



Local Zoning and Permitting for Battery Energy Storage Systems

October 26, 2023

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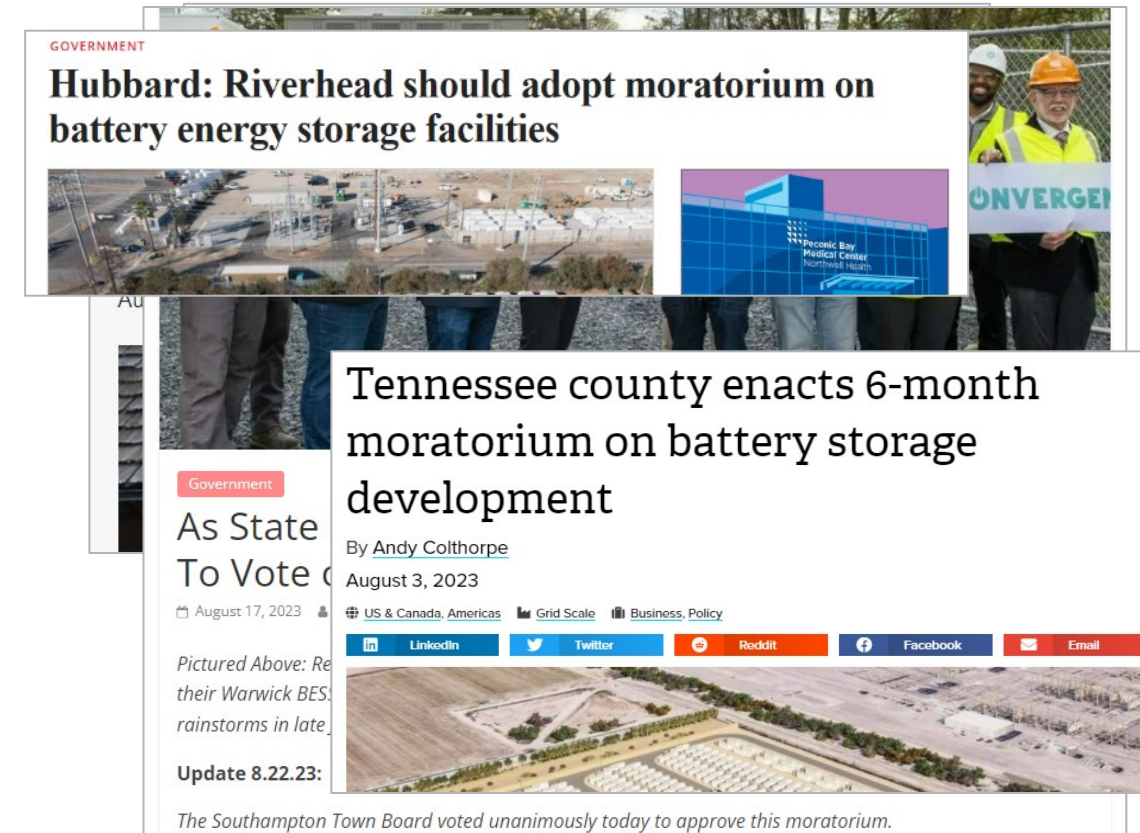
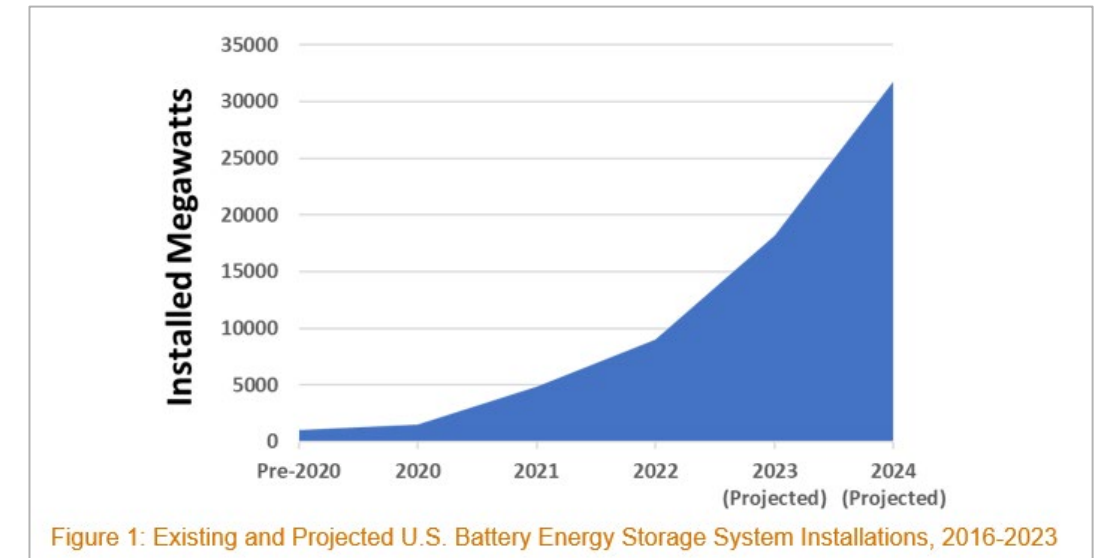


