HAMPTON BAYS CAC NOVEMBER 2022 MEETING MINUTES

Meeting Date: November 17, 2022
Meeting Time & Location: 7pm EST Zoom Meeting
HBCAC Meeting Zoom link
https://us02web.zoom.us/j/87034073959?pwd=MVpoMFFtNGRma2FaUU5ZK2drZFVsdz09

HBCAC website link: https://www.southamptontownny.gov/435/Hampton-Bays

Member Attendees: Kevin McDonald – Chairperson, Margaret Friedlander - Secretary; Molly Scruggs, Geraldine Spinella, Louise Stalzer, Amy Paradise, Dave McMorris, Ray D'Angelo, Christine Taylor, James Mackin

Guest Attendees: Maria Hults resident and President of the HBCA, Councilperson Rick Martel; Councilperson Cyndi McNamara, Legislative Aide Paula Godfrey

Guest Speaker: Candace Rossi, CEM Senior Project Manager, NY-Sun NYS Energy Research Development Authority (NYSERDA)

Guest Speaker Topic: Battery Energy Storage Systems (BESS)

MEETING AGENDA

1. Guest speaker/presenter
   - Battery storage, site plan and best practice policies for NY (note we are not discussing individual projects—they have their own procedures for review)
2. Town Board members updates
   - Traffic matters update---Downtown issues—CVS, other developments if any.

HBCAC MEMBER VOTE

A unanimous vote of members in attendance was taken.

The Hampton Bays CAC strongly advises the Town of Southampton Board Members to comply with the NYSERDA Model Law and related guidelines provided in the New York State Battery Energy Storage System Guidelines for Local Governments, most-recently updated in December 2020 and any future updates. This document contains information and step-by-step instructions to support local governments in New York in managing the development of residential, commercial, and utility-scale BESS in their communities.

Because this is a relatively new technology application it's imperative that our Town Board proactively and collaboratively engage with the Planning Board, Fire Safety, Police Services, and all Authorities Having Jurisdiction (AHJs) to ensure best practices, defined by the Model Law and related best practice guidelines, are implemented.

Overview: The Model Law is intended to help local government officials and AHJs adopt legislation and regulations to responsibly accommodate battery energy storage systems in their communities. The Model Law lays out procedural frameworks and substantive requirements for residential, commercial, and utility-scale battery energy storage systems.

Refer to the New York State Battery Energy Storage System Guidelines for Local Governments 2020 attachment for the complete contents of the Model Law.

ATTACHMENTS

1. Candice Rossi provided the attachment of her 11/17/22 presentation to the HBCAC
2. New York State Battery Energy Storage System Guidelines for Local Governments 2020

HBCAC FOLLOW UP REQUESTS:

- A Southampton Town community work session, inclusive of all Town wide CACs and Civic groups who are interested, to discuss Battery Energy Storage Systems.
  - Key stakeholders should include: a NYSERDA representative; Michael Lieberman, Hampton Bays Long Range Planner and NYSERDA point person for the Town; Ryan Murphy, Hampton Bays Code Enforcement; and representatives from the Town Board, Planning Board and our Fire, Police, Ambulance services.
  - Consider including AHJs and Civic groups engaged in the planning and implementation of the Battery Energy Storage Systems in East Hampton and Montauk
- Confirmation of Fire Dept training and the status of an emergency response plan specific to Battery Energy Storage systems

CANDICE ROSSI GUEST SPEAKER PRESENTATION (see presentation deck attached)

- Candice Rossi specifically works for the Clean Energy Siting Team www.nyserda.ny.gov/Siting
- NYSERDA created clean energy guidebooks to assist local governments managing clean energy developments in their communities
- NYSERDA offers local governments free one-on-one technical assistance on topics including, but not limited to:
  - Property taxes & Payment-in-Lieu-of-Taxes (PILOTs)
  - SEQR process
  - Adopting clean energy zoning laws
  - Municipal procurement
  - Adopting & Implementing the Unified Solar Permit & Energy Storage Permit
- Introduction to Battery Energy Storage Systems (BESS)
- Overview: NYS goals, policies, and programs
- BESS fire safety & codes in NY State
  - Summer of 2019 NYSERDA worked with NY Dept of State to address BESS code requirements during which time 2021 codes were being drafted
  - An emergency rule was passed which adopted 2021 uniform codes for NY State and must be followed
  - A lot of codes are put in place to address fire risks and to prevent and/or contain fire and/or thermal runaway
  - The presentation deck provides 6 out of 100 slides about BESS fire codes for a quick overview
- Helpful Links
  - Clean Energy Siting Homepage www.nyserda.ny.gov/Siting
  - Battery Energy Storage Guidebook www.nyserda.ny.gov/StorageGuidebook
- *Follow up information received from Candice Rossi on 11/22/22 copied and pasted below.*

  I have provided below some information regarding Ralph's {Ray D'Angelo's} question re: battery failures.

  The data regarding cell failure is a little more complicated, as there are different chemistries even within lithium-ion batteries, and also, there are different configurations and different safety features in each project depending on the local codes. I would note again, that NYS has some of the most stringent codes in the county, so NYS projects will likely have more safety features than some of the batteries that have failed in the past.

The Electric Power Research Institute (EPRI) has a journal article *As Lithium-ion Batteries Scale, Mitigation the Risk of Fires Becomes More Important*, *https://eprijournal.com/a-focus-on-battery-energy-storage-safety/* which has this information published; "EPRI's battery energy storage system database has tracked over 50 utility-scale battery failures, most of which occurred in the last four years. One fire resulted in life-threatening injuries to first responders. These incidents represent a 1 to 2 percent failure rate across the 12.5 GWh of lithium-ion battery energy storage worldwide." Its important to note, that failure does not always result in fire, and only 1 incident out of 50 failures tracked led to injuries to first responders. I would assume that the 1 incident they are referring to is the one in Surprise, Arizona in April 2019 (which actually led to us working with DOS to upgrade NYS' codes) and that system was installed on a utility site on, I believe, the 2012 ICC codes, which we are utilizing the 2021 ICC codes in NYS. There has also been a lot of lessons learned from that incident in regards to incident management for battery failures. I do think the article does a good job of putting this into perspective.

They also keep a database of BESS Failure Events worldwide that is available here. https://storagewiki.epri.com/index.php/BESS_Failure_Event_Database

Q&A

Q: Margaret Friedlander
Was the Battery Energy Storage System Guidelines and other relevant information provided to the Southampton Town Board and/or the Southampton Town Planning Board?

A: Guest Speaker
Her colleague Bill worked with Michael Lieberman on the Model Law. Per Rick Martel, Michael Lieberman is the Towns NYSERDA contact at Town Hall.

Q: Kevin McDonald
Are you finding most municipalities are following the model law, and compliance is good and comprehensive, and does it appear to be working?

A: Guest Speaker
Yes from what we can see at this point. I was in Buffalo and there's a 20-megawatt site and the town adopted our Model Law, and the team is helping to train the local fire department. Town fire codes can only do so much and there are some parts of the Model Law the identify having an emergency operations response plan which shows you're actually complying with all fire safety recommendations per the Model Law

Q: Margaret Friedlander
What's your experience with other locals that are installing Battery Energy Storage Systems when it comes to Authorities Having Jurisdiction (AHJs) successfully working and planning together to ensure compliance with the Model Law?

The Model Law (is guidance, and not literally "a law") also mentions the appointment of a Battery Energy Storage Task Force that include residents, businesses, interested Non-Profit organizations, utilities, relevant municipal officials.

In the Town of Southampton, the Planning Board cannot comment on what's before the Town Board and The Town Board cannot comment on what's before the Planning Board. How then can we ensure there's a cohesive plan and approach to siting and building Battery Energy Storage Systems that comply with Model Law if everyone is working in silos?

I was the person who provided the NYSERDA Guidelines to our Southampton Town Planning Board in March of 2022, and at the time, they were unaware of these Guidelines and the Board agreed they needed to educate themselves about this subject.

A: Guest Speaker
Model Law and NYSERDA Guidelines encourage best practice. It should be all stakeholders at the table collaborating. Much of what needs to be signed-off on are regulations that fall within the fire code, and this requires the fire code official signing off on specific things. **In the law itself - Fire training is required as part of a BESS Site Plan application and special use permit application.**
A lot can be hit or miss -- some towns are collaborative and others not, but we can only encourage people, we can't hand hold.

Margaret Friedlander
I encourage our Councilpersons Rick Martel and Cyndi McNamara who are on this Zoom call to take note of the above, read the NYSERDA Model Law and Guidelines, and follow up accordingly to ensure all AHJs are informed and working collaboratively

Q: Margaret Friedlander
Permitting for Tier 2 Bess that calls for onsite utility lines to be placed underground to the extent feasible and as permitted by the serving utility… (see pages 9-10 in the Guidebook)

Would it be accurate to say if it cost less money and is more convenient to keep utility lines above ground vs underground – this is an option?

A: Guest Speaker
The Model Law recommends utility lines be underground, but it depends on the utility and site. Most communities don't want to see more wires. Cost is born by the energy storage owner, not the utility or the Town

Q: Geraldine Spinella
Are you involved in any of the companies that want to build Battery Energy Storage Systems in Hampton Bays?

There are Battery Energy Storage projects in Hampton Bays already before the Planning Board. These should not be located in residential neighborhoods. We should be seeing a plan from our Fire Marshal before anything moves forward.

What is the cost to homeowners?

A: Guest Speaker
No, I don't even know who these companies are. We are just working with local governments to give them information. The Battery Storage owner would be charged by, and will be paying, the utility company. There is no additional cost to the residents.

Q: Margaret Friedlander
What percentage of Battery Storage Energy Systems are sited in rural more isolated areas and in more populated city or suburb site locations? Where are a lot of these being sited?

A: Guest Speaker
I don't have that information off-hand or data points I can reference. A lot of them are being Upstate NY which happens to be more rural.

Q: Ray D'Angelo
What is the failure rate of these batteries?
And is there any noise, like a hum, associated with these facilities?
Some facts not related to Battery Storage Systems: Lithium-ion batteries have a propensity to catch fire. This year in NY State there have been over 200 fires related to lithium-ion batteries with 6 fatalities and over 135 injuries. We have to be really careful where we site these Battery Energy Storage Systems.

A: Guest Speaker

I don't have specific information regarding failure rates. It is fairly low, but I don't have specific data points. There is some noise – kind of similar to a transformer. They're definitely not as loud as a window installed air conditioner and the sound dissipates pretty quickly. One site I visited I could hear something inside the fence, but not outside.

There are differences between mobile and stationary lithium battery units. Mobile units (like e-bikes) are harder to regulate, and the stationary units have a more substantial codes and protection measures. They have similar technologies, but different code requirements and safety measures.

Follow Up information from guest speaker requested: What is the engineer specification of the range of reasonable failure rates?

COMMENTS

Councilperson Rick Martell

Michael Lieberman, Planner, is working with NYSERDA. He's updated the Town Board a little bit about sustainability and is the person to have deeper discussions with. And Ryan Murphy, briefed the Board on NY State code for Battery Storage Systems. I don't think any additional recommendations have been made to the NY State code, but I can find out. "Just as Ray is concerned about safety, so am I. I want to make sure our Fire Dept is trained and ready."

Chair, Kevin McDonald

It would be good to have a work session about this topic to inform and lead the proper siting of these Battery Energy Storage Systems without discussing specific projects in front of the Planning Board.

Margaret Friedlander

Based on NYSERDA Model Law and best practice guidelines the subject of and resulting discussions and planning for Battery Energy Storage Systems should not be siloed, and it's important that the Planning Board and the Town Board not continue with a "Chinese Wall" approach.

A Chinese wall in business is a virtual barrier erected to block the sharing of information among groups or individuals within the same organization from sharing information that could create a conflict of interest.

There should be no conflict of interest amongst all Authorities Having Jurisdiction (AHJs) if the goal is to ensure there's a cohesive plan, approach, and codes re: siting, safety, et al, related to Battery Energy Storage Systems that comply with NYSERDA Model Law and best practices.

There should be no conflict of interest when it comes to the safety of our community and the Town Board must proactively engage all AHJs inclusive of the Planning Board, Police, Fire, Ambulance, et al.

I call for a vote from the CAC about this subject

Councilperson Cyndi McNamara

This {Battery Energy Storage Systems} is a new code.

We are going to have a public hearing on December 13, 2022, on our Solar Code. Planning does a great job and they put a lot of work and time into making sure these codes, if anything, are more stringent than the State requires. The Solar Code is a great example. There are already planned projects awaiting the Solar Code. I anticipate us adopting the code and then these projects will come before the Planning Board very quickly.

I think they {the Planning Board} did take a step back on Battery Energy Storage Systems so they could get some training – which they have done. We're taking our time with the code to get it right so when it {Battery Energy Storage Systems} comes up the guidelines are all there. I know the

Planning Board worked with Code and won't make any decisions until they have all the information they need. Not sure if they worked with NYSERDA directly, but to say they didn't have the actual manual, maybe they didn't, but I know people on the Planning Board, and they wouldn't make any decisions until they had the information they needed.

Margaret Friedlander
The Planning Board was very transparent about needing to be educated when I participated in two remote work sessions. And I did provide them with the NYSERDA Guidelines in March of 2022 which they admitted they were unaware of and unfamiliar with. It's important to ensure that all AHJs, including the Fire Marshall, Ambulance, Police… are all working together. Their services are inextricably linked when it comes to Battery Energy Storage Systems safety and response plan.

Cyndi McNamara
I can tell you 100% that our Fire Department have this {Battery Energy Storage System Fire} training

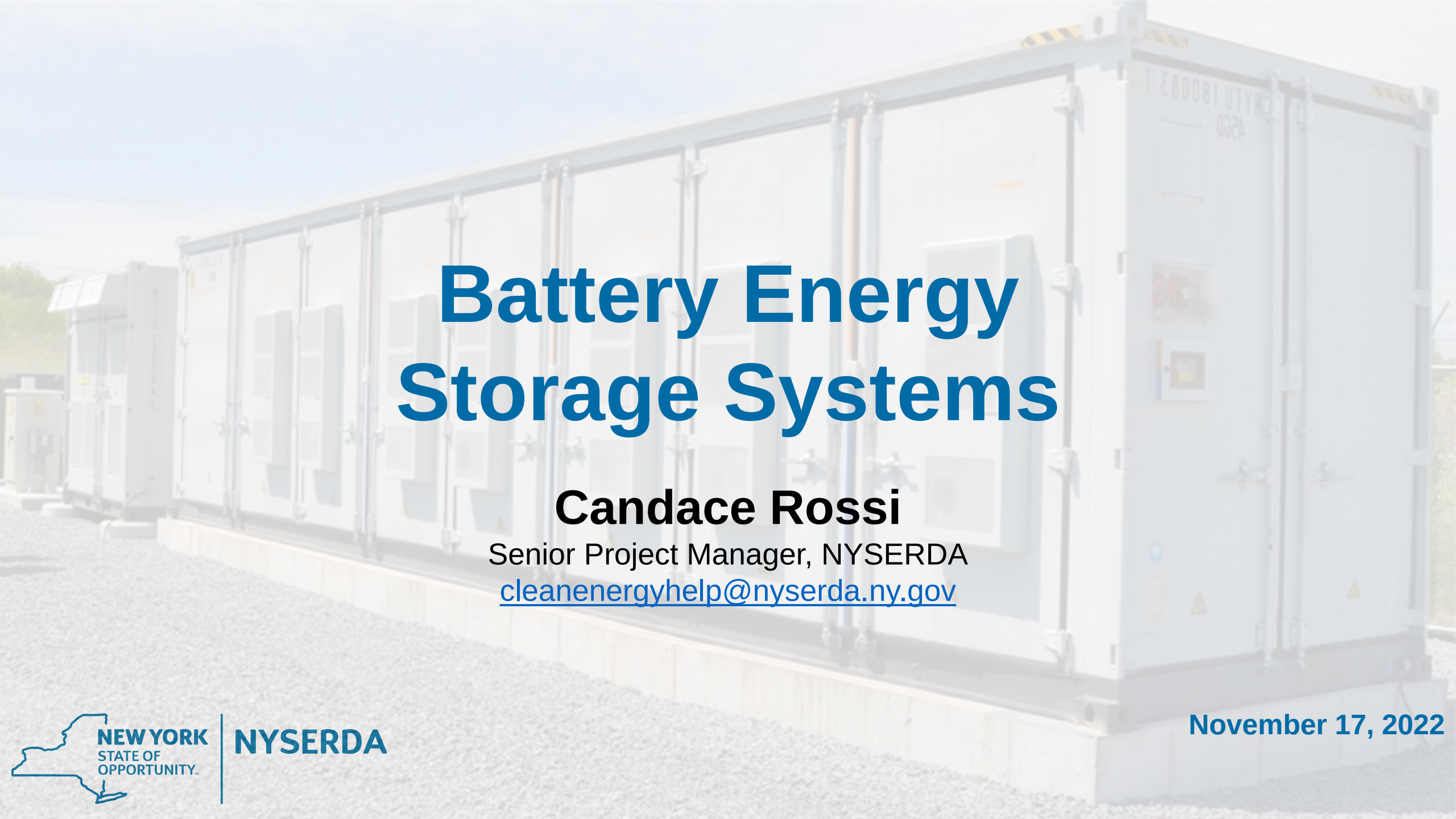
Kevin McDonald
I'm not critical often, but when you make an inquiry to the Fire Department Fire Marshall's office, the response is we'll take a look at it when we get the referral. This is probably not the best response.

So, our message to our Councilpersons is there are people who are concerned and want to be sure that all the I's dotted and T's crossed that something new and different never done before is done with a rigorous review and not something less.

Geraldine Spinella
One of the site locations for a BESS in Hampton Bays is surrounded by homes and business, it's located right on Montauk Hwy {302 & 310 W. Montauk Highway} and backs up against the railroad tracks. The property has already been purchased – so what can be done to ensure everyone's safety after the fact? These should be sited in an industrial park. I asked the Fire Dept in the Spring if they were aware of Battery Energy Storage Systems proposed in Hampton Bays and did they have any experience with any type of lithium battery fires? They said no they were not aware and did not have any experience; and heck I wouldn't want to put out one of those fires because you almost can't.

Margaret Friedlander
There may be some relevant learnings based on the East Hampton and Montauk Battery Energy Storage Systems.

- East Hampton Site location is 3 Cove Hollow Road
- Montauk Site location, per the East Hampton Star, is a triangular parcel less than a half-acre in size, bordered to the north by the Long Island Railroad tracks and to the west by North Shore Road. The site location is surrounded by major FEMA flood zones, and is only about 100 yards in either direction from Fort Pond and Fort Pond Bay}.



Battery Energy Storage Systems

Candace Rossi
Senior Project Manager, NYSERDA
cleanenergyhelp@nyserda.ny.gov

NEW YORK STATE OF OPPORTUNITY. NYSERDA

November 17, 2022

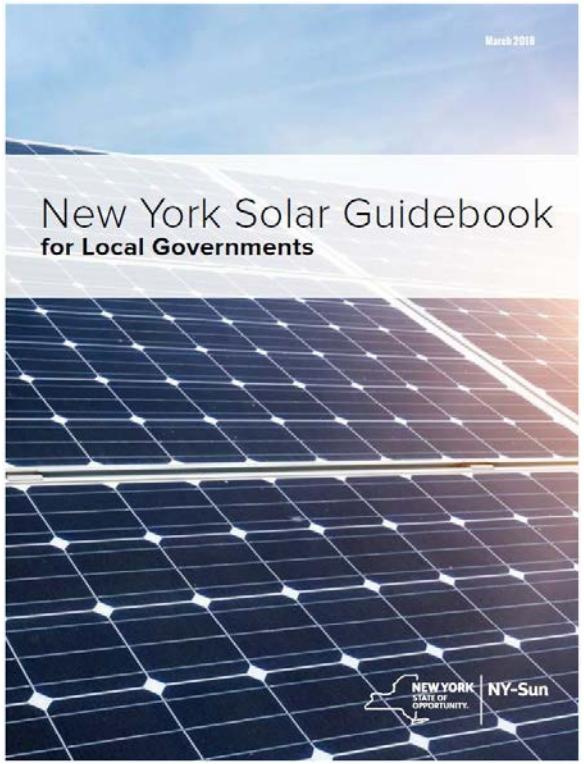
Introduction

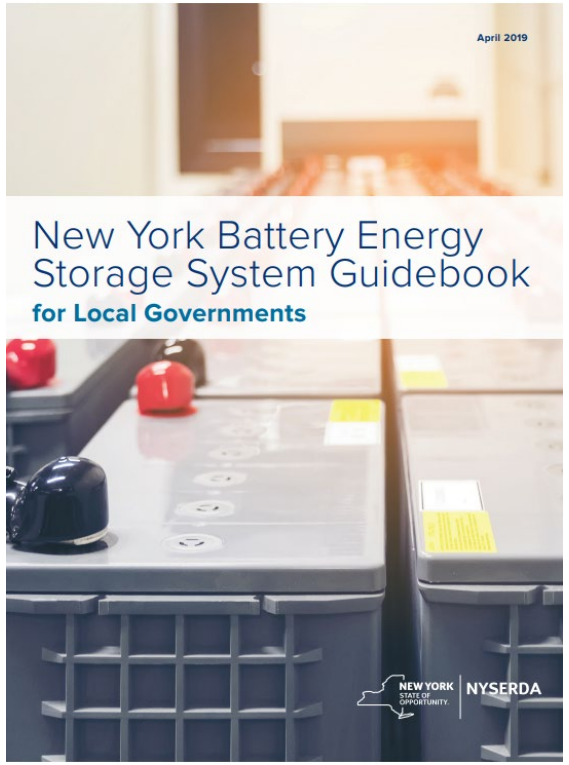
Candace Rossi
Senior Project Manager, NYSERDA
Candace.Rossi@nyserda.ny.gov

Clean Energy Siting Team:
www.nyserda.ny.gov/Siting

Clean Energy Siting Team

NYSERDA created clean energy guidebooks to assist local governments managing clean energy development in their communities.

