

NYIEC Presentation #4

Title: Energy Storage Systems: From Technology to FDNY and DOB Approval

Energy demand, especially electricity demand, continues to grow due to modern infrastructure, data center, and the increasing use of electric vehicles. At the same time, the electrical grid is facing challenges related to capacity constraints, grid instability, extreme weather, and the need for greater resilience. The increasing adoption of renewable energy resources such as wind and solar, further requires the need for reliable energy storage methods to bridge the gap between intermittent power generation and continuous customer demand. Energy storage systems (ESS) can help address these challenges. ESS are designed to store energy to be used later. It can provide peak shifting, grid balancing, increase grid resiliency, and integrate renewable energy generation.

The first part of this presentation will provide an overview of ESS technologies, applications, and installation types. Different technologies will be discussed with a focus on lithium-ion battery technology and the fire safety. Different applications will be presented, including stationary and mobile systems. Different installation types will be introduced including outdoor, indoor, rooftop. The combination of technology, application, and installation type can significantly affect the safety considerations and regulatory requirements.

The second part of the presentation will focus on the review and approval process at FDNY and DOB. In a highly populated environment like NYC, however, deploying ESS requires a complex review on fire safety, building, electrical, zoning, and permitting requirements. The two main AHJs involved are FDNY and DOB. The presentation will introduce the key codes, standards, and rules used by both agencies. It will cover the two types of approval: ESS product approval (TM-2), installation approval (TM-1) and site-specific approval (OTCR-2). It will discuss the review requirements and explain why they are necessary from a fire safety and construction perspective. The presentation will also include some common challenges during the approval process and discuss strategies on how to develop an efficient approval pathway.

Overall, this presentation aims to provide the audience with a better understanding of the ESS technologies and options, the fire safety considerations and navigating the FDNY approval.

Speakers' Bios:

Ningshengjie Gao, Ph.D.

Plan reviewer, FDNY - Tech Management Unit

Ningshengjie (Ning) is a plan reviewer at Tech Management Unit, FDNY. Since 2021, she has been working on research, review, and approval on various battery-related technologies and projects, including energy storage systems, ebike charging cabinet, and portable power packs. She has led/contributed to several first-of-kind NYC approvals including: first temporary-use mobile ESS, first residential-use ESS, first ebike battery charging cabinet, first ebike fleet charging warehouse. She is a technical committee member of several UL standards. Ning holds a Ph.D. from Oregon State University focusing on waste-to-energy and had postdoc training on developing rechargeable lithium batteries for electric vehicles at Idaho National Laboratory.

Alan Price, PE



Director, DOB, Office of Alternative Energy

Alan D. Price, PE, is currently serving as the Director of the Office of Technical Certification and Research, and the Director of the Office of Alternative Energy at the New York City Department of Buildings. In these roles, Alan oversees two critical offices for the Department, responsible for researching, evaluating and approving adoption of alternative construction materials and alternative energy technology. Alan joined the agency in 2008 and has been the point person for helping facilitate the utilization of novel materials and technology in the New York City construction industry, without negatively impacting public safety. Prior to working at the Department, Alan worked in private industry as a professional engineer for over a decade. A recognized industry expert on energy storage systems, Alan's work in the Office of Alternative Energy is critical to protect public safety, while the City and State move towards meeting their ambitious sustainability goals.