



Safety at the Street Level NYC Fire Code

*Energy Storage
Safety & Reliability Forum 2022
*For Public Release**

NICK PETRAKIS
SENIOR CONSULTANT



NOTICE OF RIGHTS

No part of this presentation or any information contained herein may be reproduced, transmitted, presented or disseminated in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage and/or retrieval system, without written permission from Energy Safety Response Group (ESRG)

© Copyright ESRG. 2022.

Energy Storage Safety & Reliability Forum 2022 *For Public Release*

NICK PETRAKIS
SENIOR CONSULTANT

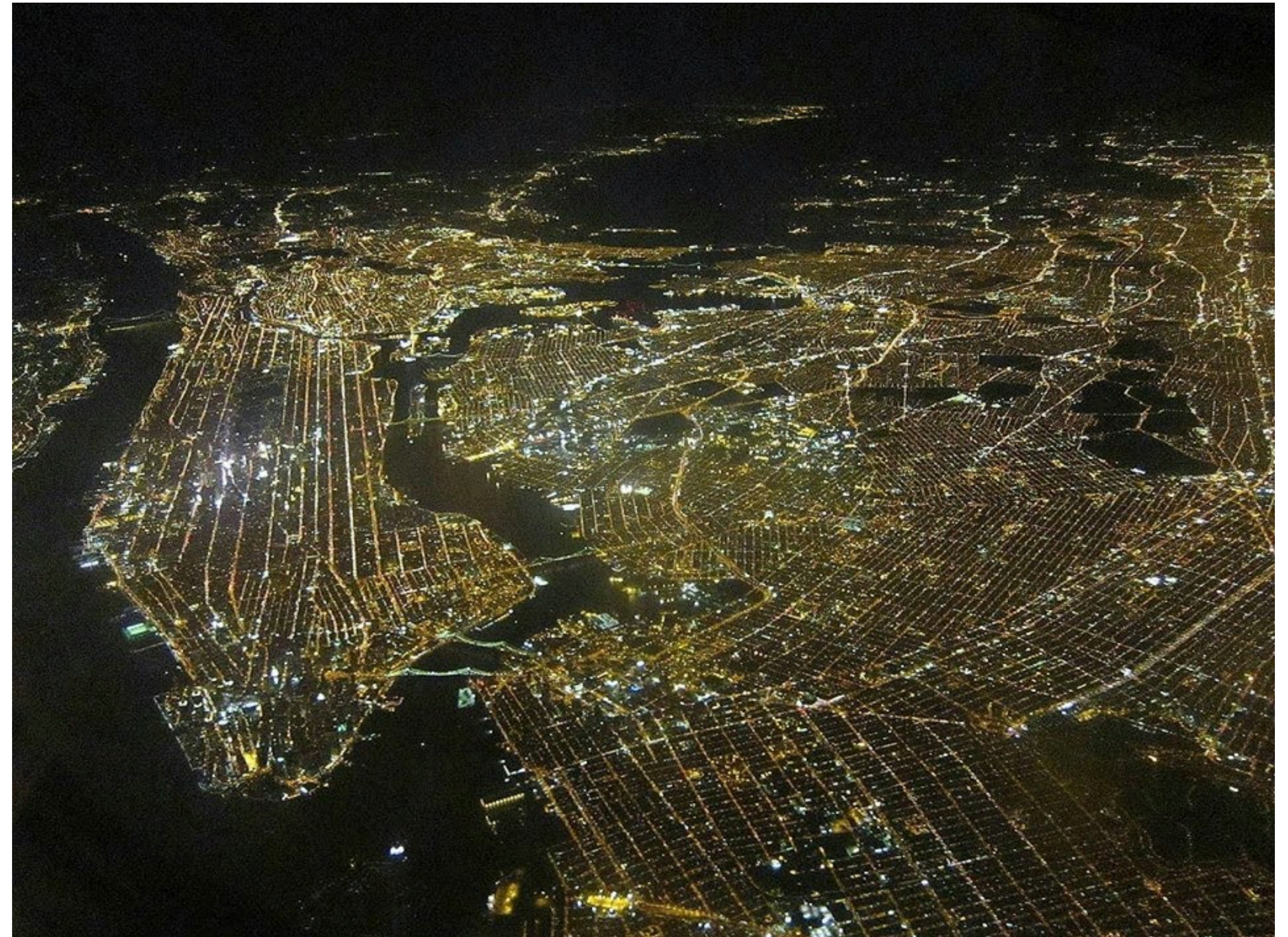
NYC - DENSE URBAN ENVIRONMENT

- NYC is a densely populated urban environment
- Push for electrification (Local Law 97 and Local Law 154)
- Strain on historic distribution grid
- Large need for battery ESS to augment that demand
 - Li+ is most prominent due to footprint, energy density
 - FDNY created Sustainability Unit to address new technologies



CHALLENGES

- Push for elimination of fossil fuel burning equipment for energy generation – push towards full electrification(Local Law 97 and Local Law 154)
- NYS Initiatives – 100 MWh by 2020 in NYC
- Ground mounted systems – near exposures
- Indoor systems – within mixed occupancies