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Why do Local Zoning Codes Matter for BESS Deployment?

- Policy and market incentives are driving **rapid growth** in BESS deployment.
- The nature of BESS means systems may be built near other existing land uses.
- Local planning and zoning officials may **lack the familiarity** with BESS technologies needed to **make reasonable zoning decisions** that balance safety, community impacts, and other goals.
- **Uncertainty at the local zoning level** has led developers to withdraw projects in some areas and has spurred **moratoriums or bans** on energy storage projects in others.
- Local officials may benefit from seeing how other jurisdictions have addressed the unique question of energy storage siting.



GOVERNMENT
Hubbard: Riverhead should adopt moratorium on battery energy storage facilities

Tennessee county enacts 6-month moratorium on battery storage development
By Andy Colthorpe
August 3, 2023
US & Canada, Americas | Grid Scale | Business, Policy

As State To Vote
August 17, 2023

Update 8.22.23:
The Southampton Town Board voted unanimously today to approve this moratorium.

Methodology

- **Two goals:**

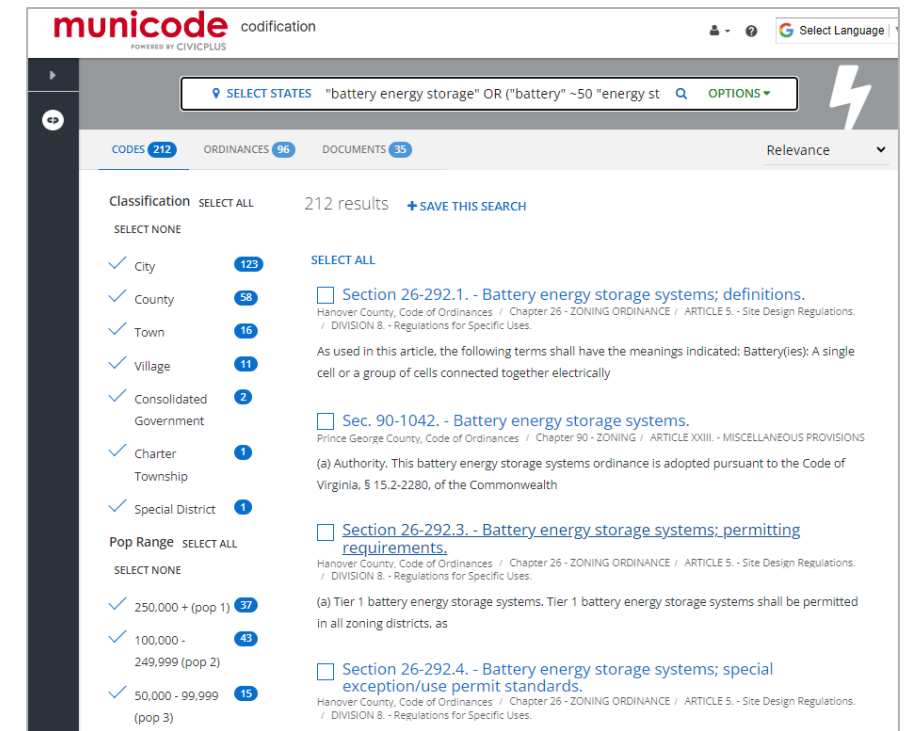
- 1) Understand prevalence and presence of BESS in zoning codes
- 2) Conduct a deeper dive into what those codes include in order to develop resources