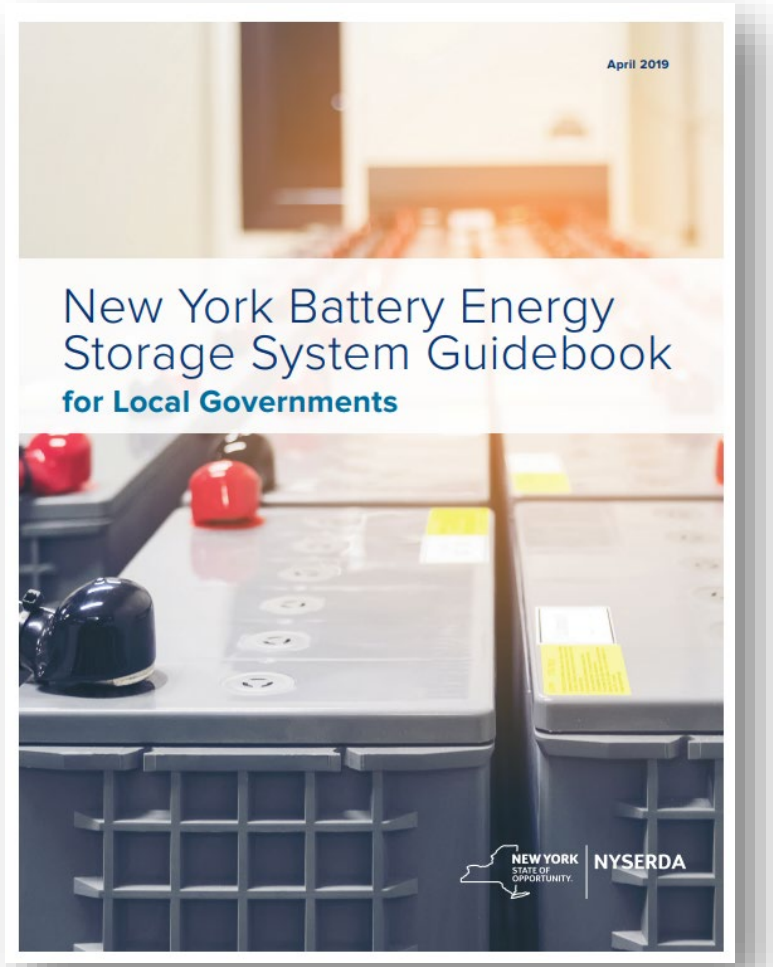




NYSERDA offers local governments free one-on-one technical assistance on topics including, but not limited to:

- Property taxes & Payment-in-Lieu-of-Taxes (PILOTs)
- SEQR process
- Adopting clean energy zoning laws
- Municipal procurement
- Adopting & Implementing the Unified Solar Permit & Energy Storage Permit

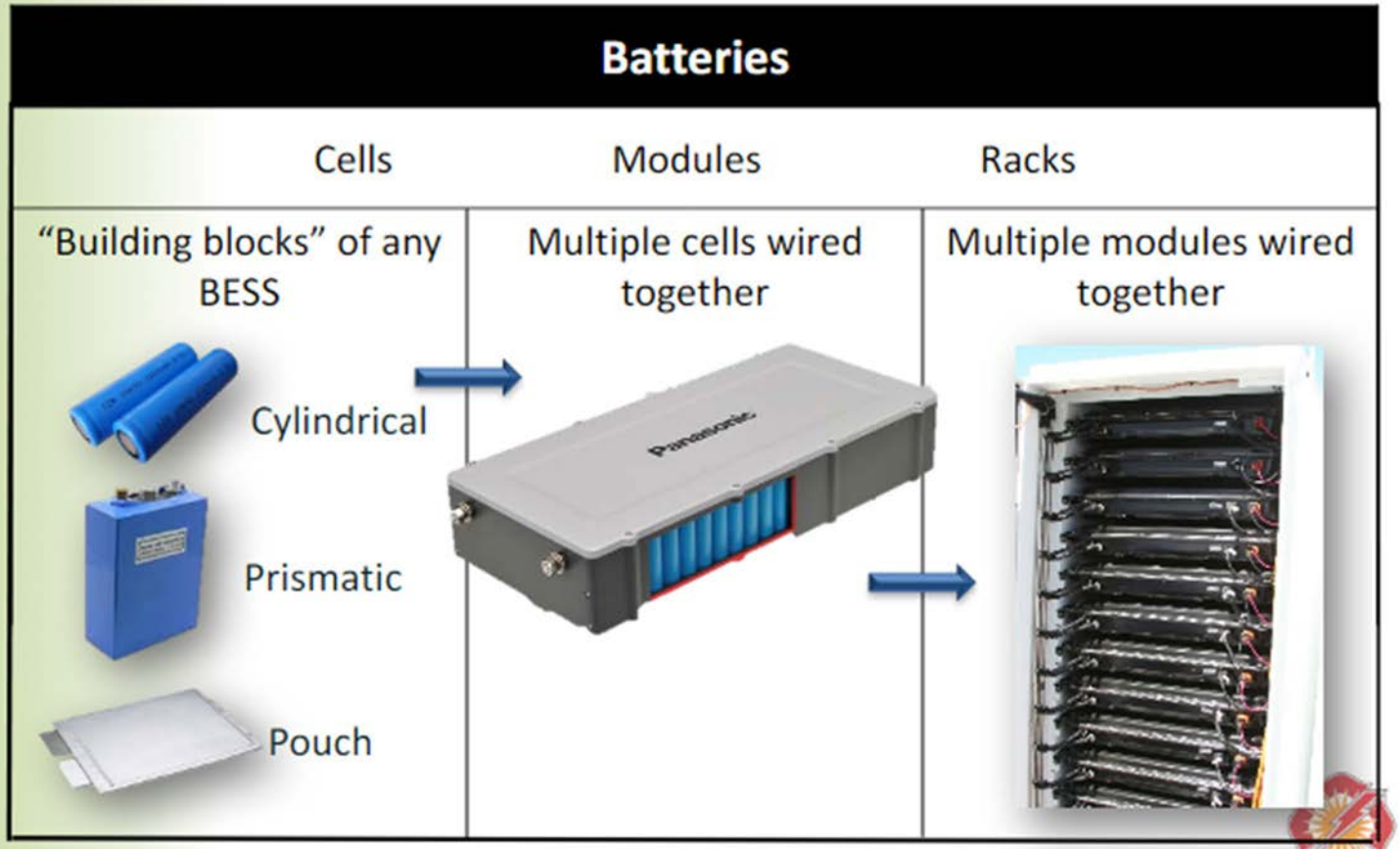
Battery Energy Storage Guidebook for Local Governments



- **Chapter 1** – Battery Energy Storage Model Law
- **Chapter 2** – Battery Energy Storage Model Permit
- **Chapter 3** – Battery Energy Storage Inspection Checklist
- **Chapter 4** – 2020 New York State Uniform Code

Introduction to Battery Energy Storage Systems

Battery Energy Storage Systems



"The Role of Storage and DER for California, Solar + Storage for Resiliency." Angelina Galiteva, Founder Renewables 100 Policy Institute, November 2017.

ENERGY
RESPONSE SOLUTIONS

Battery Energy Storage Systems

	Lead Acid	Sodium-Sulfur	Flow Batteries	Lithium-Ion
Round-trip efficiency	70-85%	70-80%	60-80%	85-95%
Typical duration	2-6 hours	6-8 hours	4-12 hours	0.25-4 hours
Time to build	6-12 months	6-18 months	6-12 months	6-12 months
Operating cost	High	Moderate	Moderate	Low
Space required	Large	Moderate	Moderate	Small
Cycle life	500-2,000	3,000-5,000	5,000-8,000+	2,000-6,000+
Technology maturity	Mature	Commercial	Early-moderate	Commercial

Adapted from: http://cpee.colostate.edu/wp-content/uploads/2018/08/Storage_July2018.pdf

Battery Energy Storage Systems (BESS)

Residential

Commercial

Utility

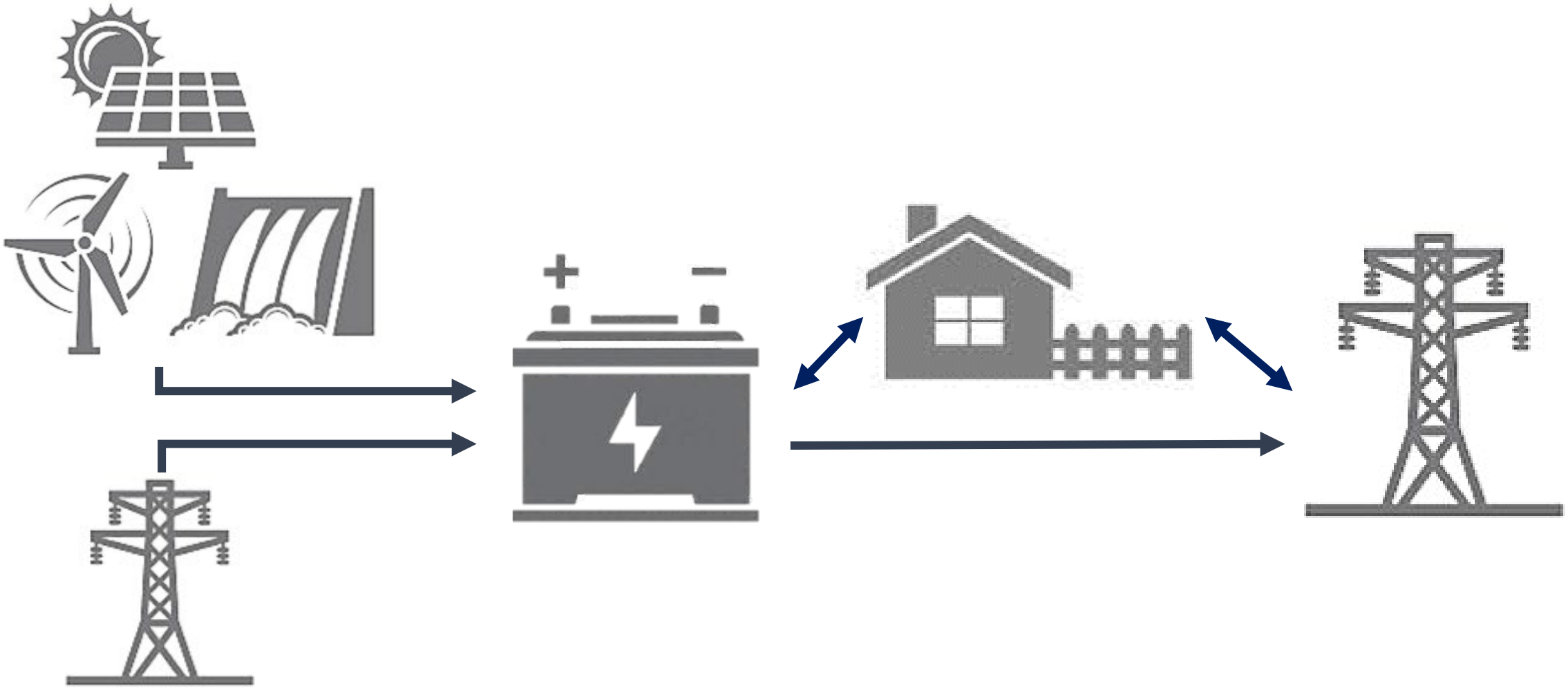
Behind-the-meter
“Customer-side”

Front-of-the-meter
“Utility-side”

Battery Management System

- Monitors each individual cell within the system
- Will alarm if there are potential issues
- If required, can isolate affected cells or modules from the total system

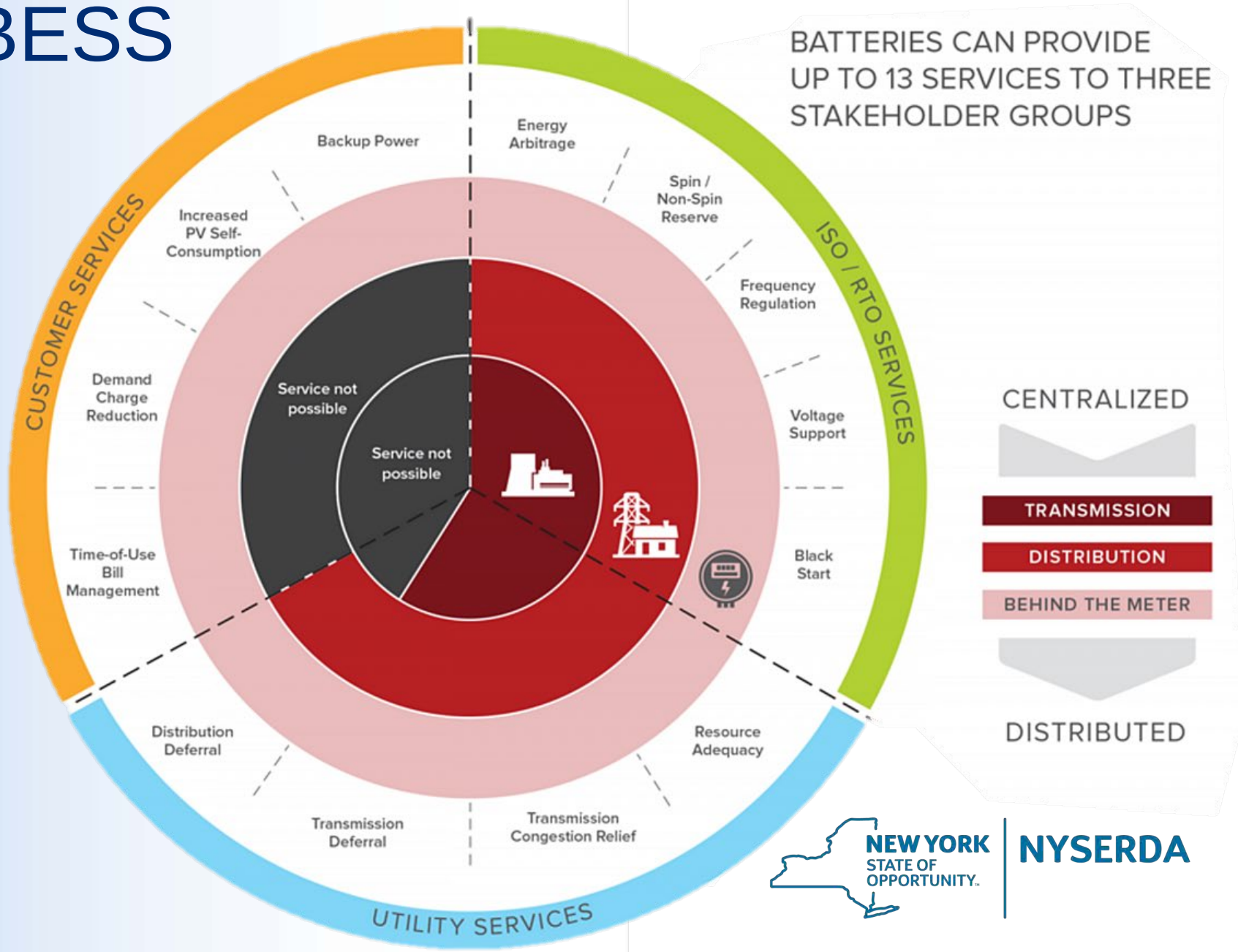
Applications for BESS



Applications for BESS

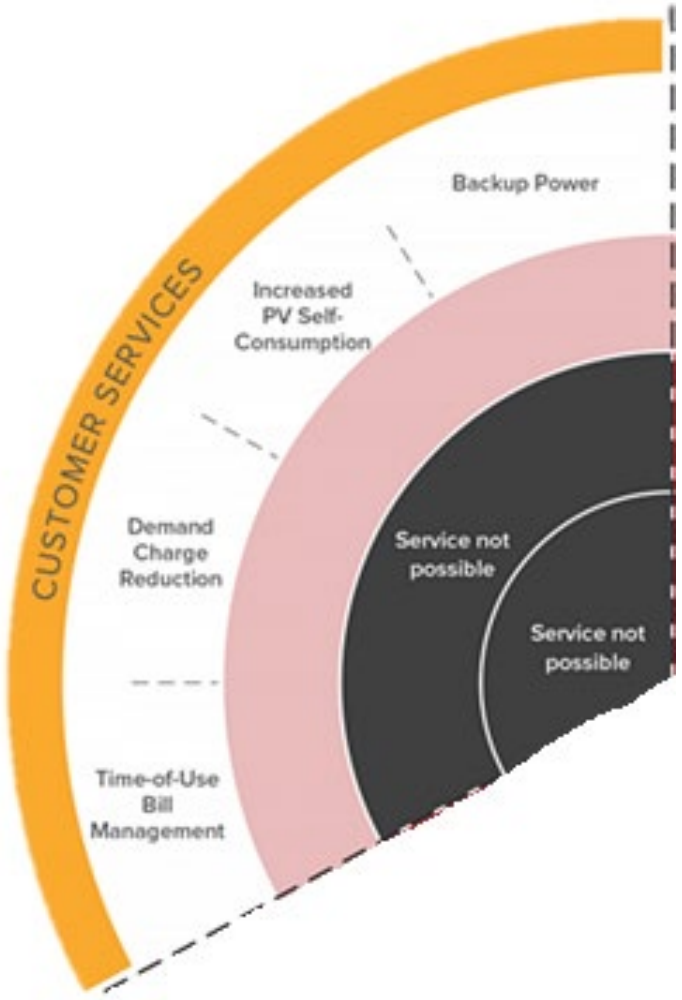
Services by group:

- Customer Services (Residential/Commercial)
- Utility Services
- Grid Services (ISOs / RTOs)



NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Customer Services (Residential/Commercial)



- **Backup Power** → Power availability during outages
- **Increased PV Self-Consumption** → If paired with solar PV, ability to better utilize your own generation
- **Demand Charge Reduction**
- **Time-of-Use Bill Management**

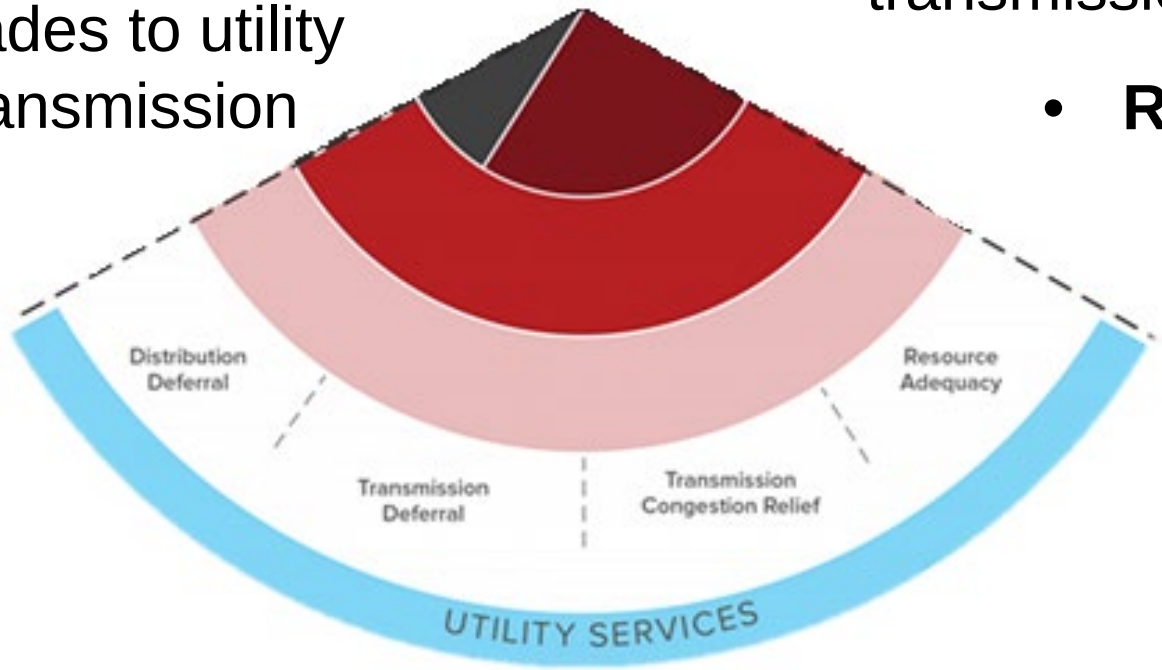
→ Shift your consumption to save money during periods of high demand

Also known as demand or peak shaving, load shifting

Utility Services

- **Distribution Deferral**
- **Transmission Deferral**

Defer costly upgrades to utility distribution and transmission infrastructure



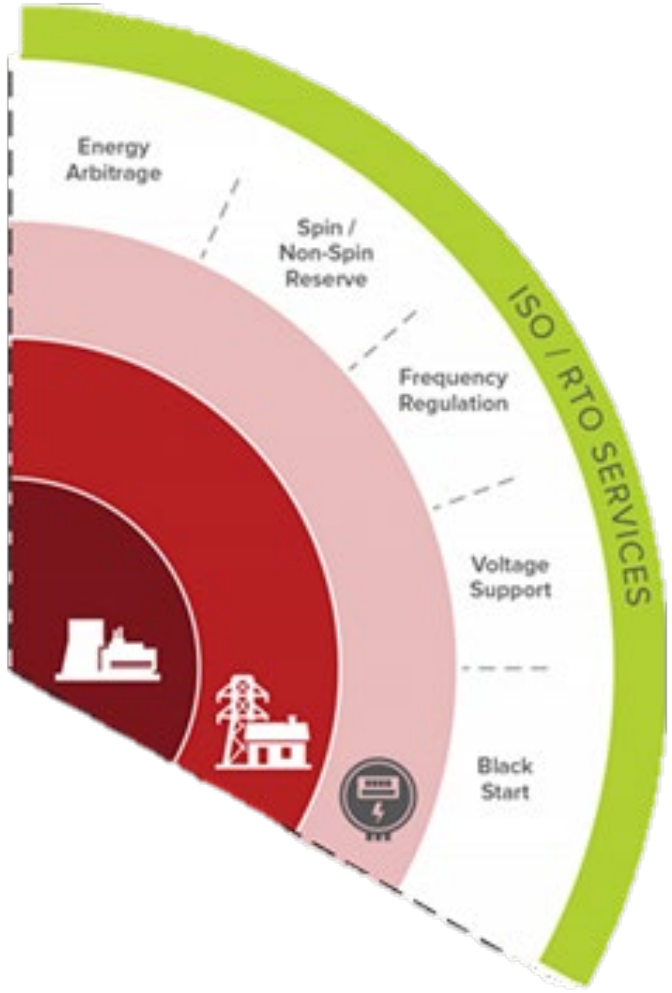
- **Transmission Congestion Relief:** Mitigate congestion in areas with lots of generation or inadequate transmission capacity
- **Resource Adequacy:** Have enough capacity to keep the lights on!

Grid Services (ISOs, RTOs)

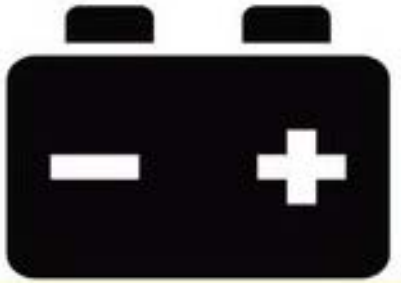
- **Energy Arbitrage** → Charging when electricity costs/demand are low, discharging when high; can also reduce curtailment of renewables
- **Spin/Non-Spin Reserve** → Dispatch energy as needed to ensure that grid supply = demand
- **Frequency Regulation** → Quickly ensure generators are synchronized for grid stability
- **Voltage Support** → Provide/absorb voltage as needed for grid stability

"Ancillary Services"

- **Black Start** → Help large generators come online following system failure



Example: Peaker Replacement



	Gas Peaker	Energy Storage
Range	~80% of capacity – minimum operational limits	200% of capacity –can act as supply or demand
Utilization	Low—only to meet peak demand or emergencies	High—simultaneous grid services
Dispatch Time	Minutes	Seconds
Standby	Costs and emissions	No costs or direct emissions

Overview: NYS Goals, Policies, and Programs

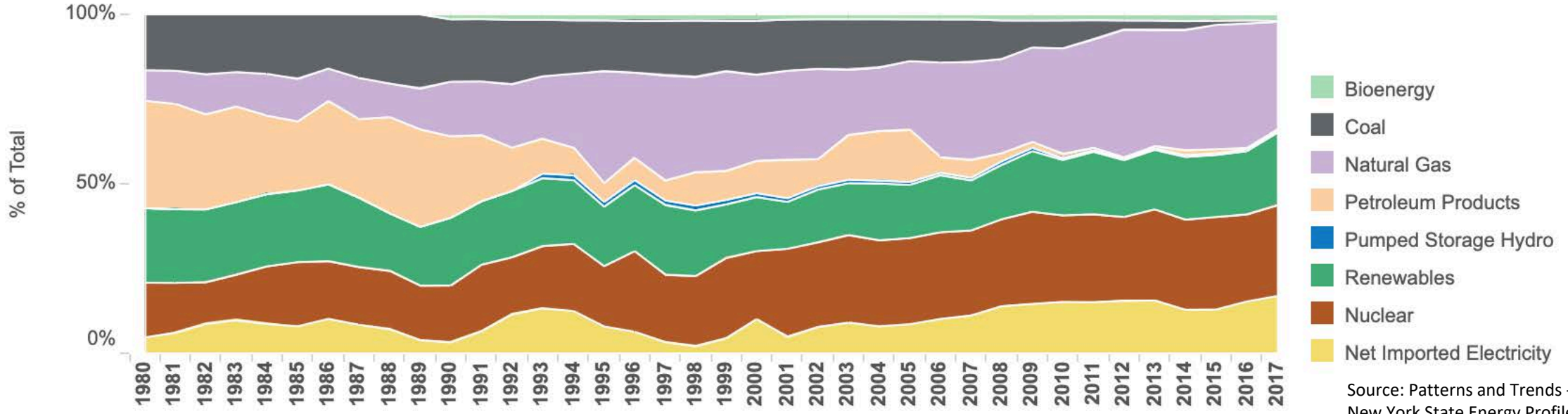
The Climate Leadership and Community Protection Act (Climate Act)

Electricity Sector Goals:

- 70% Renewable Electricity by 2030
- 100% Emissions-Free Grid by 2040

Technology-Specific Goals:

- 10,000 MW Distributed Solar by 2030*
- 9,000 MW Offshore Wind by 2035
- 1,500 MW Energy Storage by 2025; 3,000* MW by 2030



Source: Patterns and Trends - New York State Energy Profile (NYSERDA)

Energy Storage Initiative

A critical resource for enabling New York's clean energy future

Benefits:

- Avoid CO_2 emissions
- Reduce the impact of outages
- Allow intermittent renewables to be available during peak demand
- Create 30,000 jobs by 2030 in New York

NYSERDA Opportunities

- $400 million market acceleration bridge incentives: available for retail, bulk, standalone, and storage plus solar PV
- Technical assistance: permitting, interconnection, customer acquisition, and financing resources