PROXIMITY TO EXPOSURES



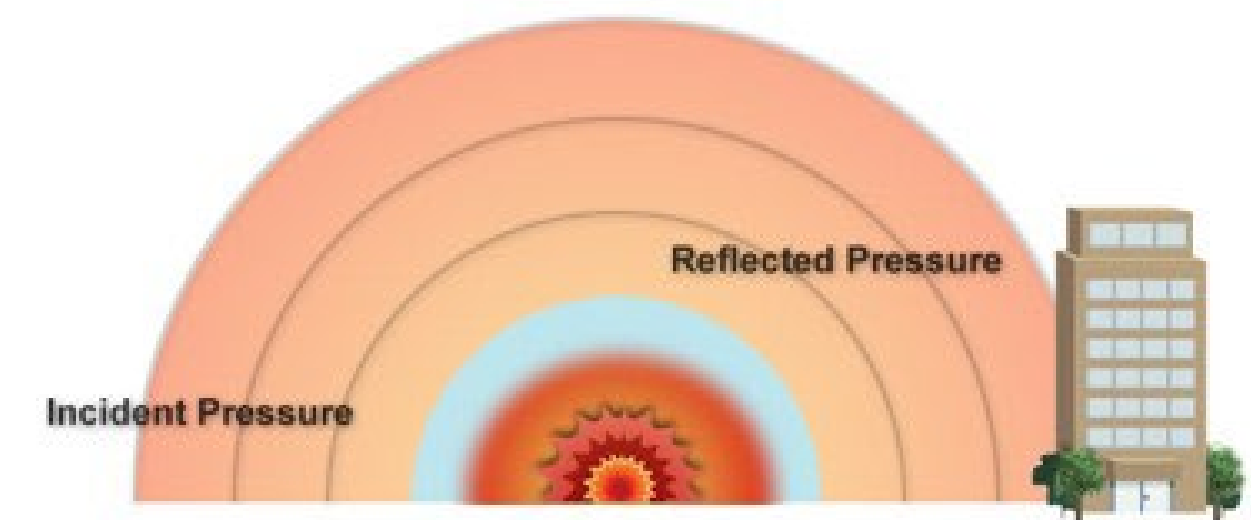
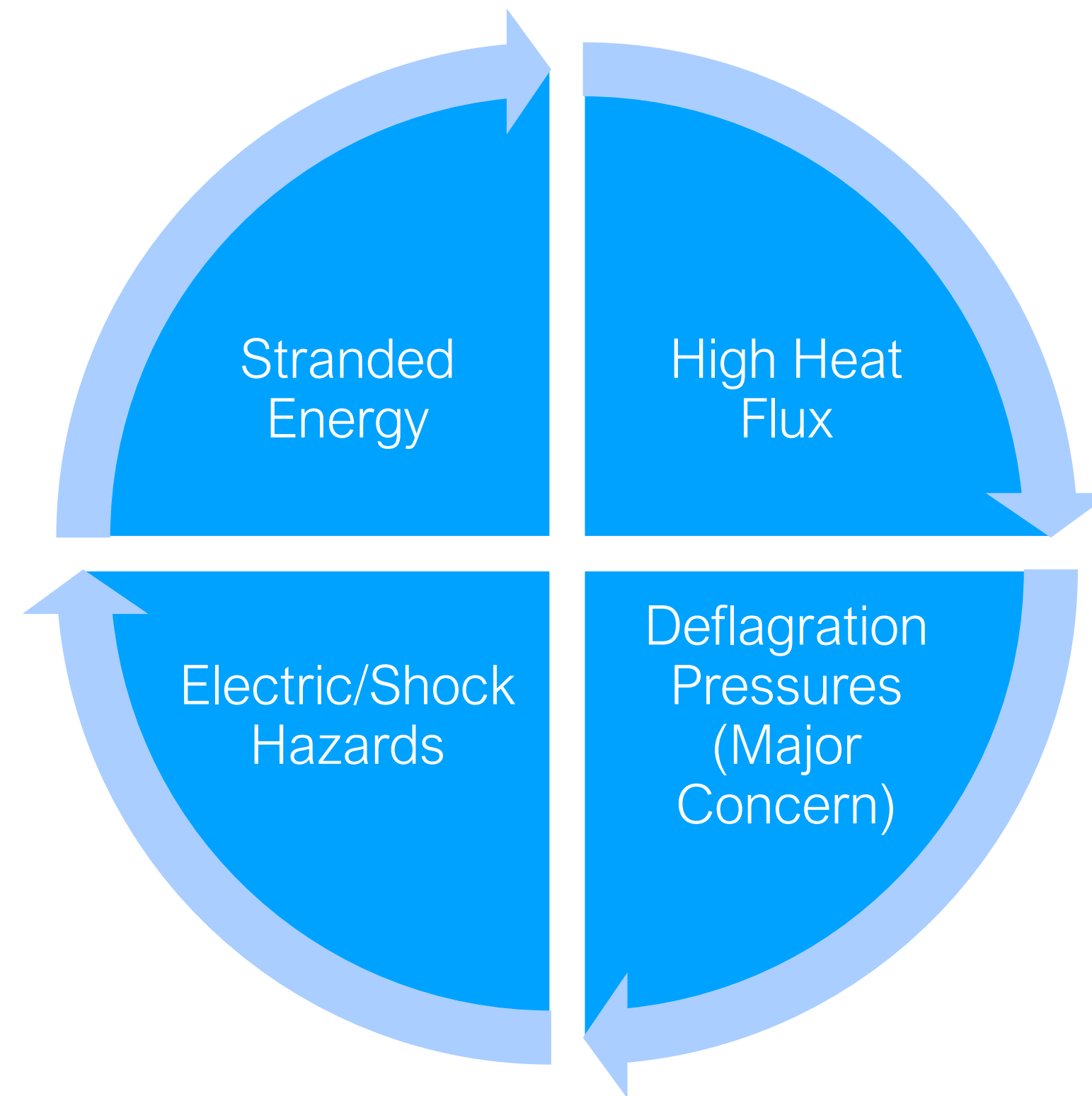
NOTABLE INCIDENTS - APS



