

# Building a Path to Solar+Storage

Central Hudson Solar Summit  
Sustainable CUNY  
March 3, 2020

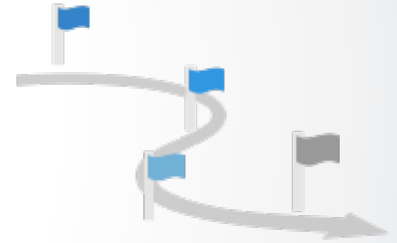


# Smart DG Hub: Success Through Partnership

ENGAGEMENT OF  
STAKEHOLDERS



PATHWAYS TO  
PROGRESS



# Smart DG Hub Projects: [smartdghub.org](http://smartdghub.org)

## Learn More About Our Storage Projects



REDUCING STORAGE SOFT COSTS



RESOURCES, PERMITTING AND GUIDES



RESILIENT SOLAR PROJECT



CRITICAL FACILITY SOLAR+ EVALUATOR



STORAGE ROADMAP & TRACKER



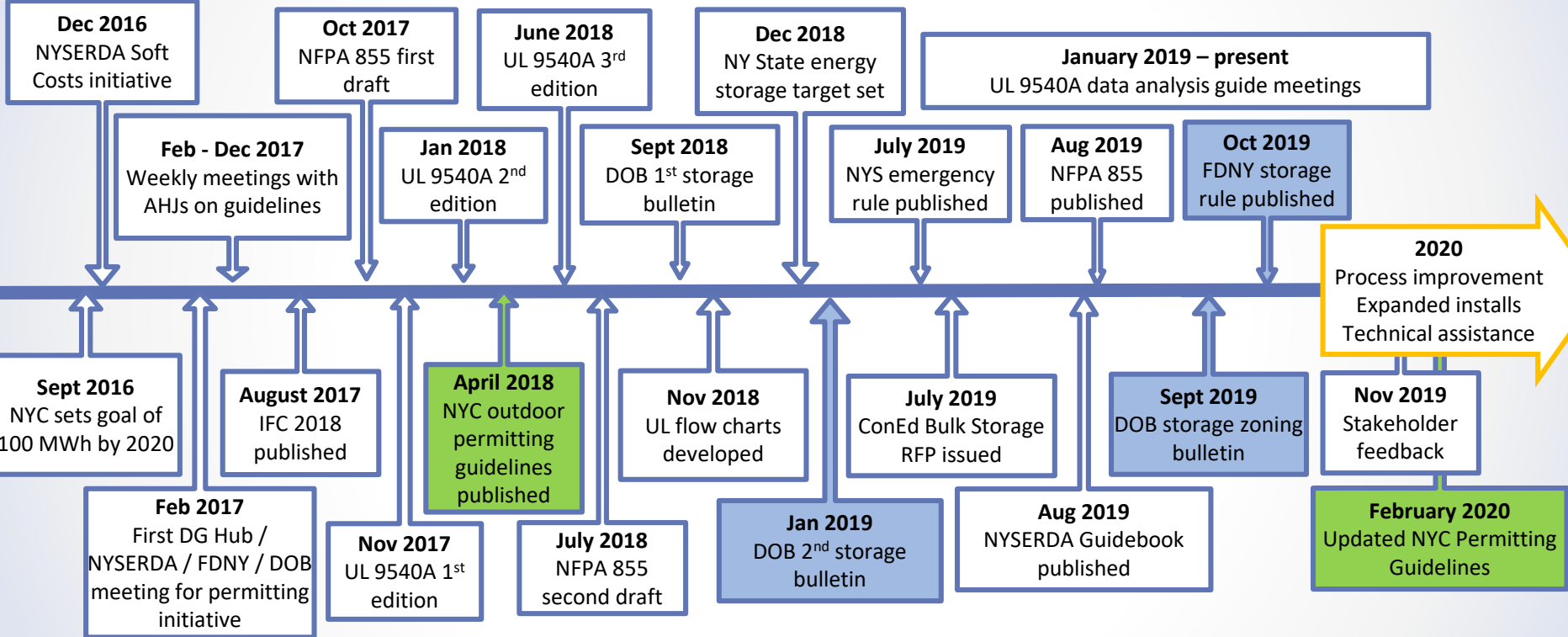
STORAGE 101

**The Path to  
Energy  
Storage  
Permitting?**



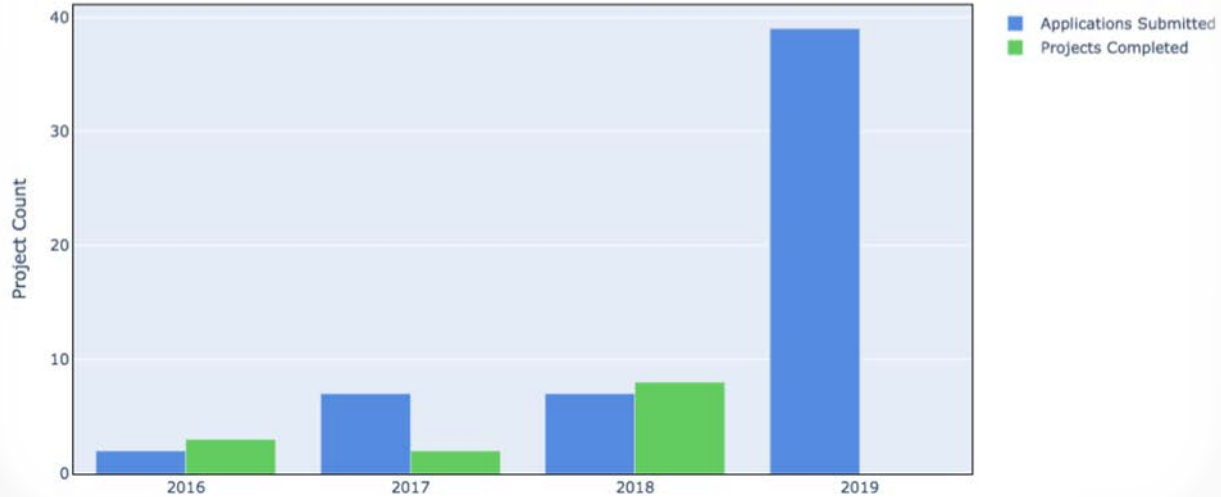