2025 STATEWIDE ENERGY STORAGE TARGET

1,500 MW

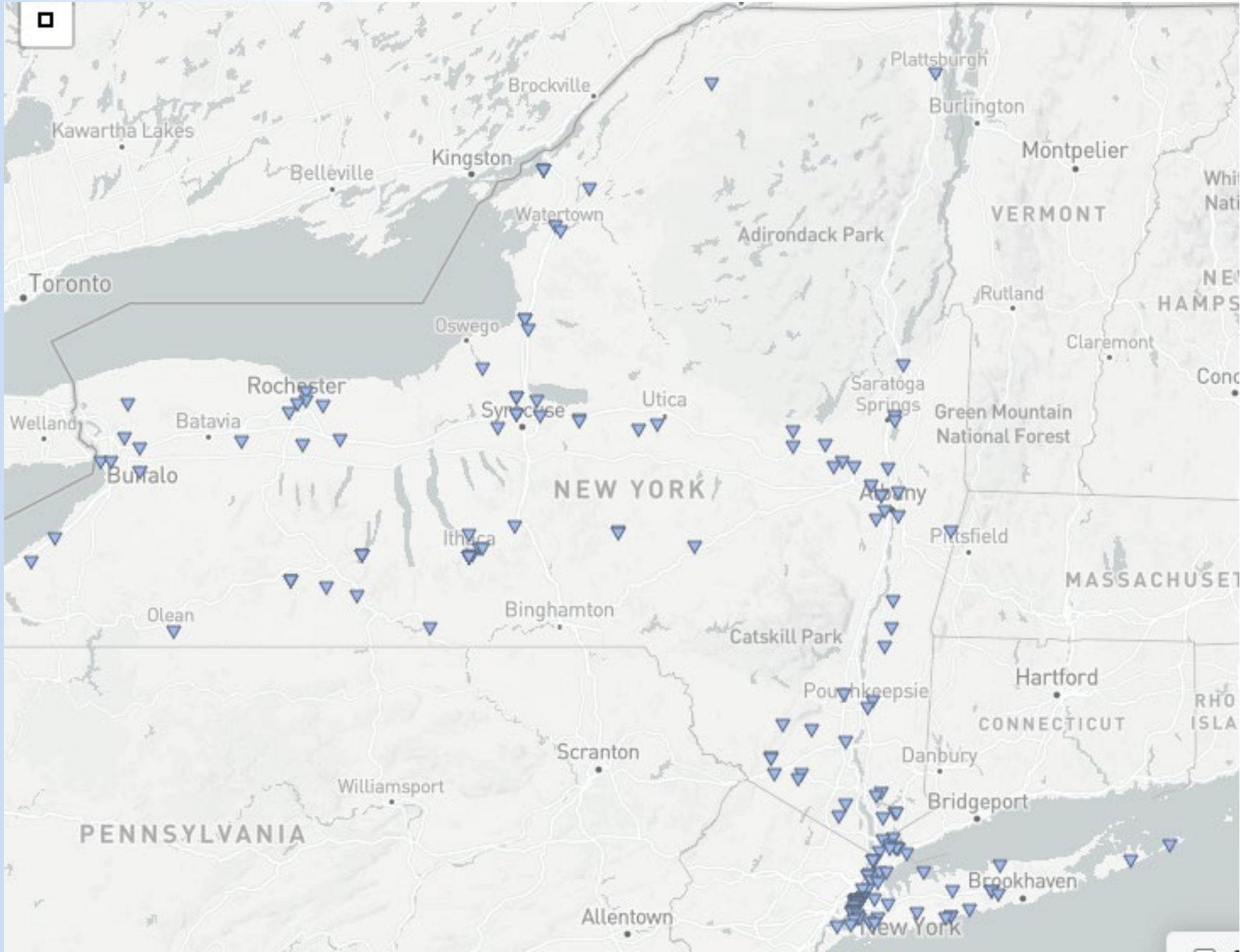
2030 STATEWIDE ENERGY STORAGE TARGET

3,000 MW*

6,000 MW by 2030 Target via Governor's SOTS

Energy Storage Snapshot

Map: Energy Storage Projects currently reporting to NYSERDA's DER Website



BESS Fire Safety & Codes

Code Evolution for BESS in NYS

2019 Energy Storage Supplement amended New York State's Uniform Code, effective July 1, 2019

- Added provisions related to the installation, use, and maintenance of energy storage systems
- Permanent ruling put in place November 1, 2019

Fully implemented in the 2020 NYS Uniform Code, effective May 12, 2020

Applicable without the need for adoption at the local level

Fire Safety

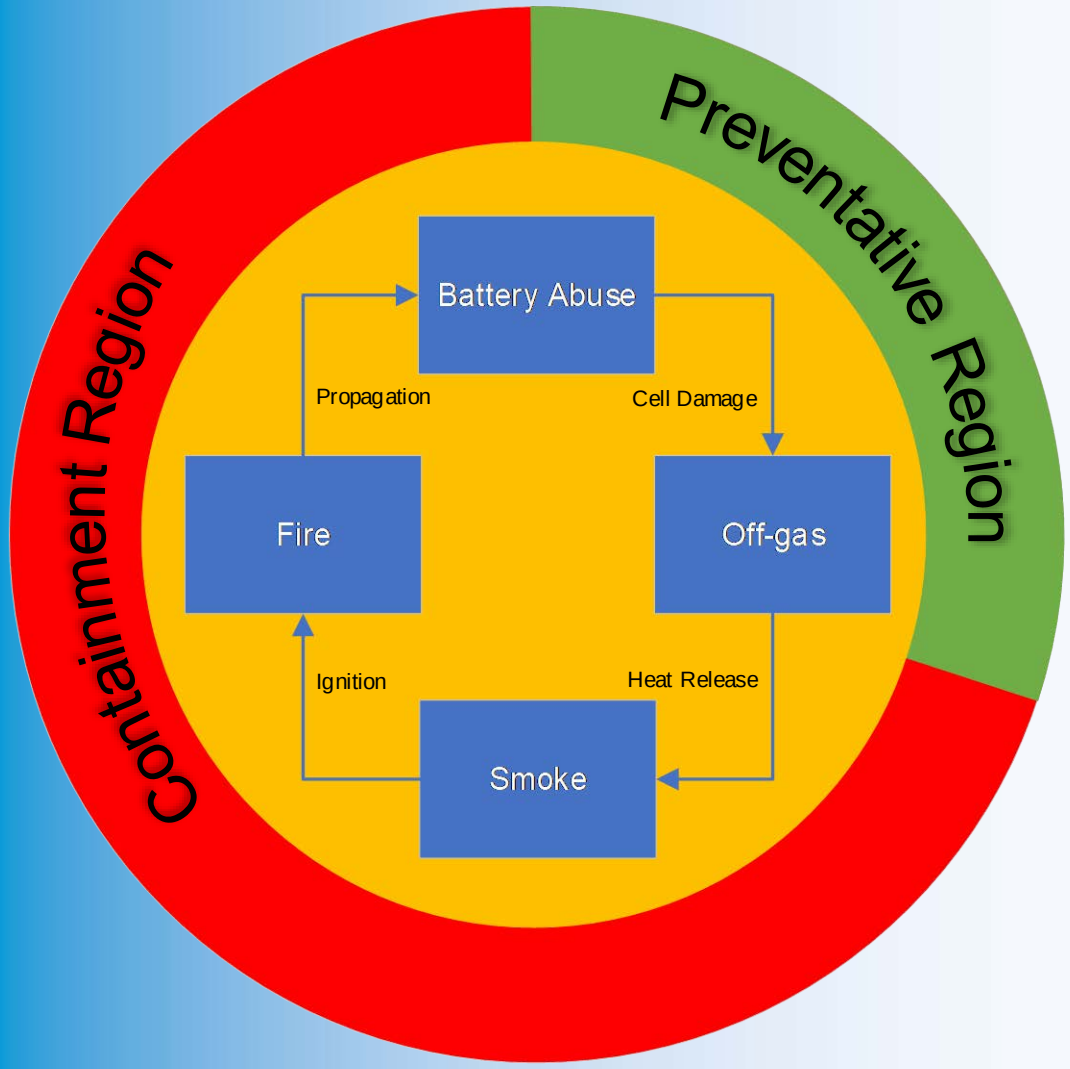


Image adapted from: "Compliance Requirements and Fault Detection." Steve Cummings, Nexceris, LLC, June 28, 2018 - http://energystorage.org/system/files/resources/nfpa_webinar_combined_slides_v5.pdf

Thermal runaway - What happens?

1. **Battery Abuse –** potentially electrical, mechanical, thermal or physical abuse of the battery that results in some kind of cell damage
2. **Off-gassing/Venting** due to rise in internal temperature – still time to prevent thermal runaway
3. **Smoke** – thermal runaway has begun and must be contained
4. **Fire** – thermal runaway is underway and must be contained, propagation likely
5. **Propagation** to other cells if not contained

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Fire Safety

Protection Methods for Stages of Thermal Runaway Battery Failure

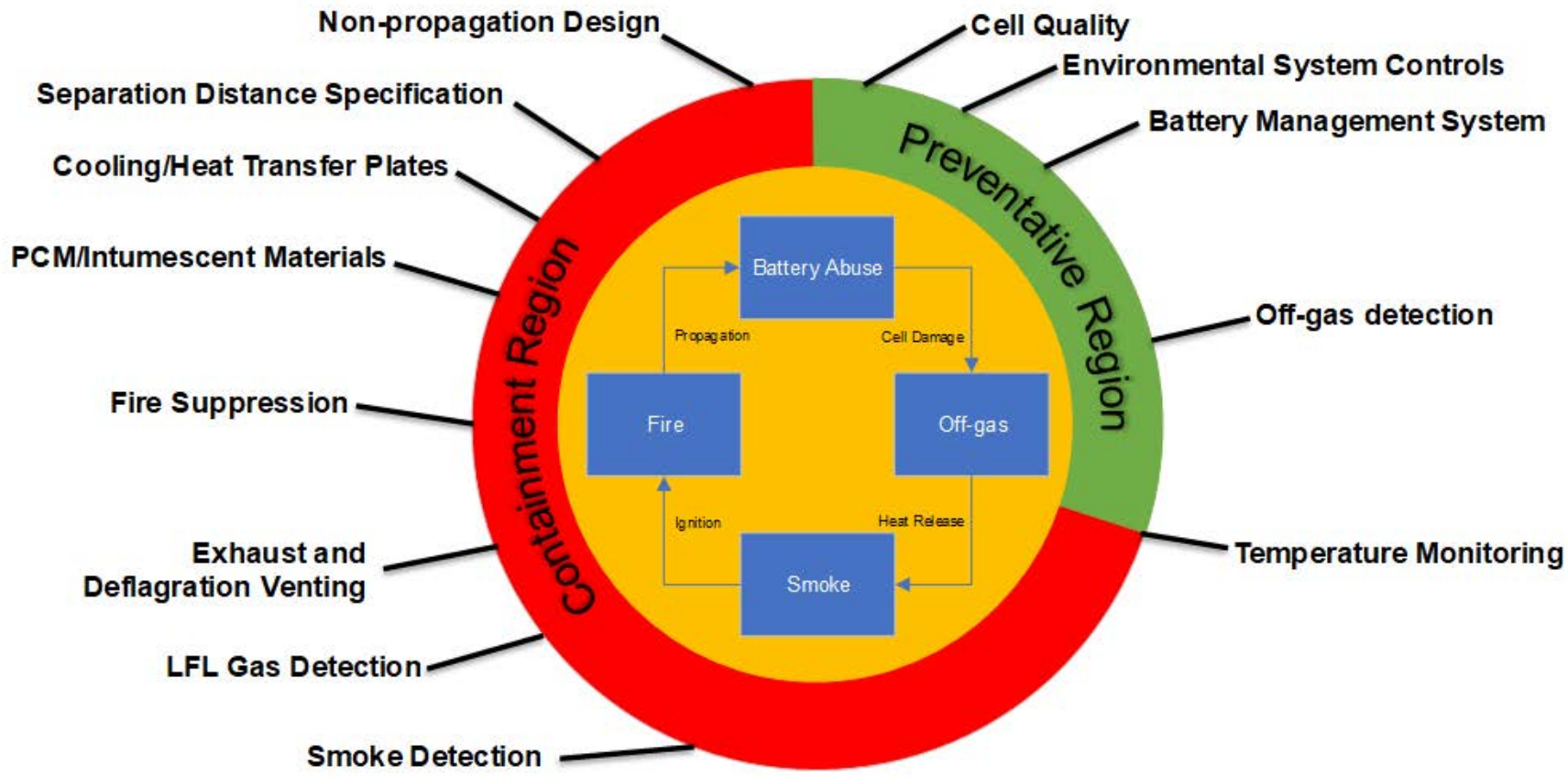


Image adapted from: "Compliance Requirements and Fault Detection." Steve Cummings, Nexceris, LLC, June 28, 2018 - http://energystorage.org/system/files/resources/nfpa_webinar_combined_slides_v5.pdf

Snapshot: 2020 Fire Code of NYS

Section 1206 Electrical Energy Storage Systems

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Hazard Mitigation Analysis

HMA will evaluate the consequences of failure modes

- Thermal runaway in a single BESS rack, module, or unit
- Failure of any battery management system
- Failure of any ventilation system
- Voltage surges on the primary electric supply
- Short circuits on the load side of BESS
- Failure of smoke, fire, or gas detection, or fire suppression.
- Failure of spill neutralization or containment system

Analysis approval

- Fires will be contained for the minimum duration of the fire-resistance and detected in time to allow occupants to safely evacuate
- Toxic and highly toxic gases released during fires will not reach concentrations in excess of Immediately Dangerous to Life or Health (IDLH) level in the building or adjacent means of egress routes during the time deemed necessary to evacuate occupants from any affected area
- Flammable gases will not exceed 25% of their LFL and will be controlled through ventilation of the gases preventing accumulation or by deflagration venting

Large Scale Fire Test

- Where required, must be conducted in accordance with **UL 9540A** or approved equivalent
- Demonstrates that fire will not spread to adjacent systems and will be contained for duration of fire-resistance rating of assemblies
- May be used for fire code official to approve exceptions to certain requirements

Battery Energy Storage Management System

- Monitors and balances within the manufacturer's specifications
  - Cell voltages
  - Currents
  - Temperatures
- BMS shall disconnect electrical connections to the BESS or place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltages, or under voltages are detected

Image from: https://www.eepowersolutions.com/products/centroid-snet-2-battery-management-software/

Fire Remediation

- BESS owner shall mitigate the hazard or remove damaged equipment from the premises to a safe location
- BESS owner shall dispatch fire mitigation personnel to respond to possible ignition or re-ignition of a damaged BESS and remain on duty after the fire department leaves the premise until the damaged energy storage equipment is removed from the premises
- On-duty fire mitigation personnel shall have the following responsibilities:
  - Fire watch
  - Notify FD if a fire occurs
  - Maintain until decommissioning is finished
  - Evacuate building if needed

Electrochemical BESS Tech Specific Protections

Compliance Required [b]	Battery Technology				Other Energy Storage System and Battery Technologies [b]	Capacitor Energy Storage System [b]
	Lead-acid	Ni-Cad and Ni-MH	Lithium-Ion	Flow		
1206.13.1 Exhaust ventilation	Yes	Yes	No	Yes	Yes	Yes
1206.13.2 Spill control and neutralization	Yes [c]	Yes [c]	No	Yes	Yes	Yes
1206.13.3 Explosion control	Yes [a]	Yes [a]	Yes	No	Yes	Yes
1206.13.4 Safety caps	Yes	Yes	No	No	Yes	Yes
1206.13.5 Thermal runaway	Yes [d]	Yes	Yes [e]	No	Yes [e]	Yes

a. Not required for lead-acid and nickel cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.
b. Protection shall be provided unless documentation acceptable to the fire code official is provided that provides justification why the protection is not necessary based on the technology used.
c. Applicable to vented (i.e. flooded) type nickel-cadmium and lead-acid batteries.
d. Not required for vented (i.e. flooded) type lead-acid batteries.
e. The thermal runaway protection is permitted to be part of an energy storage management system that has been evaluated with the battery as part of the evaluation to UL 1973.

Questions?

Candace Rossi
Senior Project Manager
CleanEnergyHelp@nyserda.ny.gov

Helpful Links

Clean Energy Siting Homepage
www.nyserda.ny.gov/Siting

Battery Energy Storage Guidebook
www.nyserda.ny.gov/StorageGuidebook

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

December 2020

New York Battery Energy Storage System Guidebook

for Local Governments

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

New York Battery Energy Storage System Guidebook

In 2019, New York passed the nation-leading Climate Leadership and Community Protection Act (Climate Act), which codified aggressive climate and energy goals, including the deployment of 1,500 MW of energy storage by 2025, and 3,000 MW by 2030. Over $350 million in New York State incentives have been authorized to accelerate the adoption of energy storage systems in effort of building a self-sustaining industry. Energy storage systems will serve many critical roles to enable New York's clean energy future. As intermittent renewable power sources, such as wind and solar, provide a larger portion of New York's electricity, energy storage systems will be used to smooth and time-shift renewable generation, and minimize curtailment. As New York's grid becomes smarter and more decentralized, these systems will dispatch stored energy when and where it is needed the most. Further, energy storage systems will allow New York to meet its peak power needs without relying on its oldest and dirtiest peak generating plants, many of which are approaching the end of their useful lives.

As an important first step in protecting public and firefighter safety while promoting safe energy storage, the New York State Energy Research and Development Authority (NYSERDA) developed the first comprehensive set of guidelines for reviewing and evaluating battery energy storage systems. The Battery Energy Storage System Guidebook (Guidebook) helps local government officials, and Authorities Having Jurisdiction (AHJs), understand and develop a battery energy storage system permitting and inspection processes to ensure efficiency, transparency, and safety in their local communities. The Guidebook provides in-depth details about the permitting and inspection processes of battery energy systems that have (1) experienced the sharpest price declines, (2) are offered by a large number of manufacturers, and (3) are likely to comprise the largest number of battery energy storage system permits an AHJ may see.

The Guidebook contains the following chapters:

- **Battery Energy Storage System Model Law (Model Law):** The Model Law is intended to help local government officials and AHJs adopt legislation and regulations to responsibly accommodate battery energy storage systems in their communities. The Model Law lays out procedural frameworks and substantive requirements for residential, commercial, and utility-scale battery energy storage systems.
- **Battery Energy Storage System Model Permit (Model Permit):** The Model Permit is intended to help local government officials and AHJs establish the minimum submittal requirements for electrical and structural plan review that are necessary when permitting residential and small commercial battery energy storage systems.
- **Battery Energy Storage System Electrical Checklist (Checklist):** The Battery Energy Storage System Electrical Checklist is intended to be utilized as a guideline for field inspections of residential and small commercial battery energy storage systems. It can be used directly by local code enforcement officers or provided to a third-party inspection agency, where applicable.
- **2020 New York State Uniform Fire Prevention and Building Code:** The 2020 New York State Uniform Fire Prevention and Building Codes implement the latest safety considerations for energy storage systems.

When combined with all applicable provisions of the codes, regulations, and industry standards as referenced in the New York State Uniform Fire Prevention and Building Code, these resources create an all-encompassing process to safely permit all types of battery energy storage systems. The Guidebook is intended to create complementary review processes for battery energy storage systems separate from other technologies. For example, if a hybrid project contains both a battery energy storage system and solar photovoltaics, the proposed project would have to comply with both solar and battery energy storage system requirements.

This relatively new technology, and its subsequent variations, continues to face regulatory, policy and financial challenges. NYSERDA will continue to work with permitting authorities and the industry to test the processes outlined in the guide so they can be refined and updated as the codes and standards evolve.

The Guidebook is advisory only and not legally binding. These resources are not intended for adoption precisely as they are written, and each municipality should delete, modify, or add other provisions as appropriate to suit local conditions, comprehensive plans, and existing land use and zoning provisions. Neither NYSERDA, nor any of its employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information. AHJs and other entities are welcome to use and distribute the Guidebook.

NYSERDA offers free technical assistance, including educational workshops, to local governments to help further understand the issues addressed in the Battery Energy Storage Guidebook. Workshops provide municipal planning and zoning board members, code officials, first responders, and others with the knowledge and resources to ensure responsible battery storage development in their communities. The team helps municipalities:

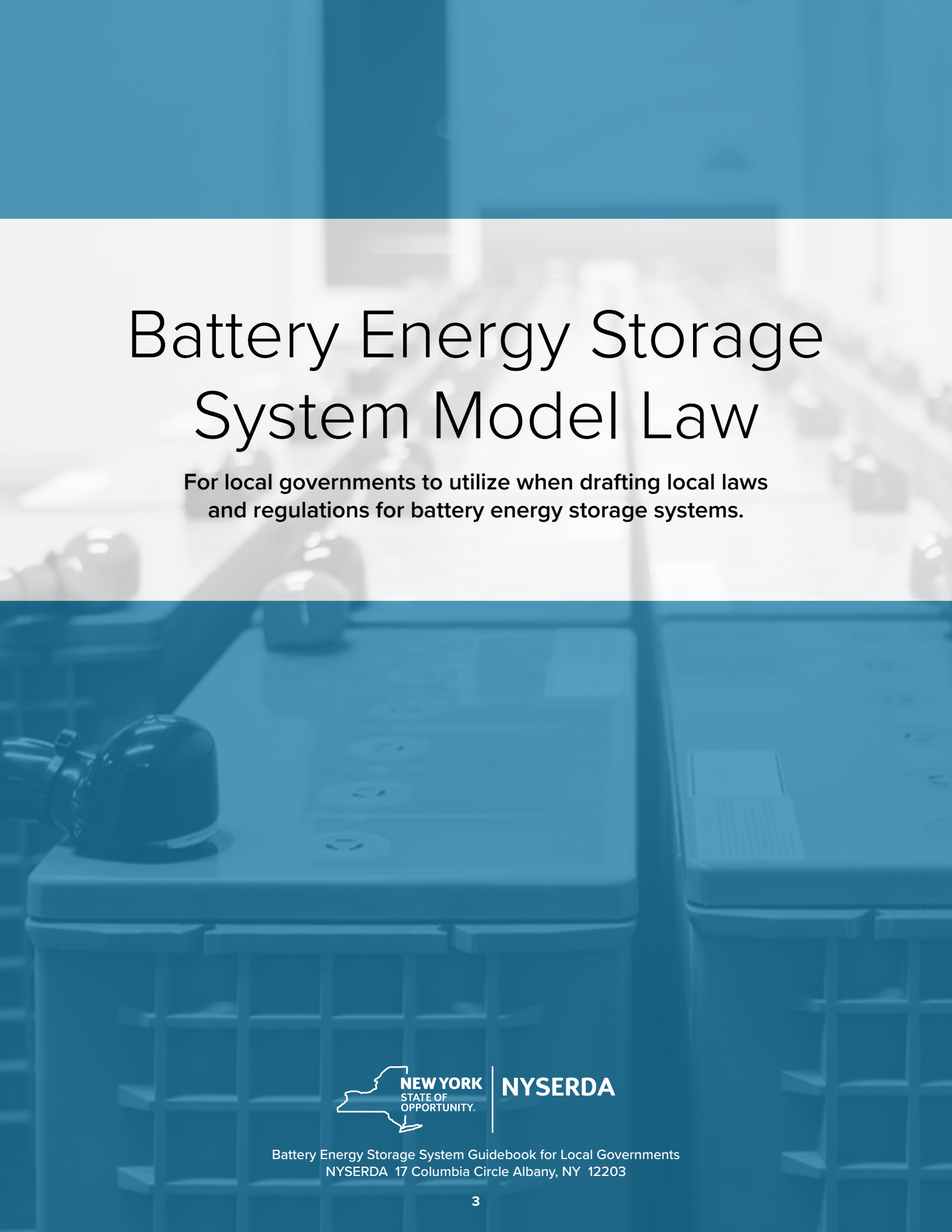
- Develop appropriate zoning procedures
- Draft, amend, or adopt legislation for energy storage systems
- Update a comprehensive plan to include energy storage technologies
- Improve the permitting process
- Understand new fire safety requirements
- Answer questions regarding energy storage systems

If you have any questions regarding clean energy technologies, are interested in scheduling a free training in your region, or wish to access NYSERDA's full suite of clean energy siting resources, please email the team at **cleanenergyhelp@nyserda.ny.gov** or visit **nyserda.ny.gov/Siting**.

You can download specific chapters of the New York Battery Energy Storage System Guidebook at nyserda.ny.gov/Energy-Storage-Guidebook.