- **Survey approach:**

- EIA Form 860M used to identify 97 cities and counties with ≥ 5 MW BESS projects
 - ✓ 28 references to batteries or energy storage from these areas
- Keyword searches (“battery energy storage,” “battery storage,” “BESS”) were conducted of the Municode database.
 - ✓ While Municode is the largest collection of U.S. codes and ordinances, it only contains a small fraction (3,900) of U.S. county and municipal codes.
- 3 additional ordinances selected via stakeholder engagement
- Supplementary keyword search conducted via Google

- **Overall:**

- 59 codes of ordinances identified that mention BESS
- 12 codes of ordinances reviewed in depth as representative samples



Types of Ordinances Regulating BESS



Ordinances written to regulate solar installations that also include storage.

These ordinances generally only regulate storage systems when co-located with solar generation, and generally apply all solar PV regulations to storage components.

“All mechanical equipment for the solar energy system including any solar panels, invertors, buildings, *structures for batteries or storage cells*, shall be completely enclosed by a minimum 12 foot high fence...” (Township of Plumsted, NJ Code § 15-5.21)



Local adoption of **national or international** fire or building codes that include standards for BESS.

Counties and municipalities have adopted fire and/or building codes that include explicit safety, labeling, and siting guidance for energy storage, such as the 2018 IFC, 2020 NEC, or NFPA 855. (Local governments’ ability to adopt fire codes varies by state.)

“NFPA 855, Standard for the Installation of Stationary Energy Storage Systems, 2020 edition...are hereby adopted and incorporated into this ordinance as fully as if set out at length herein.” (Town of Yarmouth, Maine Code Chapter 319: Fire Prevention and Life Safety Ordinance, 2021)



Ordinances that incent or encourage energy storage development.

Some municipal ordinances protect the right to install energy storage systems or use local building codes to add incentives for storage.

“[all residents and businesses] are permitted to construct and operate stand-alone electric energy systems... [including] fuel cell systems [and] battery systems.” (City of Lancaster, California, Ordinance No. 1067)



Ordinances that outline detailed zoning and permitting requirements for BESS.

