

# Innovation, energy storage systems and current safety codes

## **As our demand for safe, sustainable and reliable electricity continues to grow the aging power grid grows more stressed and vulnerable to failure.**

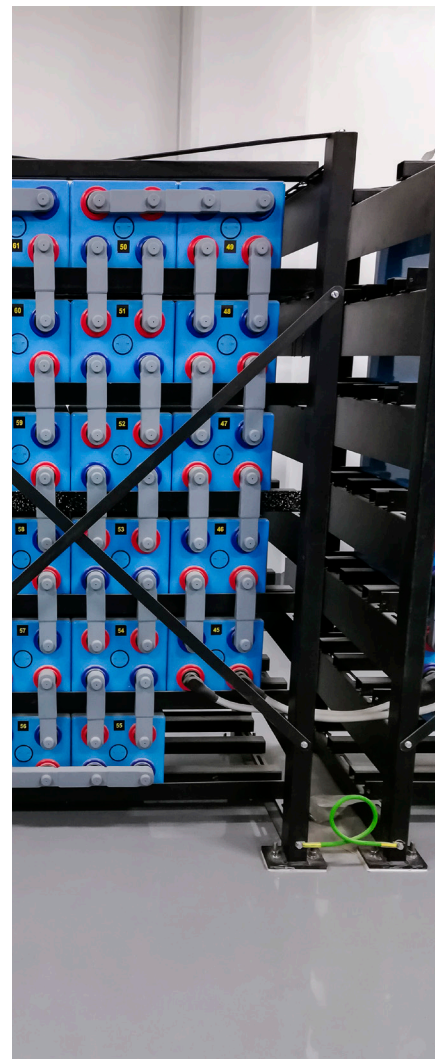
Innovation and emerging technology, such as battery energy storage systems, help to improve the resilience and reliability of our electrical infrastructure, while also creating jobs and fueling the economy.

Innovation and new technologies continue to revolutionize people's lives and enhance the functionality and resiliency of the built environment. Continuous technological advancements promise improvements in the efficiency and our utilization of modern buildings and improve people's lifestyles for work and recreation.

### **What is needed**

As states, cities and municipalities consider adoption of model codes that affect the deployment of energy storage systems and adoption of new innovations, the following best practices can help:

- take a whole-of-government approach in considering policy solutions that may be needed, which is particularly critical when laws/regulations focused on one sector or issue can have consequences for others;
- build on what is already being done in the private sector, emphasizing the continued value of public-private partnerships in solving these challenges;
- participate in the development of codes and standards to ensure they continue to meet the needs of authorities having jurisdiction; and
- maintain a regular schedule of code adoption (e.g. update codes every three years).





### **Approach: Encourage innovation, mitigate risk, pursue safety**

Codes and standards development organizations help innovators evaluate risks and vulnerabilities to create safe, secure and sustainable products by updating building and safety codes and product standards on a regular cycle. By applying safety science in the development of such standards and codes, innovative technologies can move quickly from the research lab to the built environment efficiently and safely. Through collaborating with industry, government and other stakeholders, codes and standards development organizations provide a consensus process for safe adoption of new innovations by anticipating and managing associated risks and promoting economic growth.

### **Problem statement and supporting information**

As our demand for safe, sustainable and reliable electricity continues to grow with the thriving U.S. economy and urban building boom, the aging electric power grid grows more stressed and vulnerable to failure every passing day. With the innovation of new lithium-ion battery technology, commercial electric energy storage for peak-demand shaving and infrastructure resilience is economically feasible and being embraced as an environmentally friendly method to meet the ever-increasing demand for electricity. With the many benefits of this new technology also comes new risks to the safety of our built environment that must be addressed if innovative battery energy storage systems are to be safely deployed.

The challenge we face is how to identify and manage the risks associated with this new technology that is becoming an integral part of our built environment in a smooth and efficient manner for ensuring the safety and reliability people count on. This is why the model building construction codes and fire safety codes are updated every three years through a comprehensive and transparent process involving innovative technology developers and all stakeholders such as designers, builders, manufacturers and code officials. The current model codes include requirements developed through a consensus process to embrace the deployment of battery energy storage systems while ensuring the safety that is essential for use in high-rise and other high-occupancy buildings.

Many of us have seen the fire risks associated with thermal runaway in lithium-ion batteries when physically damaged or not equipped with a battery management system to control the charging and discharging of the stored energy. In response to the development of this new technology and the discovery of these significant safety risks, model codes and standards development organizations mobilized research and technical experts to develop the testing and performance standards and building construction and fire safety code requirements to allow for the efficient and safe integration of battery energy storage systems into our built environment.

The public and private sector must work together proactively to solve these challenges; collaboration is key to addressing them holistically. The enhancement and adoption of model building construction and fire safety codes on a consistent and frequent cycle is an essential collaborative way states and jurisdictions can promote innovation and new technology while ensuring the safety we all expect in the built environment where we live, work and play.

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V1.0 | 7.19