NYSERDA offers objective information and analysis, innovative programs, technical expertise, and support to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels. NYSERDA professionals work to protect the environment and create clean energy jobs. A public benefit corporation, NYSERDA has been advancing innovative energy solutions since 1975.

Table of Contents



Battery Energy Storage System Model Law

For local governments to utilize when drafting local laws and regulations for battery energy storage systems.

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Battery Energy Storage System Guidebook for Local Governments
NYSERDA 17 Columbia Circle Albany, NY 12203

Section Contents

Overview

The Model Law is intended to help local government officials and AHJs adopt legislation and regulations to responsibly accommodate battery energy storage systems in their communities. The Model Law lays out procedural frameworks and substantive requirements for residential, commercial, and utility-scale battery energy storage systems.

The workable version of this document can be found at nyserda.ny.gov/Energy-Storage-Guidebook, under Battery Energy Storage System Model Law tab.

1. Instructions

1. This Model Law can be adopted by the governing board of cities, towns, and villages (hereinafter "local governments" or "municipalities") to regulate the installation, operation, maintenance, and decommissioning of battery energy storage systems. The Model Law is intended to be an "all-inclusive" local law, regulating the subject of battery energy storage systems under typical zoning and land use regulations and it includes the process for compliance with the State Environmental Quality Review Act. Municipalities should review this Model Law, examine their local laws and regulations and the types, size range and number of battery energy storage system projects proposed, and adopt a local law addressing the aspects of battery energy storage system development that make the most sense for each municipality, deleting, modifying, or adding other provisions as appropriate.
2. This Model Law references a "Battery Energy Storage System Model Permit" that is available as part of NYSERDA's Battery Energy Storage Guidebook. The Model Permit is intended to help local government officials and AHJs establish the minimum submittal requirements for electrical and structural plan review that are necessary when permitting residential and small commercial battery energy storage systems.
3. In some cases, there may be multiple approaches to regulate a certain aspect of battery energy storage systems. The word "OR" has been placed in the text of the model law to indicate these options. Municipalities should choose the option that works best for their communities. The content provided in brackets and highlighted is optional. Depending on local circumstances, a municipality may want to include this content or choose to adopt a different standard.
4. The Model Law is not intended for adoption precisely as it is written. It is intended to be advisory only, and users should not rely upon it as legal advice. A municipality is not required to adopt this Model Law. Municipal officials are urged to seek legal advice from their attorneys before enacting a battery energy storage system law. Municipalities must carefully consider how the language in this Model Law may be modified to suit local conditions, comprehensive plans, and existing land use and zoning provisions.

5. Before enacting this Model Law, a comprehensive plan outlining the goals and policies for the installation, operation, maintenance, and decommissioning of battery energy storage systems must be adopted by the local governing board (city or common council, town board, village board of trustees). Some local governing boards can satisfy this requirement by updating an existing comprehensive plan while others must adopt a new comprehensive plan. Suggestions on how local governing boards can develop and adopt in their existing or new comprehensive plans battery energy storage system friendly policies and plans that provide local protection are listed below:

   A. Adopt a resolution or policy statement that outlines a strategy for municipal-wide battery energy storage system development. The chief executive officer of a local government (like a town supervisor or city or village mayor) may choose to issue in accordance with its local charter or other valid local law or regulations an executive order, proclamation or other declaration to advance battery energy storage system development.

   B. Appoint a Battery Energy Storage Task Force ("Task Force") that represents all interested stakeholders, including residents, businesses, interested non-profit organizations, the battery energy storage industry, utilities, and relevant municipal officials and staff to prepare an action plan, adopt or amend a comprehensive plan to include battery energy storage system planning goals and actions, and develop local laws and/or other regulations to ensure the orderly development of battery energy storage system projects.

   C. Charge the Task Force with conducting meetings on a communitywide basis to involve all key stakeholders, gather all available ideas, identify divergent groups and views, and secure support from the entire community. The Task Force should also conduct studies and determine whether existing policies, plans, and land use regulations require amendments to remove barriers to and facilitate battery energy storage system development goals.

   D. Establish a training program for local staff and land use boards. Municipalities are encouraged to utilize State and Federal technical assistance and grants for training programs when available.

   E. Partner with adjacent communities to adopt compatible policies, plan components, and zoning provisions for battery energy storage system projects. County or regional planning agencies may also advise participating local governments on locally addressing these issues.

2. Model Law

1. Authority

This Battery Energy Storage System Law is adopted pursuant to Article IX of the New York State Constitution, §2(c)(6) and (10), New York Statute of Local Governments, § 10 (1) and (7); [Select one: sections 261-263 of the Town Law / sections 7-700 through 7-704 of the Village Law / sections 19 and 20 of the City Law and section 10 of the Municipal Home Rule Law] of the State of New York, which authorize the [Village/Town/City] to adopt zoning provisions that advance and protect the health, safety and welfare of the community.

2. Statement of Purpose

This Battery Energy Storage System Law is adopted to advance and protect the public health, safety, welfare, and quality of life of [Village/Town/City] by creating regulations for the installation and use of battery energy storage systems, with the following objectives:

A. To provide a regulatory scheme for the designation of properties suitable for the location, construction and operation of battery energy storage systems;

B. To ensure compatible land uses in the vicinity of the areas affected by battery energy storage systems;

C. To mitigate the impacts of battery energy storage systems on environmental resources such as important agricultural lands, forests, wildlife and other protected resources; and

D. To create synergy between battery energy storage system development and [other stated goals of the community pursuant to its Comprehensive Plan].

3. Definitions

As used in this [Article/Chapter], the following terms shall have the meanings indicated:

ANSI: American National Standards Institute

BATTERY(IES): A single cell or a group of cells connected together electrically in series, in parallel, or a combination of both, which can charge, discharge, and store energy electrochemically. For the purposes of this law, batteries utilized in consumer products are excluded from these requirements.

BATTERY ENERGY STORAGE MANAGEMENT SYSTEM: An electronic system that protects energy storage systems from operating outside their safe operating parameters and disconnects electrical power to the energy storage system or places it in a safe condition if potentially hazardous temperatures or other conditions are detected.

BATTERY ENERGY STORAGE SYSTEM: One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include a stand-alone 12-volt car battery or an electric motor vehicle. A battery energy storage system is classified as a Tier 1 or Tier 2 Battery Energy Storage System as follows:

A. Tier 1 Battery Energy Storage Systems have an aggregate energy capacity less than or equal to 600kWh and, if in a room or enclosed area, consist of only a single energy storage system technology.

B. Tier 2 Battery Energy Storage Systems have an aggregate energy capacity greater than 600kWh or are comprised of more than one storage battery technology in a room or enclosed area.

CELL: The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy.

COMMISSIONING: A systematic process that provides documented confirmation that a battery energy storage system functions according to the intended design criteria and complies with applicable code requirements.

DEDICATED-USE BUILDING: A building that is built for the primary intention of housing battery energy storage system equipment, is classified as Group F-1 occupancy as defined in the International Building Code, and complies with the following:

1) The building's only use is battery energy storage, energy generation, and other electrical grid-related operations.

2) No other occupancy types are permitted in the building.

3) Occupants in the rooms and areas containing battery energy storage systems are limited to personnel that operate, maintain, service, test, and repair the battery energy storage system and other energy systems.

4) Administrative and support personnel are permitted in areas within the buildings that do not contain battery energy storage system, provided the following:

   a. The areas do not occupy more than 10 percent of the building area of the story in which they are located.

   b. A means of egress is provided from the administrative and support use areas to the public way that does not require occupants to traverse through areas containing battery energy storage systems or other energy system equipment.

ENERGY CODE: The New York State Energy Conservation Construction Code adopted pursuant to Article 11 of the Energy Law, as currently in effect and as hereafter amended from time to time.

FIRE CODE: The fire code section of the New York State Uniform Fire Prevention and Building Code adopted pursuant to Article 18 of the Executive Law, as currently in effect and as hereafter amended from time to time.

NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL): A U.S. Department of Labor designation recognizing a private sector organization to perform certification for certain products to ensure that they meet the requirements of both the construction and general industry OSHA electrical standards.

NEC: National Electric Code.

NFPA: National Fire Protection Association.

NON-DEDICATED-USE BUILDING: All buildings that contain a battery energy storage system and do not comply with the dedicated-use building requirements.

NON-PARTICIPATING PROPERTY: Any property that is not a participating property.

NON-PARTICIPATING RESIDENCE: Any residence located on non-participating property.

OCCUPIED COMMUNITY BUILDING: Any building in Occupancy Group A, B, E, I, R, as defined in the International Building Code, including but not limited to schools, colleges, daycare facilities, hospitals, correctional facilities, public libraries, theaters, stadiums, apartments, hotels, and houses of worship.

PARTICIPATING PROPERTY: A battery energy storage system host property or any real property that is the subject of an agreement that provides for the payment of monetary compensation to the landowner from the battery energy storage system owner (or affiliate) regardless of whether any part of a battery energy storage system is constructed on the property.

UNIFORM CODE: the New York State Uniform Fire Prevention and Building Code adopted pursuant to Article 18 of the Executive Law, as currently in effect and as hereafter amended from time to time.

4. Applicability

A. The requirements of this Local Law shall apply to all battery energy storage systems permitted, installed, or modified in [Village/Town/City] after the effective date of this Local Law, excluding general maintenance and repair.

B. Battery energy storage systems constructed or installed prior to the effective date of this Local Law shall not be required to meet the requirements of this Local Law.

C. Modifications to, retrofits or replacements of an existing battery energy storage system that increase the total battery energy storage system designed discharge duration or power rating shall be subject to this Local Law.

5. General Requirements

A. A building permit and an electrical permit shall be required for installation of all battery energy storage systems.

B. Issuance of permits and approvals by the [Reviewing Board] shall include review pursuant to the State Environmental Quality Review Act [ECL Article 8 and its implementing regulations at 6 NYCRR Part 617 ("SEQRA")].

C. All battery energy storage systems, all Dedicated Use Buildings, and all other buildings or structures that (1) contain or are otherwise associated with a battery energy storage system and (2) subject to the Uniform Code and/or the Energy Code shall be designed, erected, and installed in accordance with all applicable provisions of the Uniform Code, all applicable provisions of the Energy Code, and all applicable provisions of the codes, regulations, and industry standards as referenced in the Uniform Code, the Energy Code, and the [Village/Town/City] Code.

6. Permitting Requirements for Tier 1 Battery Energy Storage Systems

Tier 1 Battery Energy Storage Systems shall be permitted in all zoning districts, subject to the Uniform Code and the "Battery Energy Storage System Permit," and exempt from site plan review.

7. Permitting Requirements for Tier 2 Battery Energy Storage Systems

Tier 2 Battery Energy Storage Systems are permitted through the issuance of a [special use permit] within the [XXXXXXXXXXXX, XXXXXXXXXX, XXXXXXXXXX] zoning districts, and shall be subject to the Uniform Code and the site plan application requirements set forth in this Section.

A. Applications for the installation of Tier 2 Battery Energy Storage System shall be:

1) reviewed by the [Code Enforcement/Zoning Enforcement Officer or Reviewing Board] for completeness. An application shall be complete when it addresses all matters listed in this Local Law including, but not necessarily limited to, (i) compliance with all applicable provisions of the Uniform Code and all applicable provisions of the Energy Code and (ii) matters relating to the proposed battery energy storage system and Floodplain, Utility Lines and Electrical Circuitry, Signage, Lighting, Vegetation and Tree-cutting, Noise, Decommissioning, Site Plan and Development, Special Use and Development, Ownership Changes, Safety, and Permit Time Frame and Abandonment. Applicants shall be advised within [10] business days of the completeness of their application or any deficiencies that must be addressed prior to substantive review.

2) subject to a public hearing to hear all comments for and against the application. The [Reviewing Board] of the [Village/Town/City] shall have a notice printed in a newspaper of general circulation in the [Village/Town/City] at least [5] days in advance of such hearing. Applicants shall have delivered the notice by first class mail to adjoining landowners or landowners within [200] feet of the property at least [10] days prior to such a hearing. Proof of mailing shall be provided to the [Reviewing Board] at the public hearing.

3) referred to the [County Planning Department] pursuant to General Municipal Law § 239-m if required.

4) upon closing of the public hearing, the [Reviewing Board] shall take action on the application within 62 days of the public hearing, which can include approval, approval with conditions, or denial. The 62-day period may be extended upon consent by both the [Reviewing Board] and Applicant.

B. Utility Lines and Electrical Circuitry. All on-site utility lines shall be placed underground to the extent feasible and as permitted by the serving utility, with the exception of the main service connection at the utility company right-of-way and any new interconnection equipment, including without limitation any poles, with new easements and right-of-way.

C. Signage.

1) The signage shall be in compliance with ANSI Z535 and shall include the type of technology associated with the battery energy storage systems, any special hazards associated, the type of suppression system installed in the area of battery energy storage systems, and 24-hour emergency contact information, including reach-back phone number.

2) As required by the NEC, disconnect and other emergency shutoff information shall be clearly displayed on a light reflective surface. A clearly visible warning sign concerning voltage shall be placed at the base of all pad-mounted transformers and substations.

D. Lighting. Lighting of the battery energy storage systems shall be limited to that minimally required for safety and operational purposes and shall be reasonably shielded and downcast from abutting properties.

E. Vegetation and tree-cutting. Areas within [10] feet on each side of Tier 2 Battery Energy Storage Systems shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers shall be permitted to be exempt provided that they do not form a means of readily transmitting fire. Removal of trees should be minimized to the extent possible.

F. Noise. The [1-hour] average noise generated from the battery energy storage systems, components, and associated ancillary equipment shall not exceed a noise level of [60] dBA as measured at the outside wall of any non-participating residence or occupied community building. Applicants may submit equipment and component manufacturers noise ratings to demonstrate compliance. The applicant may be required to provide Operating Sound Pressure Level measurements from a reasonable number of sampled locations at the perimeter of the battery energy storage system to demonstrate compliance with this standard.

G. Decommissioning.

1) Decommissioning Plan. The applicant shall submit a decommissioning plan, developed in accordance with the Uniform Code, to be implemented upon abandonment and/or in conjunction with removal from the facility. The decommissioning plan shall include:

   a. A narrative description of the activities to be accomplished, including who will perform that activity and at what point in time, for complete physical removal of all battery energy storage system components, structures, equipment, security barriers, and transmission lines from the site;

   b. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations;

   c. The anticipated life of the battery energy storage system;

   d. The estimated decommissioning costs and how said estimate was determined;

   e. The method of ensuring that funds will be available for decommissioning and restoration;

   f. The method by which the decommissioning cost will be kept current;

   g. The manner in which the site will be restored, including a description of how any changes to the surrounding areas and other systems adjacent to the battery energy storage system, such as, but not limited to, structural elements, building penetrations, means of egress, and required fire detection suppression systems, will be protected during decommissioning and confirmed as being acceptable after the system is removed; and

   h. A listing of any contingencies for removing an intact operational energy storage system from service, and for removing an energy storage system from service that has been damaged by a fire or other event.

2) Decommissioning Fund. The owner and/or operator of the energy storage system, shall continuously maintain a fund or bond payable to the [Village/Town/City], in a form approved by the [Village/Town/City] for the removal of the battery energy storage system, in an amount to be determined by the [Village/Town/City], for the period of the life of the facility. This fund may consist of a letter of credit from a State of New York licensed-financial institution. All costs of the financial security shall be borne by the applicant.

H. Site plan application. For a Tier 2 Battery Energy Storage System requiring a Special Use Permit, site plan approval shall be required. Any site plan application shall include the following information:

1) Property lines and physical features, including roads, for the project site.

2) Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, and screening vegetation or structures.

3) A [one- or three-line] electrical diagram detailing the battery energy storage system layout, associated components, and electrical interconnection methods, with all National Electrical Code compliant disconnects and over current devices.

4) A preliminary equipment specification sheet that documents the proposed battery energy storage system components, inverters and associated electrical equipment that are to be installed. A final equipment specification sheet shall be submitted prior to the issuance of building permit.

5) Name, address, and contact information of proposed or potential system installer and the owner and/or operator of the battery energy storage system. Such information of the final system installer shall be submitted prior to the issuance of building permit.

6) Name, address, phone number, and signature of the project Applicant, as well as all the property owners, demonstrating their consent to the application and the use of the property for the battery energy storage system.

7) Zoning district designation for the parcel(s) of land comprising the project site.

8) Commissioning Plan. Such plan shall document and verify that the system and its associated controls and safety systems are in proper working condition per requirements set forth in the Uniform Code. Where commissioning is required by the Uniform Code, Battery energy storage system commissioning shall be conducted by a New York State (NYS) Licensed Professional Engineer after the installation is complete but prior to final inspection and approval. A corrective action plan shall be developed for any open or continuing issues that are allowed to be continued after commissioning. A report describing the results of the system commissioning and including the results of the initial acceptance testing required in the Uniform Code shall be provided to [Code Enforcement/Zoning Enforcement Officer or Reviewing Board] prior to final inspection and approval and maintained at an approved on-site location.

9) Fire Safety Compliance Plan. Such plan shall document and verify that the system and its associated controls and safety systems are in compliance with the Uniform Code.

10) Operation and Maintenance Manual. Such plan shall describe continuing battery energy storage system maintenance and property upkeep, as well as design, construction, installation, testing and commissioning information and shall meet all requirements set forth in the Uniform Code.

11) Erosion and sediment control and storm water management plans prepared to New York State Department of Environmental Conservation standards, if applicable, and to such standards as may be established by the Planning Board.

12) Prior to the issuance of the building permit or final approval by the [Reviewing Board], but not required as part of the application, engineering documents must be signed and sealed by a NYS Licensed Professional Engineer.

13) Emergency Operations Plan. A copy of the approved Emergency Operations Plan shall be given to the system owner, the local fire department, and local fire code official. A permanent copy shall also be placed in an approved location to be accessible to facility personnel, fire code officials, and emergency responders. The emergency operations plan shall include the following information:

   a. Procedures for safe shutdown, de-energizing, or isolation of equipment and systems under emergency conditions to reduce the risk of fire, electric shock, and personal injuries, and for safe start-up following cessation of emergency conditions.

   b. Procedures for inspection and testing of associated alarms, interlocks, and controls.

   c. Procedures to be followed in response to notifications from the Battery Energy Storage Management System, when provided, that could signify potentially dangerous conditions, including shutting down equipment, summoning service and repair personnel, and providing agreed upon notification to fire department personnel for potentially hazardous conditions in the event of a system failure.

d. Emergency procedures to be followed in case of fire, explosion, release of liquids or vapors, damage to critical moving parts, or other potentially dangerous conditions. Procedures can include sounding the alarm, notifying the fire department, evacuating personnel, de-energizing equipment, and controlling and extinguishing the fire.

e. Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required.

f. Procedures for dealing with battery energy storage system equipment damaged in a fire or other emergency event, including maintaining contact information for personnel qualified to safely remove damaged battery energy storage system equipment from the facility.

g. Other procedures as determined necessary by the [Village/Town/City] to provide for the safety of occupants, neighboring properties, and emergency responders.

h. Procedures and schedules for conducting drills of these procedures and for training local first responders on the contents of the plan and appropriate response procedures.

I. Special Use Permit Standards.

1) Setbacks. Tier 2 Battery Energy Storage Systems shall comply with the setback requirements of the underlying zoning district for principal structures.

2) Height. Tier 2 Battery Energy Storage Systems shall comply with the building height limitations for principal structures of the underlying zoning district.

3) Fencing Requirements. Tier 2 Battery Energy Storage Systems, including all mechanical equipment, shall be enclosed by a [7-foot-high] fence with a self-locking gate to prevent unauthorized access unless housed in a dedicated-use building and not interfering with ventilation or exhaust ports.

4) Screening and Visibility. Tier 2 Battery Energy Storage Systems shall have views minimized from adjacent properties to the extent reasonably practicable using architectural features, earth berms, landscaping, or other screening methods that will harmonize with the character of the property and surrounding area and not interfering with ventilation or exhaust ports.

J. Ownership Changes. If the owner of the battery energy storage system changes or the owner of the property changes, the special use permit shall remain in effect, provided that the successor owner or operator assumes in writing all of the obligations of the special use permit, site plan approval, and decommissioning plan. A new owner or operator of the battery energy storage system shall notify the [Code Enforcement/Zoning Enforcement Officer] of such change in ownership or operator within [30] days of the ownership change. A new owner or operator must provide such notification to the [Code Enforcement/Zoning Enforcement Officer] in writing. The special use permit and all other local approvals for the battery energy storage system would be void if a new owner or operator fails to provide written notification to the [Code Enforcement/Zoning Enforcement Officer] in the required timeframe. Reinstatement of a void special use permit will be subject to the same review and approval processes for new applications under this Local Law.

8. Safety

A. System Certification. Battery energy storage systems and equipment shall be listed by a Nationally Recognized Testing Laboratory to UL 9540 (Standard for battery energy storage systems and Equipment) or approved equivalent, with subcomponents meeting each of the following standards as applicable:

1) UL 1973 (Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail Applications),

2) UL 1642 (Standard for Lithium Batteries),

3) UL 1741 or UL 62109 (Inverters and Power Converters),

4) Certified under the applicable electrical, building, and fire prevention codes as required.

5) Alternatively, field evaluation by an approved testing laboratory for compliance with UL 9540 (or approved equivalent) and applicable codes, regulations and safety standards may be used to meet system certification requirements.

B. Site Access. Battery energy storage systems shall be maintained in good working order and in accordance with industry standards. Site access shall be maintained, including snow removal at a level acceptable to the local fire department and, if the Tier 2 Battery Energy Storage System is located in an ambulance district, the local ambulance corps.

C. Battery energy storage systems, components, and associated ancillary equipment shall have required working space clearances, and electrical circuitry shall be within weatherproof enclosures marked with the environmental rating suitable for the type of exposure in compliance with NFPA 70.

9. Permit Time Frame and Abandonment

A. The Special Use Permit and site plan approval for a battery energy storage system shall be valid for a period of [24] months, provided that a building permit is issued for construction [and/or] construction is commenced. In the event construction is not completed in accordance with the final site plan, as may have been amended and approved, as required by the [Reviewing Board], within [24] months after approval, [Village/Town/City] may extend the time to complete construction for [180] days. If the owner and/or operator fails to perform substantial construction after [36] months, the approvals shall expire.

B. The battery energy storage system shall be considered abandoned when it ceases to operate consistently for [more than one year]. If the owner and/or operator fails to comply with decommissioning upon any abandonment, the [Village/Town/City] may, at its discretion, enter the property and utilize the available bond and/or security for the removal of a Tier 2 Battery Energy Storage System and restoration of the site in accordance with the decommissioning plan.