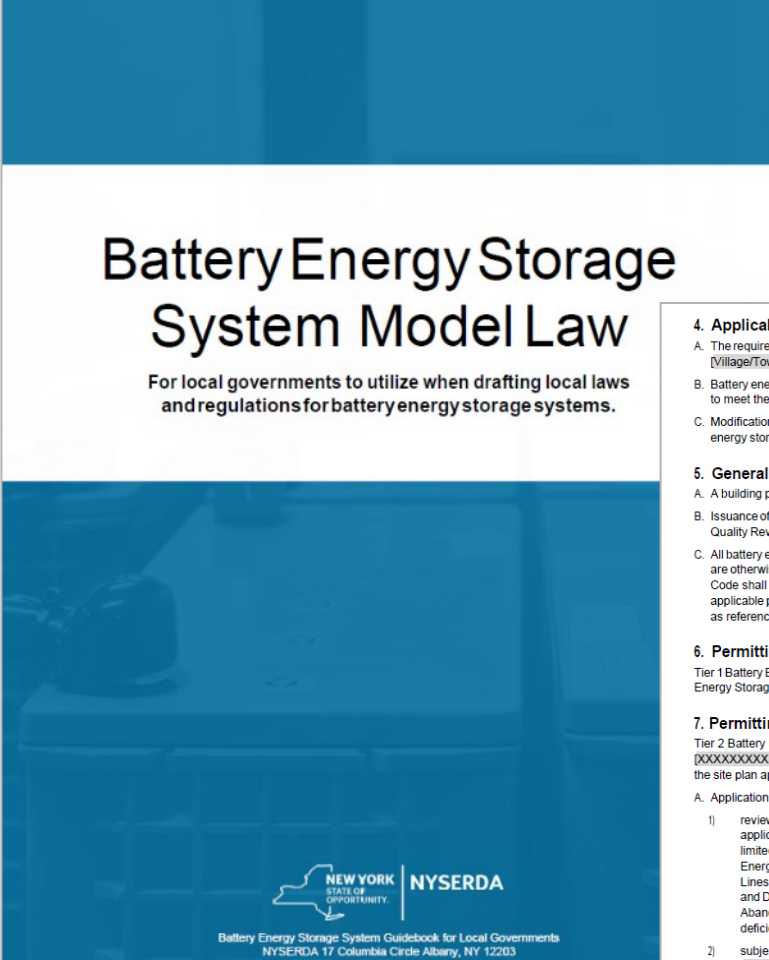
These regulations include labeling standards, permitting requirements, setbacks, height standards, and visibility requirements. These ordinances may contain elements adapted from standard fire or building codes, and may be adopted in addition to these codes to add additional guidance.

New York's BESS Model Law

- **New York-specific model law** published by NYSERDA in 2021 offers **template for local governments** to adopt BESS regulations into their zoning codes
- Exact adoption rates not tracked by NYSERDA, but language present in several New York cities and towns
- **The resource is used outside of New York:** definitions, tiers, and other language adapted in Massachusetts, Virginia, Iowa, etc.
- Resources also include model permits, electrical checklist, and fire code compliance guidelines

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

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 [XXXXXXXXXXXXXXXX, XXXXXXXXXXXX, XXXXXXXXXXXX] 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.

<https://www.nysERDA.ny.gov/Energy-Storage-Guidebook>

Common Elements of BESS Ordinances

- **Definitions and general requirements:**
 - Definitions of BESS; may include other key terms
 - Size tiers or cutoffs
 - Permitted zones for BESS
- **Visual, noise, and aesthetic requirements:**
 - Property line setbacks
 - Fencing and visual screening
 - Lighting
 - Noise
- **Safety and planning requirements:**
 - Decommissioning plans
 - Decommissioning funds
 - Site plan requirements
 - Other safety requirements



Definitions

Definitions of BESS are common and helpful in zoning ordinances. Definitions are frequently copied or adapted from standard definitions, such as from national labs or NFPA or IFC standards. *Examples:*

- “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.” (*New York model law, adapted from NFPA*)
- “An energy storage system that can store and deploy generated energy, typically a group of batteries that charge (i.e., collect energy) and store electrical energy from the grid or energy generation facility and then discharge that energy at a later time to provide electricity or other grid services when needed. BESS generally consist of batteries, battery storage containers, on-site switchyard, inverters, associated interconnection transmission line, and supervisory control and data acquisition system.” (*Whatcom County Ordinance No. 2022-048, adapted from NREL*)
- Other terms may be included, e.g. “battery,” “cell,” “commissioning,” “fire code,” “dedicated-use building,” “NFPA,” etc.