# Timeline: Where We Came From → Where We Are Going

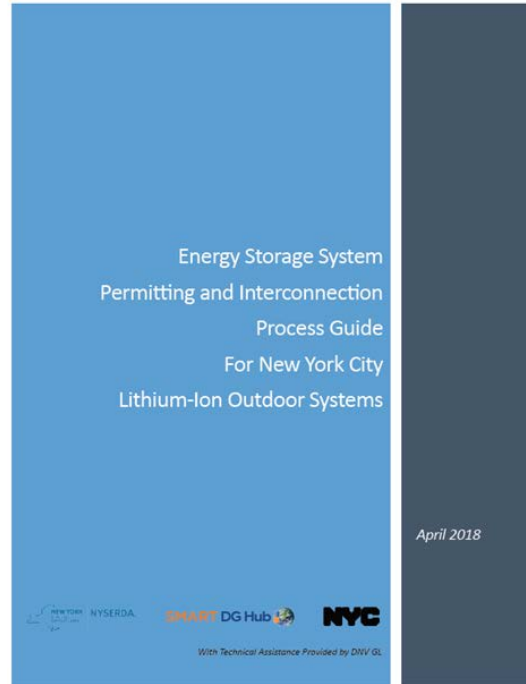


# NYC ESS Interconnection Applications

**NYC ESS Interconnection Application History**  
*Data Source: Con Edison SIR Inventory (Dec 2019)*



# Development of Outdoor Permitting Guide: Stakeholder Input/Expertise



# Permitting areas of consideration

## Fire Protection

- Define fire protection requirements for mfrs & developers
- Define fire suppression & extinguishing techniques to support FDNY SOP development
- Support development of threshold quantities and MAQ

## Ventilation & Exhaust

- Identify ventilation & exhaust req's (rates, airflow) – normal ops, emergency ops/ fire/explosion
- Support development of MAQ and threshold quantities.