10. Enforcement

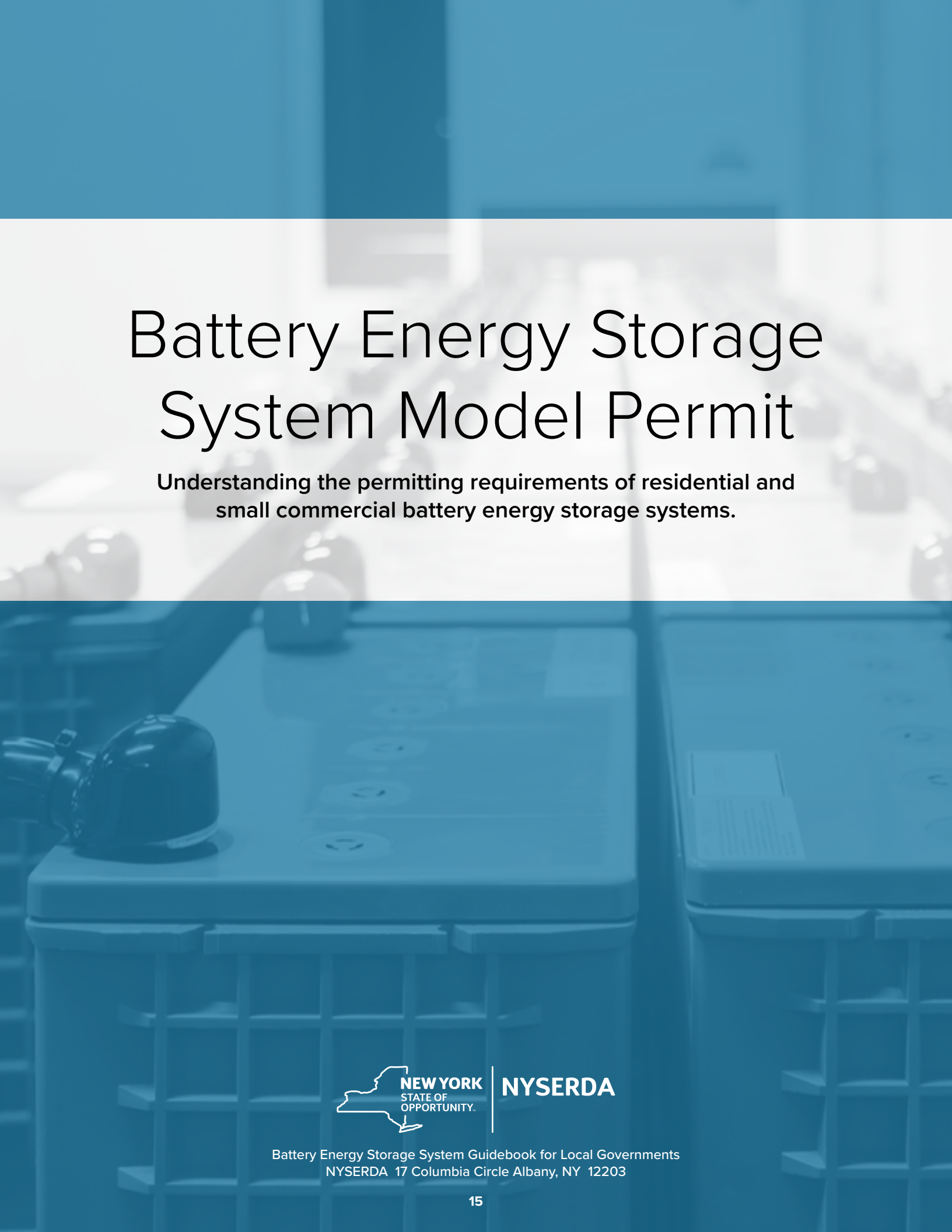
Any violation of this Battery Energy Storage System Law shall be subject to the same enforcement requirements, including the civil and criminal penalties, provided for in the zoning or land use regulations of [Village/Town/City].

11. Severability

The invalidity or unenforceability of any section, subsection, paragraph, sentence, clause, provision, or phrase of the aforementioned sections, as declared by the valid judgment of any court of competent jurisdiction to be unconstitutional, shall not affect the validity or enforceability of any other section, subsection, paragraph, sentence, clause, provision, or phrase, which shall remain in full force and effect.

Questions?

If you have any questions about the Battery Energy Storage System Model Law, please email questions to cleanenergyhelp@nyserda.ny.gov or request free technical assistance at nyserda.ny.gov/Energy-Storage-Guidebook. The NYSERDA team looks forward to partnering with communities across the State.



Battery Energy Storage System Model Permit

Understanding the permitting requirements of residential and small commercial battery energy storage systems.

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Section Contents

Overview

The Model Permit is intended to help local government officials and AHJs establish the minimum submittal requirements for electrical and structural plan review that are necessary when permitting residential and small commercial battery energy storage systems.

Additionally, battery energy storage systems shall comply with all applicable provisions of the codes, regulations, and industry standards as referenced in the New York State Uniform Fire Prevention and Building Code.

The Battery Energy Storage System Model Permit is based on the 14th Edition of the National Electric Code (NEC), which is anticipated to be adopted by New York State in 2020. NYSERDA will continue to update the Guidebook as these codes and standards evolve.

The workable version of this document can be found at nyserda.ny.gov/Energy-Storage-Guidebook, under Battery Energy Storage System Model Permit tab.

PERMIT APPLICATION

Battery Energy Storage System Model Permit

Note: Language in [ALL CAPS] below indicates where local jurisdictions need to provide information specific to the jurisdiction. Language in italics indicates explanatory notes from the authors of this document that may be deleted from the distributed version.

SUBMITTAL INSTRUCTIONS

This application and the following attachments will constitute the Battery Energy Storage System Permitting Package.

- This application form, with all fields completed and bearing relevant signatures.
- Permitting fee of $[ENTER FEE HERE], payable by [ENTER VALID PAYMENT METHODS, If checks are allo INCLUDING WHO CHECKS SHOULD BE MADE PAYABLE TO]
- Required Construction Documents for the battery energy storage system being installed, including required attachments.

Completed permit applications can be submitted electronically to [EMAIL ADDRESS] or in person at [BUILDING DEPARTMENT ADDRESS] during business hours [INDICATE BUSINESS HOURS].

APPLICATION REVIEW TIMELINE

Permit determinations will be issued within [TIMELINE] calendar days upon receipt of complete and accurate applications. The municipality will provide feedback within [TIMELINE] calendar days of receiving incomplete or inaccurate applications.

FOR FURTHER INFORMATION

Questions about this permitting process may be directed to [MUNICIPAL CONTACT INFORMATION].

PROPERTY OWNER

Property Owner's First Name | Last Name | Title

Property Address

City | State | Zip

Section | Block | Lot Number

EXISTING USE

❑ Residential ❑ Commercial

PROVIDE THE TOTAL SYSTEM CAPACITY RATING

Total System Capacity Rating:_____ kWh Power Rating:_____ kW (Select One) ❑ AC or ❑ DC

SELECT SYSTEM CONFIGURATION

❑ AC Coupled ❑ DC Coupled ❑ Standalone

SELECT BATTERY TYPE

❑ Lithium-ion, all types ❑ Lead-acid, all types ❑ Nickel-cadmium (Ni-Cd) ❑ Flow batteries ❑ Other: _____

SELECT INSTALLATION TYPE

❑ Indoor ❑ Outdoor ❑ Attached/Detached/Open Garage ❑ Rooftop ❑ Dedicated Use Building

BATTERY ENERGY STORAGE SYSTEM INSTALLATION CONTRACTOR

Contractor Business Name

Contractor Business Address | City | State | Zip

Contractor Contact Name | Phone Number

Contractor License Number(s) | Contractor Email

Electrician Business Name

Electrician Business Address | City | State | Zip

Electrician Contact Name | Phone Number

Electrician License Number(s) | Electrician Email

Please sign below to affirm that all answers are correct and that you have met all the conditions and requirements to participate in this unified process.

Property Owner's Signature | Date

Battery Energy Storage System Company Representative Signature | Date

PERMITS AND APPROVALS REQUIRED

The following permits are the minimum requirements for battery energy storage systems installed with an aggregate energy capacity less than or equal to 600kWh and, if in a room or indoor area, where only a single energy storage system technology is provided.

1. Battery Energy Storage System Permit
2. [LIST TYPE OF PERMIT(S) REQUIRED BY THE LOCAL JURISDICTION, i.e., ELECTRICAL OR BUILDING PERMIT].

SUBMITTAL REQUIREMENTS

In order to submit a complete permit application for a new battery energy storage system, the applicant must include:

a) Completed Application form.

b) Construction Documents, with listed attachments. Construction Documents must be stamped and signed by a New York State Licensed Professional Engineer.

General Requirements

- Minimum plan size is 11"x17" with a minimum font of 10.
  - Include 4 full sets of plans and 2 sets of supporting documents.
- Include the applicable codes on the cover sheet for the project.
- Include the complete scope of work on the cover sheet for the project.
- All battery energy storage systems, all dedicated use buildings, and all other buildings or structures that (1) contain or are otherwise associated with a battery energy storage system and (2) subject to the NYS Uniform Fire Prevention and Building Code (Uniform Code) and/or the NYS Energy Conservation Construction Code(Energy Code) shall be designed, erected, and installed in accordance with all applicable provisions of the Uniform Code, all applicable provisions of the Energy Code, and all applicable provisions of the codes, regulations, and industry standards as referenced in the Uniform Code, the Energy Code, and the [Village/Town/City] Code.

Site Plan and Floor Plan Requirements

- Include a legend or key for the site and floor plan with equipment symbols.
- The site plan shall include:
  - The location of the structure and the location where the system is to be installed.
  - Show conduit/cable routing of battery energy storage system.
  - Include underground trench detail, if applicable.
  - Show overhead runs, if applicable.
  - Show method and location of required ventilation equipment (if required) for indoor installations.
- Identify the total number of batteries.
- The floor plan shall include:
  - New equipment for the battery energy storage system.
  - Existing equipment for interconnection.
  - Show required working clearances for all existing/new electrical equipment.
  - Show whether the equipment is to be installed indoors or outdoors.
  - Show method and location of requirement ventilation equipment (if required) for indoor installations.
  - Show method of protection from physical damage for the battery energy storage system.
  - Show means of access to battery energy storage system.
  - Denote whether conductors are routed indoors or outdoors.
- Provide an elevation drawing of the system equipment and specify elevation in relation to flood plains.
  - If the building is in a flood zone, it shall be above base flood elevation.
- Provide supporting documents from manufacturer if equipment is subject to physical damage.

Electrical

- Installations shall be in compliance with the Battery Energy Storage System Electrical Checklist. The Battery Energy Storage System Electrical Checklist provides an overview of common points of inspection for which the applicant should be prepared to show compliance.
- One or Three-Line Diagram
  - Show grounding and bonding for the battery energy storage system, including the ground return path.
  - Show method of interconnection.
  - Show overcurrent protection method and rating when required.
  - Include detailed wiring information for all new circuits, including:
    > Conductor size/type
    > Number of conductors
    > Conduit size
    > Conduit type
  - Show all disconnection means.
  - Show ratings (voltage, ampacity, environmental, etc) for new and existing service equipment.

• Specifications and installation instructions
  - Provide specification sheets and installation instructions for the following equipment:
    > Batteries
    > Inverter
    > Transformer or autotransformer
    > Transfer switch(es)
    > ESS support or racking
    > Converters
    > Interconnecting cables and connectors
    > Management system, including charge controller(s)
    > Panelboards
    > HVAC/thermal management system
    > Fire rated material
  - An approved energy storage management system shall be provided for battery technologies other than lead-acid and nickel cadmium for monitoring and balancing cell voltages, currents, and temperatures within the manufacturer's specifications. The system shall transmit an alarm signal to an approved location if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

Fire Requirements

• All battery energy storage systems must be designed and installed in accordance with all applicable provisions of the New York State Uniform Code. Provide documentation on how this system will meet these requirements.
  - - Most one-to-two family residential systems will be subject to Section R327 (Energy Storage Systems) of the 2020 Residential Code of New York State. . All other systems are subject to Section 1206 (Electrical Energy Storage Systems) of the 2020 Fire Code of New York State.

PLAN REVIEW

Permit applications can be submitted to [DEPARTMENT NAME] in person at [ADDRESS] and electronically through: [WEBSITE/EMAIL/FAX CONTACT INFORMATION, IF APPLICABLE].

FEES

[PROVIDE CLEAR FEE SCHEDULE]

DEPARTMENTAL CONTACT INFORMATION

Once all permits to construct the battery energy storage system installation have been issued and the system has been installed, it must be inspected before final approval is granted for the battery energy storage system. On-site inspections can be scheduled by contacting [DEPARTMENT] by telephone at [PHONE NUMBER] or electronically at [WEBSITE OR EMAIL ADDRESS].

Inspection requests received within business hours are typically scheduled for the next business day. If next business day is not available, inspection should happen within a five-day window. [IF MUNICIPALITY ACCEPTS THIRD PARTY INSPECTIONS, INDICATE THIS AND PROVIDE A LIST OF APPROVED INSPECTORS].

In order to receive final approval, the following inspection is required:

[FINAL INSPECTION] The applicant must contact [INSERT CONTACT INFORMATION] when ready for a final inspection. During this inspection, the inspector will review the complete installation to ensure compliance with codes and standards, as well as confirming that the installation matches the records included with the permit application. The applicant must have ready, at the time of inspection, the following materials and make them available to the inspector:

- Copies of as-built drawings and equipment specifications, if different than the materials provided with the application.
- Photographs of key hard to access equipment.

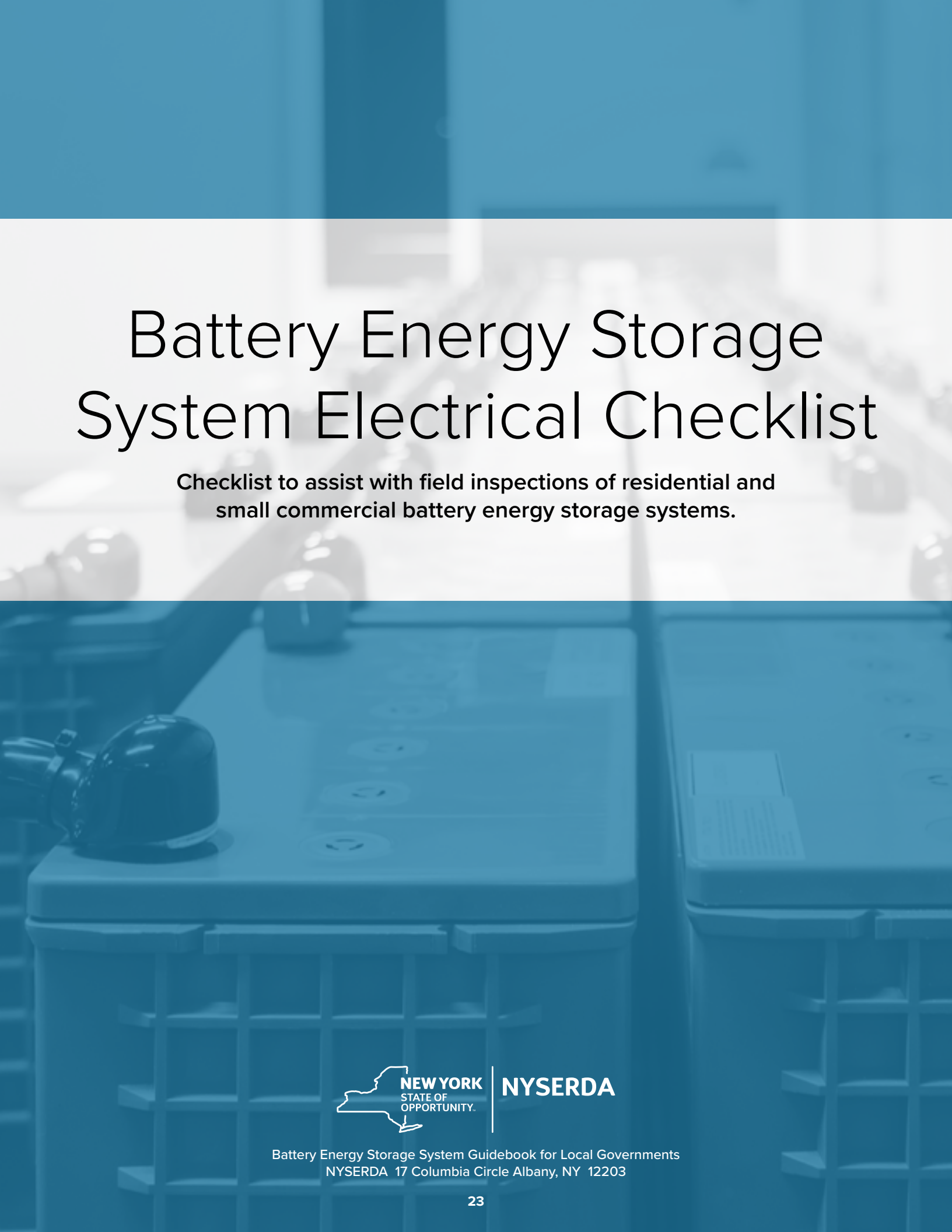
[MUNICIPALITY NAME] has adopted a standardized “Battery Energy Storage System Electrical Checklist”, which can be found here: [WEBSITE ADDRESS].

DEPARTMENTAL CONTACT INFORMATION

For additional information regarding this permit process, please consult our departmental website at [WEBSITE] or contact [DIVISION NAME] at [PHONE NUMBER].

Questions?

If you have any questions about the Battery Energy Storage System Model Permit, please email questions to cleanenergyhelp@nyserda.ny.gov or request free technical assistance at nyserda.ny.gov/Energy-Storage-Guidebook. The NYSERDA team looks forward to partnering with communities across the State.



Battery Energy Storage System Electrical Checklist

Checklist to assist with field inspections of residential and small commercial battery energy storage systems.

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Section Contents

Overview

The Electrical Checklist is intended to be utilized as a guideline for field inspections of residential and small commercial battery energy storage systems. It can be used directly by local code enforcement officers or provided to a third-party inspection agency, where applicable.

The Battery Energy Storage System Electrical Checklist is based on the 14th Edition of the National Electric Code (NEC), which is anticipated to be adopted by New York State in 2020. NYSERDA will continue to update the Guidebook as these codes and standards evolve.

The workable version of this document can be found at nyserda.ny.gov/Energy-Storage-Guidebook, Battery Energy Storage System Electrical Checklist tab.

1. Electrical Checklist

Applicable Codes: NEC 2017, [add any additional local codes required]

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

Project Information

Permit Number	
Primary Contractor	
Project Address	
Date	

Pre-Inspection

	De-energize electrical panels prior to removing the dead-front. All equipment shall be open and ready for inspection
	The approved plans, permit, and installation instructions shall be on site at time of inspection
	Major changes, including revisions, to the installation shall be submitted to the AHJ for review and approval prior to inspection

Inspection

General

	Exact match of component product number and rating with plan
	All equipment shall bear the appropriate listing mark of a Nationally Recognized Testing Laboratory where such marking is required as part of the listing, and installed in accordance with its listing (NEC Article 110.3(B))
	Battery energy storage system includes a manual (system description, operating and safety instructions, maintenance requirements, safe battery handling requirements/recommendations)
	A personnel door(s) intended for entrance to and egress from rooms designed as BESS rooms shall open in the direction of egress and shall be equipped with listed panic hardware, (NEC 706.10(D))
	Provide sufficient working spaces and clearances for batteries. Working space shall be measured from the edge of the battery cabinet, racks, or trays, (NEC 480.9, 110.26)
	Spaces about the ESS shall comply with NEC 110.26. Working space shall be measured from the edge of the ESS modules, battery cabinets, racks, or trays, (NEC 706.10(C)) • For battery racks, there shall be a minimum clearance of 1 inch between a cell container and any wall or structure on the side not requiring access for maintenance. • ESS modules, battery cabinets, racks, or trays shall be permitted to contact adjacent walls or structures, provided that the battery shelf has a free air space for not less than 90% of its length. • Pre-engineered and self-contained ESSs shall be permitted to have working space between components within the system in accordance with the manufacturer's recommendations and listing of the system.

Equipment

	Flexible Battery DC conductors are listed as hard service use and/or moisture resistant, (NEC 690.74, 706.32)
	Fine stranded flexible cables (if used) terminated in accordance with NEC 110.14, (NEC 110.14, 690.74, 706.32)
	Ungrounded conductor is not marked using white, grey, or white striped conductors to avoid confusion with grounded conductor markings, (NEC 200.7)
	Electrochemically dissimilar metals are not in direct physical contact, (NEC 110.14)
	All connections shall be secure, (NEC 110.14, 706.31)
	All metallic raceways and equipment shall be bonded and electrically continuous, (NEC 110.3(B), 250.8)
	Unused opening shall be close with protection equivalent to the wall of enclosure, (NEC 110.3(B), 408.7)
	The selected wiring methods are appropriate for the location and installed in accordance with their intended use, (NEC 310, 706)
	All live parts of batteries must be guarded regardless of voltage or battery type, (NEC 706.10(B))
	Batteries' live parts shall be guarded in accordance with (NEC 110.27, 480.10(B))
	Verify that the attachment of the battery storage unit to the wall or floor is per the approved plans. If the wall or floor construction differs from the approved plans, a revision is required prior to inspection

Grounding

	Any conductive battery racks, cases or trays must be connected to an equipment grounding conductor. (NEC 250.110)
	Equipment grounding conductor is properly identified as either bare, green, or green with continuous yellow stripe(s), (NEC 250.119)
	If there is no existing AC grounding electrode, the ESS contractor shall install (2) ground rods at the main electrical service. If there Is only (1) ground rod, a second one shall be installed. Ground rods shall be a minimum of 6' apart, (NEC Exhibit 250.25, Article 250.53, 706)

Main Electric Service

	Circuit breakers shall be of the same manufacturer as the main service panel, (NEC 110.3)

Ventilation

	Provide adequate ventilation for batteries per manufacturer's requirements. (NEC 706.10(A))
	Batteries/enclosures contain ventilation equipment to prevent excessive accumulation of gas pressure and/or gas ignition, (NEC 706.10)

Connections and Terminations

	Cell terminations have measures taken to prevent corrosion
	Electrical connections do not put mechanical strain on battery terminals, (NEC 706.31, 110.14(A))
	Overcurrent protection of ungrounded conductors shall have overcurrent protection device(s) located as close as practicable to the battery terminals in an unclassified location, (NEC 480.5, 706.7)
	Battery circuit and equipment shall be protected by overcurrent protective devices as close as practicable to the storage battery terminals in accordance with the requirements of NEC Article 240, (NEC 240.21(H), 705.65(A))
	Unless the short-circuit currents from all sources do not exceed the ampacity of the conductors, storage battery inverters shall be protected by overcurrent protective devices from all other sources, (NEC 705.65(A))
	A listed current-limiting overcurrent protective device shall be installed adjacent to the ESS for each dc output circuit, (NEC 706.21(C))
	In an ac-coupled system, the plug-in type circuit breaker connected to the output of the storage battery or multimode inverter is required to be secured, (NEC 408.36(D), 710.15(E))
	Storage battery, multimode, and utility-interactive inverter output circuit breakers that are marked "Line" and "Load" are not permitted to be back-fed, (NEC 710.15(E), 110.3(B), 705.12(B)(4))
	Single 120-volt inverter in ac coupled systems should not supply back-up loads containing multiwire branch circuit or any 240 volt outlets. Such action can overload the common neutral in such a wiring method, (NEC 710.15(C))

Monitoring and Charge Control

	Charge controllers shall be compatible with the battery or ESS manufacturer's electrical ratings and charging specifications, (NEC110.3(B))
	Charge controller is properly installed to prevent overcharging or damaging batteries, (NEC 690.72, 706.23)
	Diversionary charge controllers with utility-interactive and multimode inverters shall have a second independent controller to prevent battery overcharge in the event the diversion loads are unavailable or the diversion charge controller fails, (NEC 706.23(B)(3)(b))

Disconnecting Means

	A disconnecting means is provided for all ungrounded conductors derived from a dc stationary battery system with a voltage of over 60 volts dc, (NEC 480.7)
	A disconnecting means shall be provided for all ungrounded conductors derived from an ESS. A disconnecting means shall be readily accessible and located within sight of the ESS, (NEC 706.7(A))
	Battery circuits subject to field servicing where exceeding 240 volts nominal between conductors or to ground, shall have provisions to disconnect the series-connected strings into segments not exceeding 240 volts nominal for maintenance by qualified persons. Non-load-break bolted, or plug-in disconnects shall be permitted, (NEC 706.30(B))
	ESS exceeding 100 volts between conductors or to ground shall have a disconnecting means, accessible only to qualified persons, that disconnects ungrounded and grounded circuit conductor(s) in the electrical storage system for maintenance. This disconnecting means shall not disconnect the grounded circuit conductor(s) for the remainder of any other electrical system. A non-load-break-rated switch shall be permitted to be used as a disconnecting means, (NEC 706.30(C))
	Where battery energy storage system input and output terminals are more than 5ft from the connected equipment, or where these terminals pass through a wall or partition must comply with all of NEC 706.7(E)) (1) A disconnecting means shall be provided at the energy storage system end of the circuit. Fused disconnecting means or circuit breakers shall be permitted to be used. (2) A second disconnecting means located at the connected equipment shall be installed where the disconnecting means required by 706.7(E)(1) is not within sight of the connected equipment. (3) Where fused disconnecting means are used, the line terminals of the disconnecting means shall be connected toward the energy storage system terminals. (4) Disconnecting means shall be permitted to be installed in energy storage system enclosures where explosive atmospheres can exist if listed for hazardous locations. (5) Where the disconnecting means in (1) is not within sight of the disconnecting means in (2), placards or directories shall be installed at the locations of all disconnecting means indicating the location of all other disconnecting means. (NEC 706.7(E))
	Where a disconnecting means, located in accordance with NEC 480.7(A) (out of sight of the battery storage system), is provided with remote controls to activate the disconnecting means and the controls for the disconnecting means are not located within sight of the stationary battery system, the disconnecting means shall be capable of being locked in the open position, (NEC 480.7(B))
	The equipment grounding lug shall be as specified by the manufacturer, (NEC 110.3(B))
	Remove any insulating finish, such as paint, under the equipment grounding lug prior to installation (NEC 250.8, 250.12)
	Maximum height requirements for disconnects applies to integrated disconnect (e.g., Tesla PowerWalls or similar applications)