Size Tiers or Cutoffs

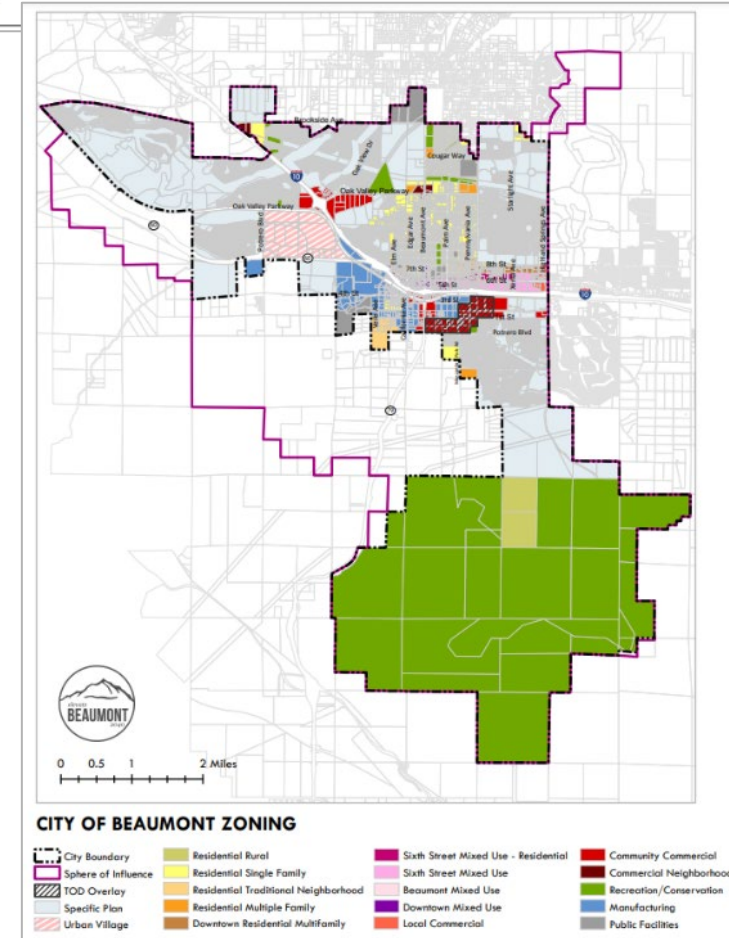
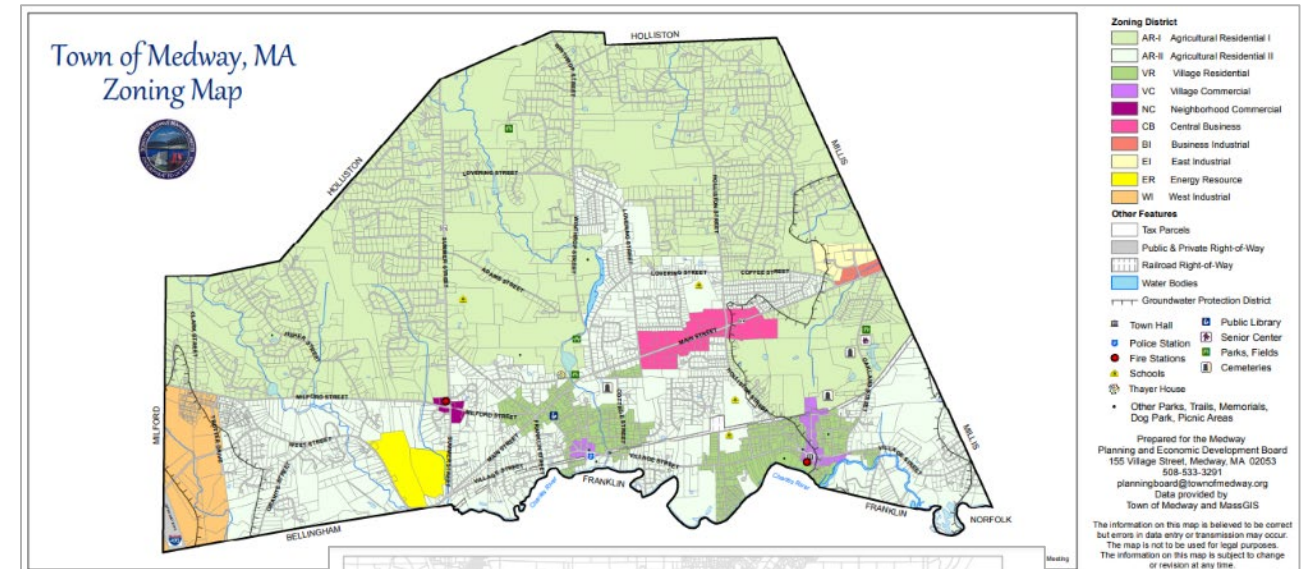
- Many ordinances set size “tiers” or cutoffs, where certain regulations or zoning restrictions apply only to larger systems.
- New York model law defines “Tier 1” systems as ≤ 600 kWh, and “Tier 2” systems as > 600 kWh (or any system using multiple battery technologies)
 - 600 kWh cutoff and “Tier 1” / “Tier 2” definitions common, even outside of New York
- **Other examples:**
 - Islip, NY – adapted NY model law but created 3 tiers instead of 2
 - Medway, MA – Tier 1 is ≤ 1 MWh and > 10 -70 kWh depending on technology
 - Whatcom County, WA – additional regulations apply to systems > 5 MW
- **Tier 2 or large systems may be:**
 - Permitted in fewer zones than smaller systems
 - Subject to additional permitting or review requirements
 - Subject to visual screening or setback requirements
- *With no tiers or cutoffs, regulations apply to systems of all sizes.*



