 50kWh groups
- Spaced 3ft from groups & walls
- Other arrangements based on large scale fire test
- Exempt: Remote Outdoor Locations



NFPA 855 - Maximum Stored Energy

Table 4.8 Maximum Stored Energy

ESS Type	Maximum Stored Energy^a (kWh)
Lead-acid batteries, all types	Unlimited
Nickel batteries ^b	Unlimited
Lithium-ion batteries, all types	600
Sodium nickel chloride batteries	600
Flow batteries ^c	600
Other battery technologies	200
Storage capacitors	20

Exempt: Dedicated use buildings
and remote locations



NFPA 855 - Ventilation and Detection

- Exhaust Ventilation
 - $1\text{ft}^3/\text{min}/\text{ft}^2$
 - Designed to keep flammable gasses under 25% of LFL
 - Exhaust away from openings
- Smoke and Fire Detection
 - Gas detection activates ventilation
 - Smoke detection per NFPA 72



4.9

4.10

Fire Control & Suppression

- Sprinkler System 0.3gpm/ft² over 2,500 ft²
- Other Fire Protection Systems
 - Large Scale Fire Test
 - UL 9540A
- Explosion Control
 - ESS exceeds 25% LFL



Exemptions

Telecommunication

- Listings
- Retrofits
- Energy Storage Management System
- Elevation Restrictions
- Size and Separation
- Smoke and Fire Detection
- Fire Suppression
- Water Supply
- System Interconnections
- Commissioning
- Decommissioning
- Explosion Control

Electric Power Utility Exemptions

- Temporary ESS out of scope
- Plans and specifications
- Emergency Operations Plan
- Listing
- Retrofits
- Energy Storage Management System
- Elevation Restrictions
- Mobile ESS
- Size and Separation
- Smoke and Fire Detection
- Fire Suppression
- Water Supply
- System Interconnections
- Commissioning
- Operations
- Decommissioning
- Explosion Control



NFPA 855 – Annexes(Informational)

Annex B, Energy Storage System Hazards

Annex C, Firefighting Considerations (Operations)

Annex D, Overview of Energy Storage System Technologies

Annex E, Permits, Inspections, Approvals and Connections

Questions?

More Information:

www.NFPA.org/855

www.NFPA.org/ESS

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