Interconnection

	The interconnection methods comply with NEC Article 705.12 (if connected to other energy sources)

Signage

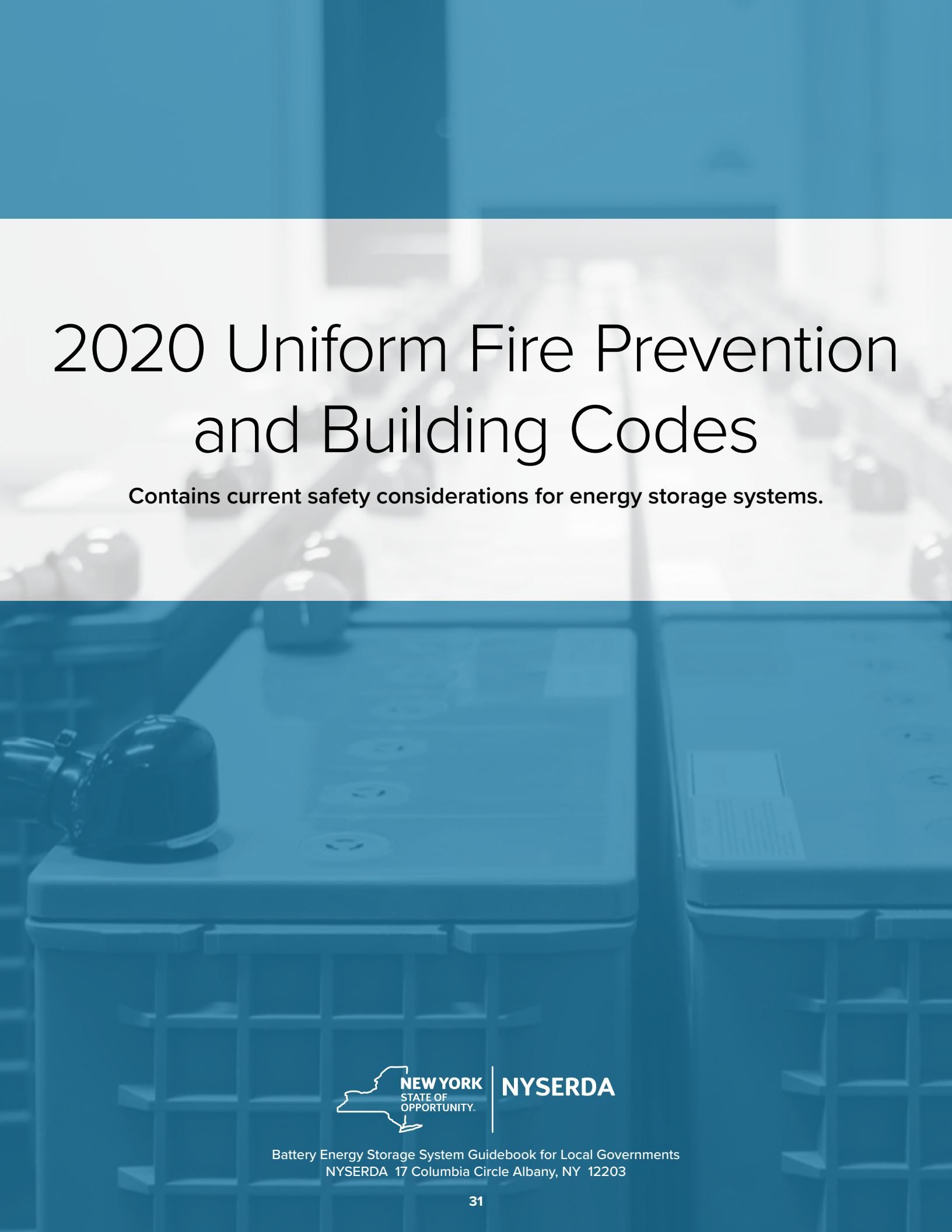
	The signage shall be in compliance with ANSI Z535 and shall include the following information 1. Labeled “Energy Storage Systems” with symbol of lightning bolt in a triangle 2. Type of technology associated with the ESS 3. Special hazards associated 4. Type of suppression system installed in the area of the ESS 5. Emergency contact information
	A permanent plaque or directory denoting the location of all electric power source disconnecting means on or in the premises shall be installed at each service equipment location and at the location(s) of the system disconnect(s) for all electric power production sources capable of being interconnected. The marking shall comply with NEC 110.21(B) (NEC 706.11)
	Equipment containing overcurrent devices in circuits supplying power to a busbar or conductors supplied from multiple sources shall be marked to indicate the presence of all sources. (NEC 705.12(B)(3))
	PV system output circuit conductors shall be marked to indicate the polarity where connected to battery energy storage systems. (NEC 690.55)
	DC system conductors of 4 AWG or larger shall be identified using colored marking tape, (NEC 210.5(C)(2))
	Where controls to activate the disconnecting means of a battery are not located within sight of a stationary battery system, the location of the controls shall be field marked on the disconnecting means. (NEC 480.7(B))
	Where controls to activate the disconnecting means of an ESS are not located within sight of the system, the disconnecting means shall be capable of being locked in the open position, in accordance with 110.25, and the location of the controls shall be field marked on the disconnecting means. (NEC 706.7(B))
	Where the sum of the ampere ratings of all overcurrent devices on panelboards, both load and supply devices, excluding the rating of the overcurrent device protecting the busbar, shall not exceed the ampacity of the busbar. The rating of the overcurrent device protecting the busbar shall not exceed the rating of the busbar. Permanent warning labels shall be applied to distribution equipment displaying the following or equivalent wording: (NEC 705.12(B)(2)(3)(c)): **WARNING:** **THIS EQUIPMENT FED BY MULTIPLE SOURCES.** **TOTAL RATING OF ALL OVERCURRENT DEVICES,** **EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE,** **SHALL NOT EXCEED AMPACITY OF BUSBAR**
	Where two sources, one a primary power source and the other another power source, are located at opposite ends of a busbar that contains loads, the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar shall not exceed 120 percent of the ampacity of the busbar. The busbar shall be sized for the loads connected in accordance with Article 220. A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the power source that displays the following or equivalent wording: (NEC 705.12(B)(2)(3)(b)): **WARNING:** **INVERTER OUTPUT CONNECTION;** **DO NOT RELOCATE THIS OVERCURRENT DEVICE.**
	All battery and battery management equipment and associated switchgear are marked and labeled according to all applicable codes including arc flash incident calculations for the safety of operation and maintenance personnel required by the National Electrical Code and OSHA: (NEC 110.16)
	If a battery dc disconnecting means is not provided at the batteries, the disconnecting means shall be legibly marked in the field. The marking shall be of sufficient durability to withstand the environment involved and shall include the following (NEC 480.7(D)): • Nominal battery voltage • Maximum available short-circuit current derived from the stationary battery system • Date the calculation was performed for the value above • The battery disconnecting means shall be marked in accordance with 110.16

Questions?

If you have any questions about the Battery Energy Storage System Electrical Checklist, please email questions to cleanenergyhelp@nyserda.ny.gov or request free technical assistance at nyserda.ny.gov/Energy-Storage-Guidebook. The NYSERDA team looks forward to partnering with communities across the State.

2020 Uniform Fire Prevention and Building Codes

Contains current safety considerations for energy storage systems.



NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Section Contents

Overview

The New York State Uniform Fire Prevention and Building Code (Uniform Code) prescribes mandatory statewide minimum standards for building construction and fire prevention. In 2020, the Uniform Code was amended to include the latest safety considerations for energy storage systems.

All energy storage systems must be designed and installed in accordance with all applicable provisions of the Uniform Code. Select excerpts from the 2020 Uniform Code that apply to Energy Storage Systems are included herein for ease of reference only.

For the latest code updates, please refer to the New York State Department of State (NYS DOS) website (www.dos.ny.gov). Should any conflicts exist between this section and the Uniform Code, the Uniform Code requirements shall prevail. This section of the Guidebook is adapted from select publications included in the 2020 Uniform Code, published by NYS DOS, available here.

The Uniform Code is formulated by the State Fire Prevention and Building Code Council (the "Code Council") pursuant to Article 18 of the New York State Executive Law.

Clarification Regarding Select 2020 Uniform Code Requirements

Applicability and enforcement of the Uniform Code is subject to the interpretation of the code official of the authority having jurisdiction. Recognizing this, NYSERDA wishes to provide clarity regarding certain provisions and requirements of the Uniform Code relating to the safety of energy storage installations:

- NYSERDA recommends that all energy storage systems exceeding the applicable maximum allowable quantities (MAQ) in aggregate (Table 1206.12 of the Fire Code), ***regardless of location and/or enclosure type,*** be required to complete a hazard mitigation analysis and large-scale fire testing in compliance with Sections 1206.5 and 1206.6 of the Fire Code, respectively. For lithium-ion systems, the MAQ is 600 kilowatt-hours (kWh).

  Exceptions to this requirement should be limited to those listed in Section 1206.12.2 of the Fire Code.

  Please note: Section 1206.6 of the Fire Code states that large-scale fire testing shall be conducted on a representative energy storage system in accordance with UL 9540A or an approved equivalent testing methodology. As such, large-scale fire testing may not be required for products with a UL-listing (or approved equivalent) which have previously completed testing in accordance with UL 9540A (or approved equivalent). Large-scale fire testing should be required if a system is customized and requires a field evaluation.

- NYSERDA recommends that all outdoor energy storage systems exceeding the applicable MAQs in aggregate, ***regardless of enclosure type and/or classification,*** meet all applicable safety requirements as outlined in Table 1206.15 of the Uniform Code, including any technology-specific requirements detailed in Table 1206.13.

  Code officials may elect to waive certain requirements based on the results of a completed hazard mitigation analysis and large-scale fire testing.

A downloadable version of the section can be found at nyserda.ny.gov/Energy-Storage-Guidebook

1. The 2020 Residential Code of New York State

1.1 2020 Residential Code of New York State Section R202 (Definitions) This is not an exhaustive list of definitions that may apply to energy storage systems

ENERGY STORAGE SYSTEM. One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include a stand-alone 12- volt car battery or an electric motor vehicle.

(RB) BATTERY SYSTEM, STATIONARY STORAGE. A rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding. load sharing or similar capabilities.

1.2 2020 Residential Code of New York State Section R327 (Energy Storage Systems)

SECTION R327 ENERGY STORAGE SYSTEMS

R327.1 General. Energy storage systems installed in buildings or structures that are subject to the provisions of this code shall be installed and maintained in accordance with Sections R327.2 through R327.11. The temporary use of an owner's or occupant's electric powered vehicle as an energy storage system shall be in accordance with Section R327.12.

Energy storage system installations exceeding the permitted aggregate ratings in Section R327.5 shall be installed in accordance with Section 1206.2 through 1206.17.7.7 of the Fire Code of New York State.

R327.2 Equipment listings. Energy storage systems listed and labeled solely for utility or commercial use shall not be used for residential applications.

Exceptions:

1. Where approved, repurposed unlisted battery systems from electric vehicles are allowed to be installed outdoors or in detached dedicated cabinets located not less than 5 feet (1524 mm) from exterior walls, property lines and public ways.
2. Energy storage systems less than 1 kWh (3.6 megajoules). R327.3 Installation. Energy storage systems shall be installed in accordance with the manufacturer's instructions and their listing.

R327.3.1 Spacing. Individual units shall be separated from each other by at least 3 feet of spacing unless smaller separation distances are documented to be adequate based on large scale fire testing complying with Section 1206.6 of the Fire Code of New York State.

R327.4 Location. Energy storage systems shall only be installed in the following locations:

1. Detached garages and detached accessory structures.
2. Attached garages separated from the dwelling unit living space and sleeping units in accordance with Section R302 of this code.
3. Outdoors on exterior walls located a minimum 3 ft. from doors and windows.
4. Utility closets and storage or utility spaces within dwelling units and sleeping units

R327.5 Energy ratings. Individual energy storage system units shall have a maximum rating of 20 kWh. The aggregate rating shall not exceed:

1. 40 kWh within utility closets and storage or utility spaces
2. 80 kWh in attached or detached garages and detached accessory structures
3. 80 kWh on exterior walls
4. 80 kWh outdoors on the ground

R327.6 Electrical installation. Energy storage systems shall be installed in accordance with NFPA 70. Inverters shall be listed and labeled in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters listed for utility interaction.

R327.7 Fire detection. Rooms and areas in which energy storage systems are installed shall be protected by smoke alarms in accordance with Section R314. A heat detector or heat alarm listed and interconnected to the smoke alarms shall be installed in locations where smoke alarms cannot be installed based on their listing.

R327.8 Fire-resistance rating. Rooms and areas containing energy storage systems shall be protected on the system side by no less than 5/8-inch Type X gypsum board or equivalent, installed on the walls and ceiling of the room or area.

Attached garages containing energy storage systems shall be protected on the system side by fire-resistant construction in accordance with Section R302.

R327.9 Protection from impact. Energy storage systems installed in a location subject to vehicle damage shall be protected by approved barriers.

R327.10 Ventilation. Indoor installations of energy storage systems that include batteries that produce hydrogen or other flammable gases during charging shall be provided with exhaust ventilation in accordance with Section 1206.13.1 of the Fire Code of New York State.

R327.11 Toxic and highly toxic gas. Energy storage systems that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within one- and two-family dwellings and townhouses.

R327.12 Electric vehicle use. The temporary use of an owner or occupant's electric powered vehicle to power a dwelling unit or sleeping unit while parked in an attached or detached garage or outside shall comply with the vehicle manufacturer's instructions and NFPA 70. The batteries on electric vehicles shall not contribute to the aggregate energy limitations in Section R327.

2. The 2020 Building Code of New York State

2.1 2020 Building Code of New York State Section 202 (Definitions) This is not an exhaustive list of definitions that may apply to energy storage systems

ENERGY STORAGE SYSTEM. One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time.

GAS DETECTION SYSTEM. A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

2.2 2020 Building Code of New York State Section 307.1.1 (Uses other than Group H)

9. Stationary storage battery systems in accordance with the Fire Code of New York State.

16. Capacitor energy storage systems in accordance with the Fire Code of New York State.

2.3 2020 Building Code of New York State Table 509 (Incidental Uses)

ROOM OR AREA	SEPARATION AND/OR PROTECTION
Energy storage systems having an energy capacity greater than the threshold quantity specified in Tabled 1206.1 of the Fire Code of New York State.	2 hours

2.4 2020 Building Code of New York State Section 907.2.23 (Fire Alarm and Detection Systems, Where required—new buildings and structures, Energy storage systems)

907.2.22 Battery rooms. An automatic smoke detection system shall be installed in areas containing stationary energy storage systems as required in section 1206 of the Fire Code of New York State.

907.2.23 Capacitor energy storage systems. An automatic smoke detection system shall be installed in areas containing capacitor energy storage systems as required in section 1206 of the Fire Code of New York State.

2.5 2020 Building Code of New York State Section 916 (Gas Detection Systems)

SECTION 916 GAS DETECTION SYSTEMS

916.1 Gas detection systems. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.

916.2 Permits. Permits shall be required as set forth in Section 105 of the Fire Code of New York State

> **916.2.1 Construction documents.** Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code and the Fire Code of New York State shall be provided with the application for permit.

916.3 Equipment. Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.

916.4 Power connections. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.

916.5 Emergency and standby power. Standby or emergency power shall be provided, or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.

916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.

916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:

1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.
2. For toxic gases, that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes in accordance with Section 6004.2.2.7 of the Fire Code of New York State.
3. Where a less frequent or delayed sampling interval is approved.

916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:

1. For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL).
2. For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.

Upon activation of a gas detection alarm, alarm signals or other required responses shall be as specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.

916.9 Signage. Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.

916.10 Fire alarm system connections. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.

916.11 Inspection, testing and sensor calibration. Gas detection systems and sensors shall be inspected, tested and calibrated in accordance with the Fire Code of New York State.

2.6 2020 Building Code of New York State Section 2702.2 (Emergency and Standby Power Systems, Where required)

2702.2.7 Gas detection systems. Emergency or standby power shall be provided for gas detection systems in accordance with the Fire Code of the State of New York.

2702.2.19 Exhaust ventilation systems. Standby power shall be provided for mechanical exhaust ventilation systems as required in accordance with the Fire Code of the State of New York.

3. The 2020 Fire Code of New York State

3.1 2020 Fire Code of New York State Section 202 (Definitions) This is not an exhaustive list of definitions that may apply to energy storage systems

BATTERY SYSTEM, STATIONARY STORAGE. A rechargeable energy storage system consisting of electro-chemical storage batteries, battery chargers, controls, and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power. an uninterruptable power supply, load shedding. load sharing or similar capabilities.

Flow battery. A type of storage battery that includes chemical components dissolved in two different liquids, ion exchange, which provides the flow of electrical current, occurs through the membrane while both liquids circulate in their respective spaces.

Lead-acid battery. A storage battery that is comprised of lead electrodes immersed in sulphuric acid electrolyte

Lithium ion battery. A storage battery with lithium ions serving as the charge carriers of the battery. The electrolyte is a polymer mixture of carbonates with an inorganic salt and can be in a liquid or a gelled polymer form. Lilhiated metal oxide is typically a cathode and forms of carbon or graphite typically form the anode.

Lithium metal polymer battery. A storage battery that is similar to the lithium ion battery except that it has a lithium metal anode in the place of the traditional carbon or graphite anode.

Nickel-cadmium (Ni-Cd) battery. An alkaline storage battery in which the positive active material is nickel oxide, the negative contains cadmium and the electrolyte is potassium hydroxide.

Pre-engineered stationary storage battery system. An energy storage system consisting of batteries, a battery management system, components and modules that are produced in a factory, designed lo comprise the system when assembled on the job site.

Prepackaged stationary storage battery system. An energy storage system consisting of batteries, a battery management system, components and modules that is factory assembled and shipped as a complete unit for installation at the job site.

Sodium-beta storage battery. A storage battery also referred to as a Na-beta battery or NBB, which uses a solid beta-alumina electrolyte membrane that selectively allows sodium ion transport between a positive electrode such as metal halide and a negative sodium electrode.

Stationary storage battery. A group of electrochemical cells interconnected lo supply a nominal voltage of DC power to a suitably connected electrical load, designed for service in a permanent location.

ENERGY STORAGE MANAGEMENT SYSTEM. An electronic system that protects energy storage systems from operating outside their safe operating parameters and disconnects electrical power to the energy storage system or places it in a safe condition if potentially hazardous temperatures or other conditions are detected.

CAPACITOR ENERGY STORAGE SYSTEM. A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

ENERGY STORAGE SYSTEM. One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include a stand-alone 12- volt car battery or an electric motor vehicle.

ENERGY STORAGE SYSTEM CABINET. A cabinet containing components of the energy storage system that is included in the UL 9540 listing for the system. Personnel are not able to enter the enclosure, other than reaching in to access components for maintenance purposes.

ENERGY STORAGE SYSTEM COMMISSIONING. A systematic process that provides documented confirmation that an energy storage system functions according to the intended design criteria and complies with applicable code requirements.

ENERGY STORAGE SYSTEM DECOMMISSIONING. A systematic process that provides documentation and procedures that allow an energy storage system to be safely deenergized, disassembled, readied for shipment or storage, and removed from the premise in accordance with applicable code requirements.

ENERGY STORAGE SYSTEM, ELECTROCHEMICAL. An energy storage system that stores energy and produces electricity using chemical reactions. It includes, among others, battery energy storage systems and capacitor energy storage systems.

ENERGY STORAGE SYSTEM, MOBILE. An energy storage system capable of being moved and utilized for temporary energy storage applications, and not installed as fixed or stationary electrical equipment. The system can include integral wheels for transportation or be loaded on a trailer and unloaded for charging, storage and deployment.

ENERGY STORAGE SYSTEM, STATIONARY. An energy storage system installed as fixed or stationary electrical equipment in a permanent location.

GAS DETECTION SYSTEM. A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self- contained gas detection and alarm device is not classified as a gas detection system.

WALK-IN ENERGY STORAGE SYSTEM UNIT. A pre-fabricated building that contains energy storage systems. It includes doors that provide walk-in access for personnel to maintain, test and service the equipment, and is typically used in outdoor and mobile energy storage system applications.

3.2 2020 Fire Code of New York State Section 1203 Emergency and Standby Power Systems

1203.2.5 Exhaust ventilation systems. Standby power shall be provided for mechanical exhaust ventilation systems as required in Section 1206.6.1.2.1. The system shall be capable of powering the required load for a duration of not less than 2 hours.

1203.2.7 Gas detection systems. Emergency power shall be provided for gas detection systems where required by Sections 604.2.8 and 604.2.14. Standby power shall be provided for gas detection systems where required by Section 916.5 and 1206.13.1.2.4.

3.3 2020 Fire Code of New York State Section 1206 Electrical Energy Storage Systems

SECTION 1206 Electrical ENERGY STORAGE SYSTEMS

[NY] 1206.1 Scope. Energy storage systems having capacities exceeding the values shown in Table 1206.1 shall comply with Section 1206.2 through 1206.17.7.7. Energy storage systems in Group R·3 and R•4 occupancies shall comply with Section 1206.18.

TABLE 1206.1 — ENERGY STORAGE SYSTEM THRESHOLD QUANTITIES

TECHNOLOGY	ENERGY CAPACITY[a]
Lead-acid batteries, all types	70 kWh (252 Megajoules)[c]
Nickel-cadmium batteries (Ni-Cd)	70 kWh (252 Megajoules)
Nickel metal hydride (Ni-MH)	70 kWh (252 Megajoules)
Lithium-ion batteries	20 kWh (72 Megajoules)
Flow batteries[b]	20 kWh (72 Megajoules)
Other battery technologies	10 kWh (36 Megajoules)
Capacitor energy storage systems	3 kWh (10.8 Megajoules)
Other electrochemical energy storage systems technologies	3 kWh (10.8 Megajoules)

a. Energy capacity is the total energy capable of being stored (nameplate rating), not the usable energy rating. For units rated in Amp-Hours, kWh shall equal rated voltage times amp-hour rating divided by 1000.
b. Shall include vanadium, zinc-bromine, polysulfde-bromide, and other flowing electrolyte type technologies.
c. An installation that exceeds 50 gallons of lead-acid battery electrolyte shall be considered to have exceeded the threshold quantities of this Table.

1206.2 Applicability. The provisions of Section 1206 shall apply to the installation, operation, maintenance, repair, retrofitting, testing, commissioning and decommissioning of both stationary energy storage systems and mobile energy storage systems.

Exceptions:

1. Equipment associated with the generation, control, transformation, transmission, or distribution of energy installations that is under the exclusive control of an electric utility.
2. Outdoor stationary vehicle charging stations with a capacity of 250 kWh or less. Electrical connections between the charging station and buildings shall meet the requirements of NFPA 70.

1206.2.1 Electrical wiring and equipment. Electrical wiring and equipment used in connection with energy storage systems shall be installed and maintained in accordance with this Chapter and NFPA 70.

1206.2.2 Mixed system installation. Where approved by the fire code official, the aggregate nameplate kWh energy capacity of all energy storage systems in a fire area shall not exceed the maximum quantity specified for any of the energy storage systems in this chapter. Where required by the Authority Having Jurisdiction, a hazard mitigation analysis shall be provided and approved to evaluate any potential adverse interaction between the various energy storage systems and technologies.

1206.3 Permits. Building permits and operating permits shall be provided in accordance with Section 108 of the 2017 Uniform Code Supplement.

1206.4 Construction documents. The following information shall be provided with the permit application:

1. Location and layout diagram of the room or area in which the energy storage system is to be installed.
2. Details on the fire-resistance rating of assemblies enclosing the energy storage system.
3. The quantities and types of energy storage system to be installed.
4. Manufacturer's specifications, ratings and listings of each energy storage system.
5. Description of energy storage management systems and their operation.
6. Location and content of required signage.
7. Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and deflagration venting systems, if provided.

8. Support arrangement associated with the installation, including any required seismic restraint.
9. A commissioning plan complying with 1206.9.1.
10. A decommissioning plan complying with 1206.9.3.
11. Peer reviewer identification and qualifications, where required by the Authority Having Jurisdiction.