Pacific Northwest
NATIONAL LABORATORY

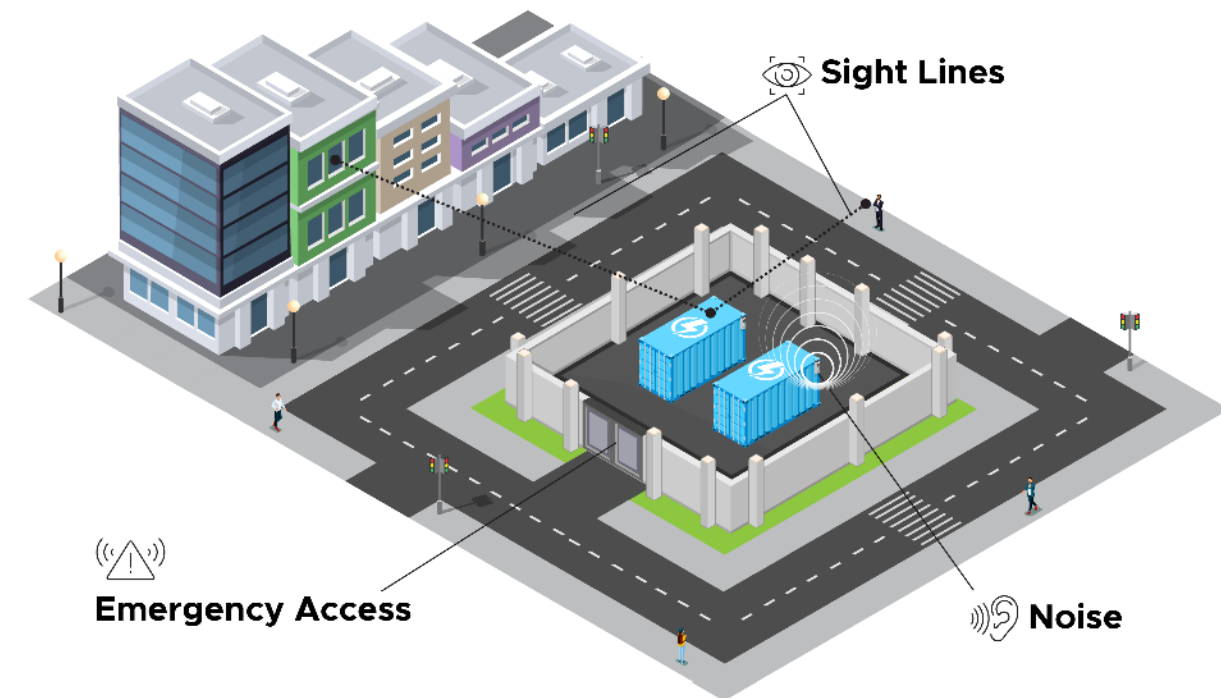
Permitted Zones

- Zones where BESS are permitted vary widely by location, as well as by system size.
- Smaller or “Tier 1” systems may be permitted in all areas, including residential – e.g. Johnson County, Iowa permits systems ≤ 300 kWh in all zones
- Larger or “Tier 2” systems are generally more restricted, often to industrial, manufacturing, or energy/utility zones – e.g. BESS in Medway, MA are permitted only in a designated “energy resource zone”
- Areas with no tiering or cutoff language apply zoning restrictions to systems of all sizes – e.g. Beaumont, CA allows BESS of any size in manufacturing zones only
- Some (or all) BESS may require a special or conditional use permit to be allowed in some (or all) zones – e.g. Virginia Beach, Virginia: BESS of any size permitted only in industrial zones, and must receive conditional use permit



Visual, Noise, and Aesthetic Requirements

- **Property line setbacks:** Generally range from 25-100 feet from property lines, buildings, roads. Vary by location, system size, and zone.
- **Fencing and visual screening:** Fencing of at least 6-8 feet commonly required. Complete visual screening from neighboring properties using fencing or vegetation is also a common requirement, especially in residential and commercial zones.
- **Noise restrictions:** Some areas cap hourly average noise levels, with maximum generally 50-60 dBA over 1-hour average (approximate volume of normal conversation or running air conditioner)
- **Lighting restrictions:** Lighting commonly required to be shielded and downcast from view of neighboring properties.



Safety and Planning Requirements

These components are described in standards (e.g. NFPA 855). Zoning ordinances that include them may reference adopted standards, copy language, or adapt it.

- **Decommissioning plans:** Almost all codes require a decommissioning plan that outlines steps to be taken when project ceases operation in order to be permitted.
- **Decommissioning funds:** Some areas require developers to maintain a decommissioning fund as part of plan.
- **Site plan requirements:** Standard requirements include specification sheets, emergency plans, one- or three-line diagrams. Some areas also require environmental or cultural resource impact remediation plans.
