This compilation of **Battery Energy Storage System (BESS) safety practices** is applicable for customers that either have or are considering the installation of higher quantities of energy storage (greater than 250 kWh).

The [National Fire Protection Association (NFPA) website](https://www.nfpa.org) provides useful documentation and videos on BESS standards for design and installation, as well as BESS safety research.

- The NFPA offers free on-line training and comprehensive instructor-led BESS and Solar classroom training featuring videos, animations, activities and case studies

**For systems that are not installed but being considered:**

- Ensure the vendor/contractor follows applicable codes and standards including:
  - **Designing** per UL 1642, 1973, 1741 SA, 9540
  - **Testing** per UL 9540A
  - **Permitting** per California Fire Code (CFC) Section 1206
  - **Installing** per NEC Article 706
  - **Interconnecting** per SCE’s interconnection guidelines – see [SCE Grid Interconnections website](https://www.sce.com/grid-interconnections)

- Ensure that the BESS is maintained according to equipment manufacturer (OEM) guidelines, ANSI/NETA-MTS, NFPA 70B, and NFPA 855

*Please note that your local Authority Having Jurisdiction (AHJ) may have additional requirements or special interpretations of these standards.*
BATTERY ENERGY STORAGE SYSTEM SAFETY

For existing systems installed pre-2019:

- Ensure that the BESS is maintained according to the equipment manufacturer (OEM) guidelines, ANSI/NETA-MTS, NFPA 70B, and NFPA 855
- Employ a qualified fire protection engineer/consultant to perform a hazard mitigation analysis (e.g., Failure Modes and Effects Analysis (FMEA), or Bowtie) per CFC Section 1206 or NFPA 855
- Consider retrofitting with appropriate safety features
  - Control system/battery management system (BMS)
    - Ground fault detection
    - Cell/module voltage/current/temperature monitoring
  - Gas monitoring
    - Off-gas/cell venting detection and early shut down
    - Toxic and flammable gas detection
  - Ventilation
    - Deflagration venting for a potential catastrophic event
    - Intrinsically safe ventilation
  - Fire detection
    - Flame, smoke and/or heat (dependent on the system layout, location and other design features)
  - Fire suppression
    - Fire hydrants
    - Automatic Sprinklers
  - 24/7 central alarm monitoring
  - Fire department-targeted signage per CFC Section 1206 or NFPA 855
- Perform planning in coordination with local fire departments
  - Pre-incident planning, awareness, familiarization
  - Emergency response plans, including post-incident reporting
BATTERY ENERGY STORAGE SYSTEM SAFETY

• Review your fire and evacuation plans annually with personnel within the occupied building

• In the event the system catches fire (you may notice bulging, hissing, smoking, or flames)
  - Immediately notify the fire department and request a hazmat team
  - Consider evacuation radius and protection of surrounding structures that could catch fire or cause severe damage
  - If safe to do so, open the electrical disconnect to isolate the system from the building
  - Potential off-gassing may be toxic and flammable depending on the type of system
  - There may be electrolyte leakage requiring containment
  - Do not attempt to disassemble or remove the energy storage system yourself; there could be energy remaining in the system that could pose an electric shock or fire hazard, even after the system is disconnected
  - The system could reignite after the initial fire is extinguished