1206.5 Hazard mitigation analysis. A failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis shall be provided under any of the following conditions:

1. Where energy storage system technologies not specifically identified in Table 1206.1 are provided.
2. More than one energy storage system technology is provided in a room or enclosed area.
3. Where allowed as a basis for increasing maximum allowable quantities. See Section 1206.12.2.

1206.5.1 Fault condition. The hazard mitigation analysis shall evaluate the consequences of the following failure modes. Only single failure modes shall be considered.

1. A thermal runaway condition in a single energy storage system rack, module or unit.
2. Failure of any energy storage management system.
3. Failure of any required ventilation or exhaust system.
4. Voltage surges on the primary electric supply.
5. Short circuits on the load side of the energy storage system.
6. Failure of the smoke detection, fire detection, fire suppression, or gas detection system.
7. Required spill neutralization not being provided or failure of a required secondary containment system.

1206.5.2 Analysis approval. The fire code official may approve the hazardous mitigation analysis provided the consequences of the hazard mitigation analysis demonstrate:

1. Fires will be contained within unoccupied energy storage system rooms or areas for the minimum duration of the fire-resistance rated assemblies identified in Section 1206.14.4.
2. Fires in occupied work centers will be detected in time to allow occupants within the room or area to safely evacuate.
3. Toxic and highly toxic gases released during fires will not reach concentrations in excess of OSHA-regulated IDLH levels in the building or in adjacent means of egress routes during the time deemed necessary to evacuate occupants from any affected area.
4. Flammable gases released from energy storage systems during charging, discharging and normal operation will not exceed 25 percent of their lower flammability limit (LFL).
5. Flammable gases released from energy storage systems during fire, overcharging and other abnormal conditions will be controlled through the use of ventilation of the gases preventing accumulation or by deflagration venting.

1206.5.3 Additional protection measures. Construction, equipment and systems that are required for the energy storage system to comply with the hazardous mitigation analysis, including but not limited to those specifically described in Section 1206 shall be installed, maintained and tested in accordance with nationally recognized standards and specified design parameters.

1206.6 Large scale fire test. Where required elsewhere in Section 1206, large scale fire testing shall be conducted on a representative energy storage system in accordance with UL 9540A or approved equivalent. The testing shall be conducted or witnessed and reported by an approved testing laboratory and show that a fire involving one energy storage system will not propagate to an adjacent energy storage system. In addition, the testing shall demonstrate that, where the energy storage system is installed within a room, enclosed area or walk-in energy storage system unit, a fire will be contained within the room, enclosed area or walk-in energy storage system unit for a duration equal to the fire-resistance rating of the room assemblies as specified in Section 1206.14.4. The test report shall be provided to the fire code official for review and approval.

1206.7 Fire remediation. Where a fire or other event has damaged the energy storage system, the system owner, agent, or lessee shall, at their expense, comply with Sections 1206.7.1 and 1206.7.2, or remove damaged equipment from the premises to a safe location.

1206.7.1 Fire mitigation personnel. Where, required by the fire code official, the system owner, agent or lessee shall, at their expense, immediately dispatch one or more fire mitigation personnel to the premises. The personnel shall remain on duty continuously after the fire department leaves the premises and until the damaged energy storage system equipment is removed from the premises, or earlier if the fire code official indicates the public safety hazard has been abated.

1206.7.2 Duties. On-duty fire mitigation personnel shall have the following responsibilities:

1. Keep diligent watch for fires, obstructions to means of egress, and other hazards.
2. Immediately contact the fire department if their assistance is needed to mitigate any hazards or extinguish fires.
3. Take prompt measures for remediation of hazards in accordance with the decommissioning plan in Section 1206.9.3.
4. Take prompt measures to assist in evacuation from the structures.

1206.8 Peer review. Where required by the Authority Having Jurisdiction, the owner or the owner's authorized agent shall be responsible for retaining and furnishing the services of a registered design professional or special expert, who will perform as a peer reviewer, subject to the approval of the fire code official.

1206.8.1 Costs. The costs of special services, where required by the Authority Having Jurisdiction, shall be borne by the owner or the owner's authorized agent.

1206.8.2 Special expert. Where the scope of work is limited or focused in an area that does not require the services of a registered design professional or the special knowledge and skills associated with the practice of architecture or engineering, an approved special expert may be employed by the owner or the owner's authorized agent as the person in responsible charge of the limited or focused activity.

1. **Scope of work.** The scope of work of a special expert shall be limited to the area of expertise as demonstrated in the documentation submitted to the fire code official for review and approval.
2. **Special expert qualifications.** Special experts are those individuals who possess the following qualifications:
    1. Has credentials of education and experience in an area of practice that is needed to evaluate risks and safe operations associated with the design, operation and special hazards of energy storage systems.
    2. Licensing or registration, when required by any other applicable statute, regulation, or local law or ordinance.

1206.9 Commissioning, decommissioning, operation and maintenance. Energy storage system commissioning, energy storage system decommissioning, operation, and maintenance shall be conducted in accordance with this section.

1206.9.1 Commissioning. Energy storage system commissioning of newly installed energy storage systems, and existing energy storage systems that have been retrofitted, replaced or previously decommissioned and are returning to service, shall be conducted prior to the energy storage system being placed in service, in accordance with a commissioning plan that has been approved prior to initiating commissioning. The commissioning plan shall include the following:

1. A narrative description of the activities that will be accomplished during each phase of commissioning including the personnel intended to accomplish each of the activities.
2. A listing of the specific energy storage system and associated components, controls and safety related devices to be tested, a description of the tests to be performed and the functions to be tested.
3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system.
4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the energy storage system.
5. Verification that required equipment and systems are installed in accordance with the approved plans and specifications.
6. Integrated testing for all fire and safety systems.

7. Testing for any required thermal management, ventilation or exhaust systems associated with the energy storage system installation.
8. Preparation and delivery of operation and maintenance documentation.
9. Training of facility operating and maintenance staff.
10. Identification and documentation of the requirements for maintaining system performance to meet the original design intent during the operation phase.
11. Identification and documentation of personnel who are qualified to service, maintain and decommission the energy storage system, and respond to incidents involving the energy storage system, including documentation that such service has been contracted for.
12. A decommissioning plan in accordance with Section 1206.9.3.

Exception: Energy storage system commissioning shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC. However, a decommissioning plan shall be provided and maintained where required by the Authority Having Jurisdiction.

1206.9.1.1 Initial acceptance testing. During the commissioning process an energy storage system shall be evaluated for proper operation in accordance with the manufacturer's instructions and the commissioning plan prior to final approval.

1206.9.1.2 Commissioning report. A report describing the results of the energy storage system commissioning and including the results of the initial acceptance testing required in Section 1206.9.1.1 shall be provided to the fire code official prior to final inspection and approval and maintained at an approved on-site location.

1206.9.2 Operation and Maintenance Manual. An Operation and Maintenance Manual (O&M) shall be provided to both the energy storage system owner or their authorized agent and to the energy storage system operator before the energy storage system is put into operation. The energy storage system shall be operated and maintained in accordance with the manual. and a copy of the manual shall be retained at an approved onsite location and be available to the fire code official. The O&M shall include the following:

1. Manufacturer's O&M for the entire energy storage system or for each component of the system requiring maintenance, that clearly identifies the required routine maintenance actions.
2. Name, address and phone number of a service agency that has been contracted to service the energy storage system and its associated safety systems.
3. Maintenance and calibration information, including wiring diagrams, control drawings, schematics, system programming instructions and control sequence descriptions, for all energy storage systems controls.
4. Desired or field-determined control set points that are permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.
5. A schedule for inspecting and recalibrating all energy storage system controls.
6. A service record log form that lists the schedule for all required servicing and maintenance actions and space for logging such actions that are completed over time and retained on site.
7. Inspection and testing records shall be maintained in the O&M.

1206.9.2.1 Systems monitoring. Systems that monitor and protect the energy storage system installation shall also be inspected and tested in accordance with the manufacturer's instructions and Section 1206.9.2.

1206.9.3 Decommissioning. The Authority Having Jurisdiction shall be notified prior to energy storage system decommissioning. Decommissioning or removal of the energy storage system from service, and from the facility in which it is located, shall be performed in accordance with the decommissioning plan. The plan shall include details on providing a safe and orderly shutdown of the energy storage system that includes the following:

1. A narrative description of the activities to be accomplished for removing the energy storage system from service, and from the facility in which it is located.
2. A listing of any contingencies for removing an intact operational energy storage system from service, and for removing an energy storage system from service that has been damaged by a fire or other event.

1206.10 Equipment. Energy storage systems and equipment shall comply with Sections 1206.10.1 through 1206.10.9.

1206.10.1 Energy storage system listings. Energy storage systems shall be listed in accordance with UL 9540 or approved equivalent.

Exception: Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76 are not required to be listed.

1206.10.2 Equipment listing. Chargers, inverters, energy storage management systems shall be covered as part of the UL 9540 listing or shall be listed separately.

1206.10.3 Utility interactive systems. Only inverters listed and labeled for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads. Inverters shall be listed and labeled in accordance with UL 1741.

1206.10.4 Energy storage management system. Where required by the energy storage system listing an approved energy storage management system shall be provided that monitors and balances cell voltages, currents and temperatures within the manufacturer's specifications. The system shall disconnect electrical connections to the energy storage system or otherwise place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

1206.10.5 Enclosures. Enclosures of energy storage systems shall be of noncombustible construction.

1206.10.6 Repairs. Repairs of energy storage systems shall only be done by qualified personnel. Repairs with other than identical parts shall be considered a retrofit and comply with Section 1206.10.7. Repairs shall be documented in the service records log.

1206.10.7 Retrofits. Retrofitting of an existing energy storage system shall comply with the following:

1. A building permit shall be obtained in accordance with Section 105.
2. New batteries, battery modules, capacitors and similar energy storage system components shall be listed.
3. Energy storage management systems and other monitoring systems shall be connected and installed in accordance with the manufacturer's instructions.
4. The overall installation shall continue to comply with UL 9540 listing requirements, where applicable.
5. Systems that have been retrofitted shall be commissioned in accordance with Section 1206.9.1.
6. Retrofits shall be documented in the service records log.

Exception: Retrofitting of lead-acid and nickel-cadmium batteries with other lead-acid and nickel-cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.

1206.10.8 Replacements. Replacements of energy storage systems shall be considered new energy storage system installations and shall comply with the provisions of Section 1206 as applicable to new energy storage systems. The energy storage system being replaced shall be decommissioned in accordance with Section 1206.9.3.

1206.10.9 Reused and repurposed equipment. Equipment and materials shall only be reused or reinstalled as approved by the fire code official. Storage batteries previously used in other applications, such as electric vehicle propulsion, shall not be reused in applications regulated by this Chapter, unless (1) approved by the fire code official and (2) the equipment is refurbished by a battery refurbishing company approved in accordance with UL 1974.

1206.11 General installations requirements. Energy storage systems shall comply with the requirements of Sections 1206.11.1 through 1206.11.12.

1206.11.1 Electrical disconnects. Where the energy storage system disconnecting means is not within sight of the main electrical service disconnecting means, placards or directories shall be installed at the location of the main electrical service disconnecting means indicating the location of stationary storage battery system disconnecting means, in accordance with NFPA 70.

Exception: Electrical disconnects for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC shall be permitted to have electrical disconnects signage in accordance with NFPA 76.

1206.11.2 Working clearances. Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment, in accordance with NFPA 70 and the manufacturer's instructions.

1206.11.3 Fire-resistance rated construction. Rooms and other indoor areas containing energy storage systems shall be separated from other areas of the building in accordance with Section 1206.14.4 and Chapter 7 of this code. Energy storage systems shall be permitted to be in the same room as the equipment they support.

1206.11.4 Seismic and structural design. Stationary energy storage systems shall comply with the seismic design requirements in Chapter 16 of the International Building Code and shall not exceed the floor loading limitation of the building.

1206.11.5 Vehicle impact protection. Where energy storage systems are subject to impact by a motor vehicle, including fork lifts, vehicle impact protection shall be provided in accordance with Section 312 of this code.

1206.11.6 Combustible storage. Combustible materials shall not be stored in energy storage system rooms, areas, or walk-in energy storage system units. Combustible materials in occupied work centers covered by Section 1206.11.10 shall be stored at least 3 feet (914 mm) from energy storage system cabinets.

1206.11.7 Toxic and highly toxic gases. Energy storage systems installed indoors and that have the potential to release toxic and highly toxic gas during charging, discharging and normal use conditions shall be provided with a hazardous exhaust system in accordance with Section 502.8 of the Mechanical Code of New York State.

1206.11.8 Signage. Approved signs shall be provided on or adjacent to all entry doors to energy storage system rooms or areas, to walk-in energy storage system units located outdoors, on rooftops, or in open parking garages, and on enclosures of energy storage system cabinets. Signs shall be designed to meet both the requirements of this section and of NFPA 70. The signage shall include the following or equivalent.

1. "Energy Storage System", "Battery Storage System", "Capacitor Energy Storage System", or the equivalent.
2. The identification of the electrochemical energy storage system technology present and its rated capacity.
3. "Energized electrical circuits"
4. If water reactive electrochemical energy storage systems are present the signage shall include "APPLY NO WATER"
5. Current contact information, including phone number, for personnel with the technical knowledge of the system who is authorized to service the equipment and for fire mitigation personnel required by Section 1206.7.1.

1206.11.9 Security of installations. Rooms, areas and walk-in energy storage system units in which electrochemical energy storage systems are located shall be secured against unauthorized entry and safeguarded in an approved manner. Security barriers, fences, landscaping, and other enclosures shall not inhibit the required air flow to or exhaust from the electrochemical energy storage system and its components.

1206.11.10 Occupied work centers. Electrochemical energy storage systems located in rooms or areas occupied by personnel not directly involved with maintenance, service and testing of the systems shall comply with the following:

1. Electrochemical energy storage systems located in occupied work centers shall be housed in locked noncombustible cabinets or other enclosures to prevent access by unauthorized personnel.
2. Where electrochemical energy storage systems are contained in cabinets in occupied work centers, the cabinets shall be located within 10 feet (3048 mm) of the equipment that they support.
3. Cabinets shall include signage complying with Section 1206.11.8.

1206.11.11 Open rack installations. Where electrochemical energy storage systems are installed in a separate equipment room and only authorized personnel have access to the room, they shall be permitted to be installed on an open rack.

1206.11.12 Walk-in units. Walk-in energy storage system units shall only be entered for inspection, maintenance and repair of energy storage system units and ancillary equipment and shall not be occupied for other purposes.

1206.12 Electrochemical Energy Storage System Protection. Where required by Section 1206.14 through 1206.17, he protection of electrochemical energy storage systems shall be in accordance with Sections 1206.12.1 through 1206.12.8.

1206.12.1 Size and separation. Electrochemical energy storage systems shall be segregated into groups not exceeding 50 kWh (180 Mega joules). Each group shall be separated a minimum 3 feet (914 mm) from other groups and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10 of this code.

Exceptions:

1. Lead-acid and nickel-cadmium battery systems in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.
2. Larger capacities or smaller separation distances shall be permitted based on large scale fire testing complying with Section 1206.6.

1206.12.2 Maximum allowable quantities. Fire areas within rooms, areas and walk-in energy storage system units containing electrochemical energy storage systems shall not exceed the maximum allowable quantities in Table 1206.12.

Exceptions:

1. Where approved by the fire code official, rooms, areas and walk-in energy storage system units containing electrochemical energy storage systems that exceed the amounts in Table 1206.12 shall be permitted based on a hazard mitigation analysis in accordance with Section 1206.5 and large-scale fire testing complying with Section 1206.6.
2. Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.
3. Dedicated use buildings in compliance with Section 1206.14.1.

1206.12.2.1 Mixed electrochemical energy systems. Where rooms, areas and walk-in energy storage system units contain different types of electrochemical energy technologies, the total aggregate quantities of the systems shall be determined based on the sum of percentages of each technology type quantity divided by the maximum allowable quantity of each technology type. The sum of the percentages shall not exceed 100 percent of the maximum allowable quantity.

1206.12.3 Elevation. Electrochemical energy storage systems shall not be located in the following areas:

1. Where the floor is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, or
2. Where the floor is located below the lowest level of exit discharge.

Exceptions:

1. Lead-acid and Nickel-cadmium battery systems less than 50 VAC and 60 VDC installed in facilities under the exclusive control of communications utilities in accordance with NFPA 76.
2. Where approved by the fire code official, installations shall be permitted in underground vaults complying with NFPA 70, Article 450, Part III.
3. Where approved by the fire code official, installations shall be permitted on higher and lower floors, based on large scale fire testing complying with Section 1206.6 or on hazard mitigation analysis complying with Section 1206.5.

TABLE 1206.12 - MAXIMUM ALLOWABLE QUANTITIES OF ELECTROCHEMICAL ENERGY STORAGE SYSTEMS

TECHNOLOGY	MAXIMUM ALLOWABLE QUANTITIES [a]
STORAGE BATTERIES	
Lead-acid, all types	Unlimited
Nickel-cadmium (Ni-Cd)	Unlimited
Nickel metal hydride (Ni-MH)	Unlimited
Lithium-ion	600 kWh
Flow batteries [b]	600 kWh
Other battery technologies	200 kWh
CAPACITORS	
All types	20 kWh
OTHER ELECTROCHEMICAL ENERGY STORAGE SYSTEM	
All types	20 kWh

a. For electrochemical energy storage system units rated in Amp-Hours, kWh shall equal rated voltage times the Amp-hour rating divided by 1000
b. Shall include vanadium, zinc-bromine, polysulfide-bromide, and other flowing electrolyte type technologies

1206.12.4 Fire detection. An approved automatic smoke detection system or radiant energy– sensing fire detection system complying with Section 907 shall be installed in rooms, indoor areas, and walk-in energy storage system units containing electrochemical energy storage systems. An approved radiant energy–sensing fire detection system shall be installed to protect open parking garage and rooftop installations. Alarm signals from detection systems shall be monitored by an approved supervising station in accordance with NFPA 72.

1206.12.4.1 System status. Where required by the Authority Having Jurisdiction, visible annunciation shall be provided on cabinet exteriors or in other approved locations to indicate that potentially hazardous conditions associated with the energy storage system exist.

1206.12.5 Fire suppression systems. Rooms and areas within buildings and walk-in energy storage system units containing electrochemical energy storage systems shall be protected by an automatic fire suppression system designed and installed in accordance with one of the following:

1. An automatic sprinkler system designed and installed in accordance with Section 903.3.1.1 with a minimum density of 0.3 gpm/ft2 based on the fire area or on a 2,500 ft2 design area, whichever is smaller.
2. Where approved, based on large scale fire testing complying with Section 1206.6, an automatic sprinkler system designed and installed in accordance with Section 903.3.1.1 with a sprinkler hazard classification.
3. Where approved, based on large scale fire testing complying with Section 1206.6, the following alternate automatic fire extinguishing systems designed and installed in accordance with Section 904:
   - 3.1 NFPA 12, Standard on Carbon Dioxide Extinguishing Systems
   - 3.2 NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection
   - 3.3 NFPA 750, Standard on Water Mist Fire Protection Systems
   - 3.4 NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems
   - 3.5 NFPA 2010, Standard for Fixed Aerosol Fire Extinguishing Systems

Exception: Fire suppression systems for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that operate at less than 50 VAC and 60 VDC shall be provided where required by NFPA 76.

1206.12.5.1 Water reactive systems. Where an electrochemical energy storage system that utilizes water reactive materials is approved based on large-scale fire testing complying with Section 1206.6, it shall be protected by an approved alternative automatic fire extinguishing system in accordance with Section 904.

1206.12.6 Maximum enclosure size. Outdoor walk-in energy storage system units housing energy storage systems shall not exceed 4,028 cubic feet, not including bolt-on HVAC and related equipment, as approved. Outdoor walk-in energy storage system units exceeding these limitations shall be considered indoor installations and comply with the requirements in Section 1206.14.

1206.12.7 Vegetation control. Areas within 10 feet (3 m) on each side of outdoor energy storage system shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers shall be permitted, provided that they do not form a means of readily transmitting fire.

Exception: A reduced clearance to combustible vegetation shall be permitted based on large scale fire testing complying with Section 1206.6.

1206.12.8 Means of egress separation. Energy storage systems located outdoors and in open parking garages shall be separated from any means of egress to ensure safe egress under fire conditions by no less than 10 feet (3048 mm).

Exception: The fire code official may approve a reduced separation distance if large scale fire testing complying with Section 1206.6 is provided that shows that a fire involving the energy storage system will not adversely impact occupant egress.

1206.13 Electrochemical energy storage system technology specific protection. Electrochemical energy storage system installations shall comply with the requirements of this section in accordance with the applicable requirements of Table 1206.13.

TABLE 1206.13 - ELECTROCHEMICAL ENERGY STORAGE SYSTEM TECHNOLOGY SPECIFIC REQUIREMENTS

COMPLIANCE REQUIRED [b]	BATTERY TECHNOLOGY				OTHER ENERGY STORAGE SYSTEM AND BATTERY TECHNOLOGIES [b]	CAPACITOR ENERGY STORAGE SYSTEM [b]
	Leadacid	Ni-Cad and Ni-MH	Lithiumion	Flow		
1206.13.1 Exhaust ventilation	Yes	Yes	No	Yes	Yes	Yes
1206.13.2 Spill control and neutralization	Yes [c]	Yes [c]	No	Yes	Yes	Yes
1206.13.3 Explosion control	Yes [a]	Yes [a]	Yes	No	Yes	Yes
1206.13.4 Safety caps	Yes	Yes	No	No	Yes	Yes
1206.13.5 Thermal runaway	Yes [d]	Yes	Yes [e]	No	Yes [e]	Yes

a. Not required for lead-acid and nickel cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.
b. Protection shall be provided unless documentation acceptable to the fire code official is provided that provides justification why the protection is not necessary based on the technology used.
c. Applicable to vented (i.e. flooded) type nickel-cadmium and lead-acid batteries.
d. Not required for vented (i.e. flooded) type lead-acid batteries.
e. The thermal runaway protection is permitted to be part of an energy storage management system that has been evaluated with the battery as part of the evaluation to UL 1973.

1206.13.1 Exhaust ventilation. Where required by Table 1206.13 or elsewhere in this code, exhaust ventilation shall be provided for rooms, areas, and walk-in energy storage system units containing electrochemical energy storage systems in accordance with the International Mechanical Code and Section 1206.13.1.1 or 1206.13.1.2

1206.13.1.1 Ventilation based upon LFL. The exhaust ventilation system shall be designed to limit the maximum concentration of flammable gas to 25 percent of the lower flammable limit (LFL) of the total volume of the room, area, or walk-in energy storage system unit during the worst-case event of simultaneous charging of batteries at the maximum charge rate, in accordance with nationally recognized standards.

1206.13.1.2 Ventilation based upon exhaust rate. Mechanical exhaust ventilation shall be provided at a rate of not less than 1 ft3/min/ft2(5.1 L/sec/m2) of floor area of the room, area, or walk-in energy storage system unit. The ventilation shall be either continuous or shall be activated by a gas detection system in accordance with Section 1206.13.1.2.4.

1206.13.1.2.1 Standby power. Mechanical exhaust ventilation shall be provided with a minimum of two hours of standby power in accordance with Section 604.2.17.

1206.13.1.2.2 Installation instructions. Required mechanical exhaust ventilation systems shall be installed in accordance with the manufacturer's installation instructions and the International Mechanical Code.

1206.13.1.2.3 Supervision. Required mechanical exhaust ventilation systems shall be supervised by an approved supervising station in accordance with NFPA 72.

1206.13.1.2.4 Gas detection system. Where required by Section 1206.13.1.2, rooms, areas, and walk-in energy storage system units containing energy storage systems shall be protected by an approved continuous gas detection system that complies with Section 916 of this code and with the following:

1. The gas detection system shall be designed to activate the mechanical ventilation system when the level of flammable gas in the room, area, or walk-in energy storage system unit exceeds 25 percent of the LFL.
2. The mechanical ventilation system shall remain on until the flammable gas detected is less than 25 percent of the LFL.
3. The gas detection system shall be provided with a minimum of 2 hours of standby power in accordance with requirements for emergency and standby power systems for gas detection systems in Section 916 of this code.
4. Failure of the gas detection system shall annunciate a trouble signal at an approved supervising station in accordance with NFPA 72.

1206.13.2 Spill control and neutralization. Where required by Table 1206.13 or elsewhere in this code, areas containing free-flowing liquid electrolyte or hazardous materials shall be provided with spill control and neutralization in accordance with this section.