Peoria (Surprise) AZ, April 19th, 2019

- Four firefighters seriously injured
- Ignition of flammable off-gassing – deflagration
- Extensive de-commissioning effort

UNIQUE HAZARDS TO BE ADDRESSED



UNIQUE HAZARDS TO BE ADDRESSED



ESRG
ENERGY SAFETY
RESPONSE GROUP

NYC RULES AND REGULATIONS



3 RCNY 608-01
OUTDOOR
SYSTEMS



2021 NYC FIRE
CODE SECTION
608



FDNY CERTIFICATE
OF APPROVAL



FDNY B-28 CERTIFICATE
OF FITNESS (SUBJECT
MATTER EXPERT)

3RCNY 608-01 SUMMARY

Large Systems (above 250kWh for Li+ or 500kWh for other technologies)

Requires robust engineered Fire Protection systems:

- Full-scale fire testing to UL 9540A
- Water-spray fixed system – NFPA 15 (0.5gpm/ft² design density)
- Deflagration venting – NFPA 68 (or explosion prevention to NFPA 69 if not feasible)
- Automatic Fire Alarm and Central Station monitoring
- Subject Matter Expert available for guidance on site (B-28 Certificate of Fitness)
- Remote staging area (outside fencing)
- 24/7 Battery Management System (BMS) monitoring with the ability to relay information to SME/CofF holder
- Robust commissioning and de-commissioning plans including damaged batteries
- Manually-activated exhaust purge

MANUALLY ACTIVATED PURGE

- Manually-activated exhaust purge to remove flammable gasses (Not an NFPA 69 system)
- Remotely actuated by Fire Department Citywide-Standard Key (2642 key)
- Could trigger deflagration if environment is fuel rich (NFPA 68 deflag venting)



B28 CERTIFICATE OF FITNESS HOLDER

All installations (regardless of size) are required to have a B28 Certificate of Fitness (C of F) holder

- Trained and knowledgeable in system and hazards associated
- Be present during commissioning/de-commissioning and confirm system is in good working order
- Understand the operation of all associated fire protection systems and manual smoke/gas purge
- Be reachable (immediately) to provide technical support (via phone)
- Be physically present on-site within 2 hours for any emergency condition
- Provide technical assistance to the Incident Commander

[cof-b28 \(nyc.gov\)](https://www.nyc.gov/cof-b28)

2021 NYC FIRE CODE SECTION 608

Requires fire protection systems similarly to 3RCNY 608 Outdoor req'ts:

- 400 kWh Maximum Allowable Quantity (MAQ) per fire area (2 hr rated)
- Fireproof, fully-sprinklered buildings (some exceptions)
- Hazardous control areas – MAQ's decrease at higher elevations
- Limitation on below-grade installations unless specifically approved
- Certificate of Approval (TM-2) to determine adequacy of fire protection systems

Unique challenges:

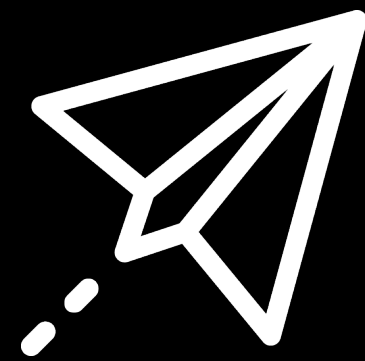
- Deflagration venting – where will deflagration venting occur? Potential to impact adjacent occupancies/staging areas?
- Higher concentration at lower floors – accessibility?
- NFPA 15 system – lots of water – Runoff and containment?
- Protection of adjacent occupancies – Mixed use buildings



QUESTIONS?

Nick Petrakis, P.E.

Senior Consultant – Energy Safety Response Group
nick.petrakis@energyresponsegroup.com



ENERGY SAFETY RESPONSE GROUP LLC

Phone: +1 740 981 7683

Email: info@energyresponsegroup.com

www.energyresponsegroup.com



ESRG
ENERGY SAFETY
RESPONSE GROUP