- **Other requirements:** Additional safety requirements may include vegetation clearing, water supply, and access for fire and emergency services.

Unique and Restrictive BESS Ordinances

- **Resource impact mitigation requirements:** Medway, MA and Amelia County, VA require impact studies and mitigation plans for any disruptions to natural, cultural, or historic resources as part of site plans.
- **Notably large property line setbacks:** Amelia County, VA, requires 5,000-foot setbacks for all BESS. These may be reduced to no less than 1,000 feet via special permit.
- **Stringent enclosure wall or fencing requirements:** Some ordinances require very specific characteristics for fences or visual screening. For example, Beaumont, CA requires fences to be made from concrete or decorative masonry and to be treated with graffiti-resistant coating.

Discussion, Takeaways, and Next Steps

- Local zoning and siting regulations for BESS are an **emerging landscape**, and regulations are not yet common.
- **Origins and drivers vary:** many codes of ordinances are adopted in response to proposed projects, sometimes after a moratorium. Others may be responses to state policy or proactive anticipation of future development.
- Adoption of language from New York’s BESS model law outside of New York is notable and indicates a wider **appetite for templates and resources, which are being developed.**
- The level of restrictiveness in these local codes **varies widely** (e.g. which zones systems are permitted in, what size systems regulations apply to, setbacks and screening requirements, etc.)
- Regulators’ and community members’ safety concerns, especially those who may be less familiar with BESS, drive bans and moratoria and may also lead to more restrictive ordinance language. **Safety concerns are meaningful and should be addressed through ongoing stakeholder engagement.**



TECHNICAL SUPPORT FOR APS RELATED TO MCMICKEN THERMAL RUNAWAY AND EXPLOSION

McMicken Battery Energy Storage System Event Technical Analysis and Recommendations

Arizona Public Service

Document No.: 10209302-HOU-R-01

Issue: A, Status: Final

Date: July 18, 2020



BESS fires are not common, but incidents that do occur may raise alarm for local regulators and their constituents.



Thank you!
Questions?