1206.13.2.1 Spill control. Spill control shall be provided to prevent the flow of liquid electrolyte or hazardous materials to adjoining rooms or areas. The method shall be capable of containing a spill from the single largest battery or vessel.

1206.13.2.2 Neutralization. An approved method to neutralize spilled liquid electrolyte shall be provided that is capable of neutralizing a spill from the largest battery or vessel to a pH between 5.0 and 9.0.

1206.13.2.3 Communication Utilities. The requirements of Section 1206.13.2 only apply where the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L) for lead acid and nickel-cadmium battery systems operating at less than 50 VAC and 60 VDC that are located at facilities under the exclusive control of communications utilities and those facilities comply with NFPA 76 in addition to applicable requirements of this code.

1206.13.3 Explosion control. Where required by Table 1206.13 or elsewhere in this code, explosion control complying with Section 911 shall be provided for rooms, areas or walk-in energy storage system units containing electrochemical energy storage system technologies.

Exceptions:

1. Where approved by the fire code official, explosion control may be waived based on large scale fire testing complying with Section 1206.6 which demonstrates that flammable gases are not liberated from electrochemical energy storage system cells or modules.
2. Where approved by the fire code official, explosion control may be waived based on documentation provided that demonstrates that the electrochemical energy storage system technology to be used does not have the potential to release flammable gas concentrations in excess of 25 percent of the LFL anywhere in the room, area, walk-in energy storage system unit or structure under thermal runaway or other fault conditions.

1206.13.4 Safety caps. Where required by Table 1206.13 or elsewhere in this code, vented batteries and other energy storage systems shall be provided with fame arresting safety caps.

1206.13.5 Thermal runaway. Where required by Table 1206.13 or elsewhere in this code, batteries and other energy storage systems shall be provided with a listed device or other approved method to prevent, detect and minimize the impact of thermal runaway.

1206.14 Indoor installations. Indoor energy storage system installations shall be in accordance with Sections 1206.14.1 through 1206.14.4.

1206.14.1 Dedicated use buildings. Dedicated use buildings in compliance with this section shall be classified as Group F-1 occupancies. For the purpose of Table 1206.14, dedicated use energy storage system buildings shall comply with all the following:

1. The building shall only be used for energy storage systems, electrical energy generation, and other electrical grid related operations.
2. Other occupancy types shall not be permitted in the building.
3. Occupants in the rooms and areas containing energy storage systems are limited to personnel that operate, maintain, service, test and repair the energy storage system and other energy systems.
4. Administrative and support personnel shall be permitted in areas within the buildings that do not contain energy storage systems provided:
    4.1 The areas do not occupy more than 10 percent of the building area of the story in which they are located.
    4.2 A means of egress is provided from the administrative and support use areas to the public way that does not require occupants to traverse through areas containing energy storage systems or other energy system equipment.

TABLE 1206.14 — INDOOR ENERGY STORAGE SYSTEM INSTALLATIONS

COMPLIANCE REQUIRED	DEDICATED USE BUILDINGS [a]	NON-DEDICATED USE BUILDINGS [b]
1206.11 General installation requirements	Yes	Yes
1206.12.1 Size and separation	Yes	Yes
1206.12.2 Maximum allowable quantities	No	Yes
1206.12.3 Elevation	Yes	Yes
1206.12.4 Smoke and automatic fire detection [e]	Yes [c]	Yes
1206.12.5 Fire suppression systems	Yes [d]	Yes
1206.14.3 Dwelling units and sleeping units	NA	Yes
1206.14.4 Fire-resistance rating	Yes	Yes
1206.13 Technology specific protection	Yes	Yes

NA = Not allowed.
a. See Section 1206.14.1.
b. See Section 1206.14.2.
c. Where approved by the fire code official, alarm signals are not required to be monitored by an approved supervising station in accordance with NFPA 72.
d. Where approved by the fire code official, fire suppression systems are permitted to be omitted in dedicated use buildings located more than 100 feet (30.5 M) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high piled stock and other exposure hazards.
e. Lead-acid and nickel-cadmium battery systems installed in Group U buildings and structures less than 1500 ft^2 (140 m^2) under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76 are not required to have an approved automatic smoke or fire detection system.

1206.14.2 Non-dedicated use buildings. For the purpose of Table 1206.14, non-dedicated use buildings include all buildings that contain energy storage systems and do not comply with the Section 1206.14.1 dedicated use building requirements.

1206.14.3 Dwelling units and sleeping units. Energy storage systems shall not be installed in sleeping units or in habitable spaces of dwelling units.

1206.14.4 Fire-resistance rating. Separation shall be provided by 2 hour rated fire barriers constructed in accordance with Section 707 of the International Building Code and 2 hour rated horizontal assemblies constructed in accordance with Section 711 of the International Building Code, as appropriate. Rooms and areas containing energy storage systems shall be protected on the system side as follows:

1. In dedicated use buildings, fire-resistance rated assemblies shall be provided between rooms and areas containing energy storage systems and areas in which administrative and support personnel are located.
2. In non-dedicated use buildings, fire-resistance rated assemblies shall be provided between rooms and areas containing energy storage systems and other areas in the building.

1206.15 Outdoor installations. Outdoor installations shall be in accordance with Sections 1206.15.1 through 1206.15.3. Exterior wall installations for individual energy storage system units not exceeding 20 kWh shall be in accordance with Sections 1206.15.3 and 1206.15.4.

1206.15.1 Remote outdoor installations. For the purpose of Table 1206.15, remote outdoor installations include energy storage systems located more than 100 feet (30.5 M) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high piled stock and other exposure hazards.

1206.15.2 Installations near exposures. For the purpose of Table 1206.15, installations near exposures include all outdoor energy storage system installations that do not comply with Section 1206.15.1 remote outdoor location requirements.

TABLE 1206.15 — OUTDOOR ENERGY STORAGE SYSTEM INSTALLATIONS[a]

COMPLIANCE REQUIRED	REMOTE INSTALLATIONS[a]	INSTALLATIONS NEAR EXPOSURES[b]
1206.11 General installation requirements	Yes	Yes
1206.12.1 Size and separation	No	Yes[c]
1206.12.2 Maximum allowable quantities	No	Yes
1206.12.4 Smoke and automatic fire detection	Yes	Yes
1206.12.5 Fire suppression systems	Yes[d]	Yes
1206.12.6 Maximum enclosure size	Yes	Yes
1206.12.7 Vegetation control	Yes	Yes
1206.12.8 Means of egress separation	Yes	Yes
1206.15.3 Clearance to exposures	Yes	Yes
1206.13 Technology specific protection	Yes	Yes

a. See Section 1206.15.1.
b. See Section 1206.15.2.
c. In outdoor walk-in energy storage system units, spacing is not required between energy storage system units and the walls of the enclosure.
d. Where approved by the fire code official, fire suppression systems are permitted to be omitted.

1206.15.3 Clearance to exposures. Energy storage systems located outdoors shall be separated by a minimum 10 feet (3048 mm) from the following exposures:

1. 1 Lot lines
2. Public ways
3. Buildings
4. Stored combustible materials
5. Hazardous materials
6. High-piled storage
7. Other exposure hazards

Exceptions:

1. Clearances from exposures are permitted to be reduced to 3 feet (914 mm) where a 1-hour firee standing fire barrier, suitable for exterior use, and extending 5 feet (1.5 m) above and 5 feet (1.5 m) horizontally beyond the physical boundary of the energy storage system installation is provided to protect the exposure.

2. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where noncombustible exterior walls without openings or combustible overhangs are provided on the wall adjacent to the energy storage system and the fire-resistance rating of the exterior wall is no less than 2 hours.

3. Clearances to buildings are permitted to be reduced to 3 feet (914.4 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the energy storage system, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large scale fire testing complying with Section 1206.6.

4. Where exterior wall installations in accordance with Section 1206.15.4 are provided, the clearance between the energy storage system and the wall in which it is mounted, is permitted to be reduced to zero.

1206.15.4 Exterior wall installations. Energy storage systems shall be permitted to be installed outdoors on exterior walls of buildings when all of the following conditions are met:

1. The maximum energy capacity of individual energy storage system units shall not exceed 20 kWh.
2. The energy storage system shall comply with applicable requirements in Section 1206.15.
3. The energy storage system shall be installed in accordance with the manufacturer's instructions and their listing.
4. Individual energy storage system units shall be separated from each other by at least 3 feet (914 mm).
5. The energy storage system shall be separated from doors, windows, operable openings into buildings, or HVAC inlets by at least 5 feet (1524 mm)

Exception: Smaller separation distances in items 4 and 5 shall be permitted based on large scale fire testing complying with Section 1206.6.

1206.16 Special installations. Rooftop and open parking garage energy storage system installations shall comply with Sections 1206.16.1 through 1206.16.6.

TABLE 1206.16 — SPECIAL ENERGY STORAGE SYSTEM INSTALLATIONS

COMPLIANCE REQUIRED	ROOFTOPS [a]	OPEN PARKING GARAGES [b]
1206.11 General installation requirements	Yes	Yes
1206.12.1 Size and separation	Yes	Yes
1206.12.2 Maximum allowable quantities	Yes	Yes
1206.12.4 Smoke and automatic fire detection	Yes	Yes
1206.12.6 Maximum enclosure size	Yes	Yes
1206.12.8 Means of egress separation	Yes	Yes
1206.16.3 Clearance to exposures	Yes	Yes
1206.16.4 Fire suppression systems	Yes	Yes
1206.16.5 Rooftop installations	Yes	No
1206.16.6 Open parking garage installations	No	Yes
1206.13 Technology specific protection	Yes	Yes

a. See Section 1206.16.1.
b. See Section 1206.16.2.

1206.16.1 Rooftop installations. For the purpose of Table 1206.16, rooftop energy storage system installations are those located on the roofs of buildings.

1206.16.2 Open parking garage installations. For the purpose of Table 1206.16, open parking garage energy storage system installations are those located in a structure or portion of a structure that complies with Section 406.5 of the International Building Code.

1206.16.3 Clearance to exposures. Energy storage systems located on rooftops and in open parking garages shall be separated by a minimum 10 feet (3048 mm) from the following exposures:

1. Buildings, except the building on which a rooftop energy storage system is mounted
2. Any portion of the building on which a rooftop system is mounted that is elevated above the rooftop on which the system is installed
3. Lot lines
4. Public ways
5. Stored combustible materials
6. Locations where motor vehicles can be parked
7. Hazardous materials
8. Other exposure hazards

Exceptions:

1. Clearances from exposures are permitted to be reduced to 3 feet (914 mm) where a 1-hour free standing fire barrier, suitable for exterior use, and extending 5 feet (1.5 m) above and extending 5 feet (1.5 m) beyond the physical boundary of the energy storage system installation is provided to protect the exposure.
2. Clearances are permitted to be reduced to 3 feet (914.4 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the energy storage system and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large scale fire testing complying with Section 1206.6.

1206.16.4 Fire suppression systems. Energy storage systems located in walk-in energy storage system units on rooftops or in walk-in energy storage system units in open parking garages shall be provided with automatic fire suppression systems within the energy storage system enclosure in accordance with Section 1206.12.5. Areas containing energy storage systems other than walk-in energy storage system units in open parking structures on levels not open above to the sky shall be provided with an automatic fire suppression system complying with Section 1206.12.5.

Exception: A fire suppression system is not required in open parking garages if large scale fire testing complying with Section 1206.6 is provided that shows that a fire will not impact the exposures in Section 1206.16.3.

1206.16.5 Rooftop. Energy storage systems and associated equipment that are located on rooftops and not enclosed by building construction shall comply with the following:

1. Stairway access to the roof for emergency response and fire department personnel shall be provided either through a bulkhead from the interior of the building or a stairway on the exterior of the building.
2. Service walkways at least 5 feet (1524 mm) in width shall be provided for service and emergency personnel from the point of access to the roof to the system.
3. Energy storage systems and associated equipment shall be located from the edge of the roof a distance equal to at least the height of the system, equipment, or component but not less than 5 feet (1.5 m).
4. The roofing materials under and within 5 feet (1524 mm) horizontally from an energy storage system or associated equipment shall be noncombustible or shall have a Class A rating when tested in accordance with ASTM E108 or UL 790.
5. A Class I standpipe outlet shall be installed at an approved location on the roof level of the building or in the stairway bulkhead at the top level.
6. The energy storage system shall be the minimum of 10 feet from the fire service access point on the roof top.
7. Energy storage systems shall not be located within 50 feet (15,240 mm) of air inlets for building HVAC systems.

   Exception: This distance shall be permitted to be reduced to 25 feet (7.620 mm) if the automatic fire alarm system monitoring the radiant-energy sensing detectors deenergizes the ventilation system connected to the air intakes upon detection of fire.

1206.16.6 Open parking garages. Energy storage systems and associated equipment that are located in open parking garages shall comply with all of the following:

1. Energy storage systems shall not be located within 50 feet (15,240 mm) of air inlets for building HVAC systems.

   Exception: This distance shall be permitted to be reduced to 25 feet (7.620 mm) if the automatic fire alarm system monitoring the radiant-energy sensing detectors deenergizes the ventilation system connected to the air intakes upon detection of fire.

2. Energy storage systems shall not be located within 25 feet (7620 mm) of exits where located on a covered level of the parking structure not directly open to the sky above.

3. An approved fence with a locked gate or other approved barrier shall be provided to keep the general public at least 5 feet (1024 mm) from the outer enclosure of the energy storage system.

1206.17 Mobile energy storage system equipment and operations. Mobile energy storage system equipment and operations shall comply with Sections 1206.17.1 through 1206.17.7.7

1206.17.1 Charging and storage. For the purpose of Section 1206.17, charging and storage covers the operation where mobile energy storage systems are charged and stored so they are ready for deployment to another site, and where they are charged and stored after a deployment.

1206.17.2 Deployment. For the purpose of Section 1206.17, deployment covers operations where mobile energy storage systems are located at a site other than the charging and storage site and are being used to provide power.

1206.17.3 Permits. Building permits and operating permits shall be provided as required by Section 108 of the 2017 Uniform Code Supplement.

1206.17.4 Construction documents. Construction documents complying with Section 1206.4 shall be provided with the building permit application for mobile energy storage system charging and storage locations.

1206.17.4.1 Deployment documents. The following information shall be provided with the operating permit applications for mobile energy storage system deployments:

1. Relevant information for the mobile energy storage system equipment and protection measures in the construction documents required by Section 1206.4.

2. Location(s) and layout diagram(s) of the area(s) in which the mobile energy storage system is to be deployed, including a scale diagram of all nearby exposures.

3. Location and content of signage, including no smoking signs and signage complying with Section 1206.11.8.

4. Description of fencing to be provided around the energy storage system, including locking methods.

5. Details on fire suppression, smoke and automatic fire detection, system monitoring, thermal management, exhaust ventilation, and explosion control, if provided.

6. The intended duration of the deployment operation, including anticipated connection and disconnection times and dates.

7. Location and description of local staging stops during transit to the deployment site. See Section 1206.17.7.5.

8. Description of the temporary wiring, including connection methods, conductor type and size, and circuit overcurrent protection to be provided.

9. Description of how fire suppression system connections to water supplies or extinguishing agents are to be provided.

10. Contact information for personnel who are responsible for maintaining and servicing the equipment and responding to emergencies as required by Section 1206.7.1.

1206.17.5 Approved locations. Locations where mobile energy storage systems are charged, stored and deployed shall be restricted to the locations established on the building permits and operating permits.

1206.17.5.1 Local staging. Mobile energy storage systems in transit from the charging and storage location to the deployment location and back shall not be parked within 100 feet (30,480 mm) of an occupied building for more than one hour during transit, unless specifically permitted by Section 1206.17.3.

1206.17.6 Charging and storage. Installations where mobile energy storage systems are charged and stored shall be treated as permanent indoor or outdoor energy storage system installations, and shall comply with the following sections, as applicable:

1. Indoor charging and storage shall comply with Section 1206.14.
2. Outdoor charging and storage shall comply with Section 1206.15.
3. Charging and storage on rooftops and in open parking garages shall comply with Section 1206.16.

Exceptions:

1. Electrical connections shall be permitted to be made using temporary wiring complying with the manufacturer's instructions, the UL 9540 listing, and NFPA 70.
2. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.

1206.17.7 Deployed mobile energy storage system requirements. Deployed mobile energy storage system equipment and operations shall comply with this section and Table 1206.17.

1206.17.1 Duration. The duration of a mobile energy storage system deployment shall not exceed 30 days.

Exceptions:

1. Mobile energy storage system deployments that provide power for durations longer than 30 days shall comply with Section 1206.17.6.
2. Mobile energy storage system deployments shall not exceed 180 days unless additional operating permits are obtained.

1206.17.7.2 Restricted locations. Deployed mobile energy storage system operations shall not be located indoors, in covered parking garages, on rooftops, below grade, or under building overhangs.

1206.17.7.3 Clearance to exposures. Deployed mobile energy storage systems shall be separated by a minimum 50 feet (15.3 M) from public seating areas and from tents, canopies and membrane structures with an occupant load of 30 or more. Deployed mobile energy storage systems shall be separated by a minimum 10 feet (3048 mm) from the following exposures:

1. Public ways
2. Buildings
3. Stored combustible materials
4. Hazardous materials
5. High-piled stock
6. Other exposure hazards

1206.17.7.4 Electrical connections. Electrical connections shall be made in accordance with the manufacturer's instructions and the UL 9540 listing. Temporary wiring for electrical power connections shall comply with NFPA 70. Fixed electrical wiring shall not be provided.

1206.17.7.5 Fencing. An approved fence with a locked gate or other approved barrier shall be provided to keep the general public at least 5 feet (1024 mm) from the outer enclosure of a deployed mobile energy storage system.

1206.17.7.6 Smoking. Smoking shall be prohibited within 10 feet (3048 mm) of mobile energy storage systems. Signs shall be posted in accordance with Section 310.

TABLE 1206.17 — MOBILE ENERGY STORAGE SYSTEMS

COMPLIANCE REQUIRED	DEPLOYMENT [a]
1206.11 General installation requirements	Yes [b]
1206.12.1 Size and separation	Yes [c]
1206.12.2 Maximum allowable quantities	Yes
1206.12.4 Smoke and automatic fire detection	Yes [e]
1206.12.5 Fire suppression systems	Yes [d]
1206.12.6 Maximum enclosure size	Yes
1206.12.7 Vegetation control	Yes
1206.12.8 Means of egress separation	Yes
1206.13 Technology specific protection	Yes

a. See Section 1206.17.2.
b. Mobile operations on wheeled vehicle or trailers shall not be required to comply with the seismic and structural load requirements of Section 1206.11.4.
c. In walk-in energy storage system units, spacing is not required between energy storage system units and the walls of the enclosure.
d. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.
e. Alarm signals are not required to be transmitted to an approved location for mobile energy storage systems deployed 30 days or less.

1206.18 Energy storage systems in Group R-3, and R-4 Occupancies. Energy storage systems in Group R-3 and R-4 occupancies shall be installed and maintained in accordance with Sections 1206.18.1 through 1206.18.9. The temporary use of an owner or occupant's electric powered vehicle as an energy storage system shall be in accordance with Section 1206.18.11. Energy storage system installations exceeding the permitted aggregate ratings in Section 1206.18.4 shall be installed in accordance with Section 1206.2 through 1206.17.7.7.

1206.18.1 Equipment listings. Energy storage systems listed and labeled solely for utility or commercial use shall not be used for residential applications.

Exceptions:

1. Where approved by the fire code official, repurposed unlisted battery systems from electric vehicles are allowed to be installed outdoors or in detached dedicated cabinets located not less than 5 feet (1524 mm) from exterior walls, property lines and public ways.
2. Energy storage systems less than 1 kWh (3.6 megajoules).

1206.18.2 Installation. Energy storage systems shall be installed in accordance with the manufacturer's instructions and their listing.

1206.18.2.1 Spacing. Individual units shall be separated from each other by at least 3 feet of spacing unless smaller separation distances are documented to be adequate based on large scale fire testing complying with Section 1206.6.

1206.18.3 Location. Energy storage systems shall only be installed in the following locations:

1. Detached garages and detached accessory structures.
2. Attached garages separated from the dwelling unit living space and sleeping units in accordance with Section 406.3.4 of the International Building Code.
3. Outdoors on exterior walls located a minimum 3 ft. from doors and windows.
4. Utility closets and storage or utility spaces within dwelling units and sleeping units

1206.18.4 Energy ratings. Individual energy storage system units shall have a maximum rating of 20 kWh. The aggregate rating shall not exceed:

1. 40 kWh within utility closets and storage or utility spaces
2. 80 kWh in attached or detached garages and detached accessory structures
3. 80 kWh on exterior walls
4. 80 kWh outdoors on the ground

1206.18.5 Electrical installation. Energy storage systems shall be installed in accordance with NFPA 70. Inverters shall be listed and labeled in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters listed for utility interaction.

1206.18.6 Fire detection. Rooms and areas within dwellings units, sleeping units and attached garages in which energy storage systems are installed shall be protected by smoke alarms in accordance with Section 907. A heat detector or heat alarm listed and interconnected to the smoke alarms shall be installed in locations within dwelling units, sleeping units and attached garages where smoke alarms cannot be installed based on their listing.

1206.18.7 Fire-resistance rating. Rooms and areas containing energy storage systems shall be protected on the system side by 2-hour rated fire barriers constructed in accordance with Section 707 of the Building Code of New York State and 2 hour rated horizontal assemblies constructed in accordance with Section 711 of the Building Code of New York State, as applicable.

1206.18.8 Protection from impact. Energy storage systems installed in a location subject to vehicle damage shall be protected by approved barriers.

1206.18.9 Ventilation. Indoor installations of energy storage systems that include batteries that produce hydrogen or other flammable gases during charging shall be provided with exhaust ventilation in accordance with Section 1206.13.1.

1206.18.10 Toxic and highly toxic gas. Energy storage systems that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within Group R-3 and R-4 occupancies.

1206.18.11 Electric vehicle use. The temporary use of an owner or occupant's electric powered vehicle to power a dwelling unit or sleeping unit while parked in an attached or detached garage or outside, shall comply with the vehicle manufacturer's instructions and NFPA 70. The batteries on electric vehicles shall not contribute to the aggregate energy limitations in Section 1206.18.4.

3.4 2020 FIRE CODE OF THE STATE OF NEW YORK Section 907.2.22 (Fire Alarm and Detection Systems)

907.2.22 Battery Rooms. An automatic smoke detection system shall be installed in areas containing energy storage systems as required in Section 1206.

907.2.23 Capacitor Energy Storage System. An automatic smoke detection system shall be installed in areas containing capacitor energy storage systems as required in Section 1206.

3.5 2020 FIRE CODE OF THE STATE OF NEW YORK Section 916 (Gas Detection Systems)

SECTION 916 GAS DETECTION SYSTEMS

916.1 Gas detection systems. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.

916.2 Permits. Permits shall be provided in accordance with Section 105.2.

916.2.1 Construction documents. Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code shall be provided with the application for permit.

916.3 Equipment. Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.

916.4 Power connections. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.

916.5 Emergency and standby power. Standby or emergency power shall be provided, or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.

916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.

916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:

1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.
2. For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes, in accordance with Section 6004.2.2.7.
3. Where a less frequent or delayed sampling interval is approved. 916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:
    1. For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL).
    2. For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.

Upon activation of a gas detection alarm, alarm signals or other required responses shall be as specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.

916.9 Signage. Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.

916.10 Fire alarm system connections. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.

916.11 Inspection, testing and sensor calibration. Inspection and testing of gas detection systems shall be conducted not less than annually. Sensor calibration shall be confirmed at the time of sensor installation and calibration shall be performed at the frequency specified by the sensor manufacturer.

4. The 2020 Existing Building Code of New York State

4.1 2020 Existing Building Code of New York State Section 202 (Definitions) This is not an exhaustive list of definitions that may apply to energy storage systems

ENERGY STORAGE SYSTEM. One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include a stand-alone 12- volt car battery or an electric motor vehicle.

4.2 2020 Existing Building Code of New York State Section 306 (Energy Storage Systems)

SECTION 306 ENERGY STORAGE SYSTEMS

306.1 Energy storage systems. The installation, operation, maintenance, repair, and retrofitting of energy storage systems shall be in accordance with Section 1206 of the Fire Code of New York State.

New York State Energy Research and Development Authority

17 Columbia Circle
Albany, NY 12203-6399

toll free: 866-NYSERDA
local: 518-862-1090
fax: 518-862-1091

info@nyserda.ny.gov
nyserda.ny.gov

ES-guide-bk-1-v11 8/21