## Lifecycle Management

- Identify information to be provided by the project developer relating to physical system management
- Develop replicable process/template for applicants.
- Provide sufficient information to support FDNY SOP development

## Status Communications

- On site signaling
- Automatic malfunction response
- Offsite signaling
- Personnel response

## Cascading Protection

- Technology specs
- Technology features and functioning
- UL listings
- Safety concerns addressed

## Signage

- Posting locations
- Information requirements
- Physical requirements

## Siting

- Identify siting requirements to minimize risk of and from fire
- Allow emergency exit and access as necessary



# Adoption of FDNY Rule: 10/1/2019

Establishes formal permitting requirements for outdoor ESS in NYC:

- System/site/safety requirements differ by Small/Med/Large system sizes
- Sm/Med/Lg differs by battery chemistry

## NYC Rules

### 3RCNY 608-01 Outdoor Stationary Storage Battery Systems

#### NEW YORK CITY FIRE DEPARTMENT

Notice of Adoption of  
New Fire Department Rule  
3 RCNY 608-01, entitled  
“Outdoor Stationary Storage Battery Systems”

NOTICE IS HEREBY GIVEN PURSUANT TO THE AUTHORITY VESTED IN THE Fire Commissioner of the City of New York pursuant to Sections FC102.6.3 and FC901.6 of the New York City Fire Code (Title 29 of Administrative Code of the City of New York), and in accordance with the requirements of Section 1043 of the New York City Charter, that the New York City Fire Department has adopted the above final rule.

The public hearing was held on May 30, 2019. The rule shall take effect on October 1, 2019.

The Notice of Adoption, final rule and the Statement of Basis and Purpose of Final Rule, will be available on the Fire Department’s website ([www.nyc.gov/fdny](http://www.nyc.gov/fdny)) and NYC RULES ([www.nyc.gov/NYCRULES](http://www.nyc.gov/NYCRULES)).

#### **Statement of Basis and Purpose of Final Rule**

The Fire Department adopts this rule to establish standards, requirements and procedures for the design, installation, operation and maintenance of outdoor stationary storage battery systems that use various types of new energy storage technologies, including lithium-ion, flow, nickel-cadmium and nickel metal hydride batteries. The rule does not govern indoor battery installations.

#### **Background and Purpose**

In April 2018, a working group coordinated by the City University of New York and the New York State Energy Research and Development Agency, in which the Fire Department participated, issued the first comprehensive set of guidelines for installing outdoor lithium-ion

# Large Scale Fire Testing: NYC Requirement for all Li ESS

## THERMAL RUNAWAY

- Thermal propagation
- Preventative measures and controls

## TOXICITY

- Ventilation requirements
- IDLH levels
- First responder and public safety



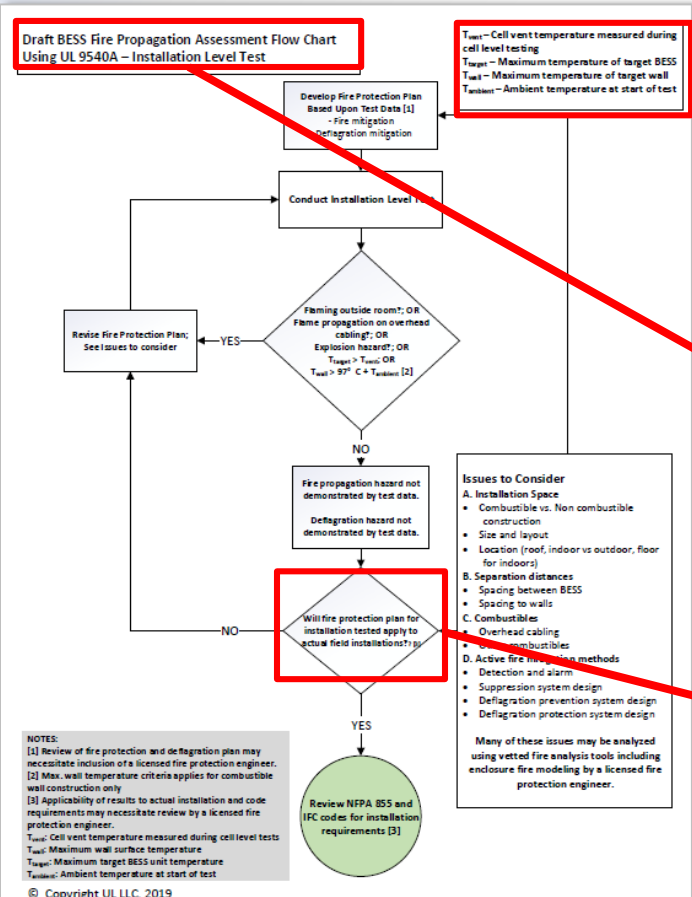
## FIRE SPREAD

- Unit spacing
- Fire and smoke detection
- Fire suppression

## EXPLOSION

- Deflagration hazard
- Ventilation and exhaust requirements
- Threat to nearby people and buildings

# Working group: Processing UL 9540A Data in NYC



$T_{cell}$  – Cell vent temperature measured during cell level testing  
 $T_{target}$  – Maximum temperature of target BESS  
 $T_{wall}$  – Maximum temperature of target wall  
 $T_{ambient}$  – Ambient temperature at start of test

**Conservative criteria are assessed in order to account for edge cases.**

Cell vent temperature  $\neq$  thermal runaway temperature, but, if no mitigative actions are taken, indicates thermal runaway *potential*.

## Reporting requirements

Any submitted fire spread analysis must include the following:

- Executive summary
- Methodology used (UL 9540A results or heat transfer calculations)
- Data input
- Result output
- Calculations and assumptions
- If model used, validation documentation
- Sign off on final design by NYS PE

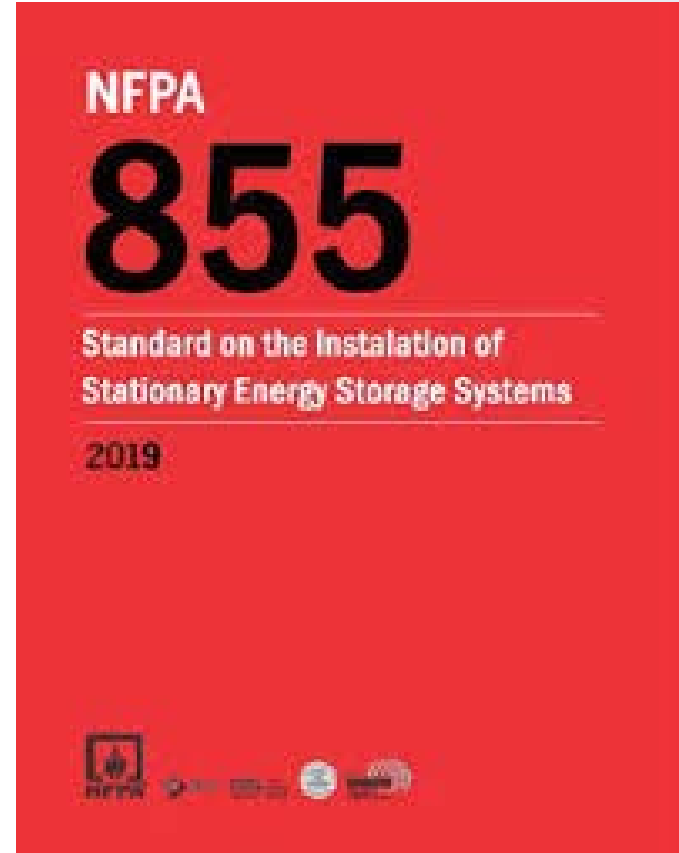
**Minor differences between test set up and actual installation are expected and permitted.** A NYS PE will be required to sign off on any differences, and comment on the test's applicability.

# Part of the bigger (battery) picture

NFPA 855 – standard for installation of energy storage systems.

Specifications for siting, spacing, fire/explosion protections, etc.

Large-scale burn testing required in order to vary from prescriptive requirements.



# Next Steps and Focus Areas

- Additional 9540A data analysis resources, guidance documents
- Streamlining of outdoor project applications – templated application components, checklists
- Streamlining AHJ reviews – inspection review checklist, deflagration analysis framework
- Indoor guidance efforts
- Continued webinars/trainings
- Project tracking

# Storage Resources: [smartdghub.com](https://smartdghub.com)

NY SOLAR MAP

Going Solar

Installing Solar

Financing Solar

Solar+Storage

Resources

NYC Solar

About

NY Solar+Storage Summit

## STORAGE RESOURCES



STORAGE PERMITTING



ROADMAP | SURVEYS



CASE STUDIES | FACT SHEETS | GUIDANCE



STORAGE MAPPING TOOLS



STORAGE WEBINARS



ADDITIONAL RESOURCES



# Technical Assistance

The Smart DG Hub is available to provide TA or point you to the appropriate Subject Matter Expert or agency representative

[www.smartdghub.com](http://www.smartdghub.com)

[smartdghub@cuny.edu](mailto:smartdghub@cuny.edu)