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CleanEnergy States Alliance

Batteries 101, Part 3:

Safety and Environmental Considerations for Battery Energy Storage in Massachusetts

July 11, 2024

Webinar Logistics

We are using the newly updated version of GoToWebinar!
Thank you for your patience as we get used to this new platform. We encourage you to provide feedback in the post-webinar survey or via email.

All attendees are in **“listen only” mode** – your webcam and microphone are disabled.

Submit questions and comments via the Questions panel 

Speaker bios available in the “Materials” section 

Automated **captions** are available 

This webinar is being recorded. We will email you a webinar recording within 48 hours.
This webinar will be posted on CESA’s website at **www.cesa.org/webinars**

Affordable, reliable, clean energy for all.

Climate Resilience and Community Health

Distributed Energy Access and Equity

Energy Storage and Flexible Demand

Fossil Fuel Replacement

CleanEnergyGroup

Resilient Power Project

Building the foundation for energy resilient communities.

USDN urban sustainability directors network

footprintproject.org™

AMERICAN MICROGRID SOLUTIONS

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Rooftop solar installation in Dorchester, MA. Credit: Resonant Energy

www.resilient-power.org

Celebrating 20 Years of State Leadership

Clean Energy States Alliance

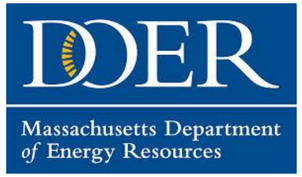
The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy.

CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

www.cesa.org

CleanEnergy States Alliance

www.cesa.org



Energy Storage Technology Advancement Partnership (ESTAP)

Conducted under contract with Sandia National Laboratories, with funding from US DOE Office of Electricity.

- Facilitate public/private partnerships to support joint federal/state energy storage demonstration project deployment
- Support state energy storage efforts with technical, policy and program assistance
- Disseminate information to stakeholders through webinars, reports, case studies and conference presentations

www.cesa.org/ESTAP

Energy Storage Policy for States

Providing support to CESA members engaged in developing energy storage policy, programs and regulation.

Activities include knowledge sharing, direct policy support, and independent analysis.

The project leverages other CESA and CEG efforts, including ESTAP and CEG's Resilient Power Project.

www.cesa.org/projects/energy-storage-policy-for-states/

Clean Energy States Alliance

Webinar Speakers

Batteries 101, Part 3: Safety and Environmental Considerations for Battery Energy Storage in Massachusetts

Todd Olinsky-Paul

Senior Project Director,
Clean Energy States Alliance
Clean Energy Group

Kimberly Roth

Wetlands Analyst,
Massachusetts Department of Environmental Protections

Ken Willette

Executive Director,
North American Fire Training Directors (NAFTD)

Brian Engle

Director, Business Development,
Amphenol; President NAATBatt

CleanEnergy States Alliance

CleanEnergy Group

MassDEP

NORTH AMERICAN FIRE TRAINING DIRECTORS EST. 1981

Amphenol

MassDEP

Advancing renewable energy & energy efficiency in the Commonwealth

CLEANENERGYRESULTS

https://www.mass.gov/clean-energy-results-program

NAATBatt INTERNATIONAL

Energy Storage 101 Webinar Series Outline

Webinar 1: Introduction to Energy Storage (May 15, 2024)

- What is energy storage? What are lithium-ion batteries?
  - Utility scale
  - Residential/commercial scale
- Why is storage important?
  - Role of battery storage in Massachusetts decarbonization plan
  - Resilience
  - Other applications
- Economic landscape for storage - State and federal incentives, market opportunities

Webinar 2: Energy Storage Benefits and Applications (May 30, 2024)

- Fossil fuel peaker plant replacement
- Energy and environmental equity
- Grid benefits
- Resilience

Energy Storage 101 Webinar Series Outline (continued)

Webinar 3: Considerations for Battery Siting (July 11, 2024)

- Fire safety
- Environmental considerations
- Security

Webinar 4: Municipal Considerations for Battery Installations

- Siting
- Permitting
- Planning
- Zoning
- Municipal best practices

NOTE: This webinar series is for informational purposes only.
We will answer as many questions as possible, prioritizing questions from Massachusetts residents or about Massachusetts-specific topics.

Upcoming Webinars

Energy Storage for Greenhouse Gas Emissions Reduction (7/30)

Department of Energy, Equitable Solar Communities of Practice Community Convening: Resilience, Storage, and Grid Benefits (8/5)

California's Flexible Demand Appliance Standards for Pool Controls Program – Employing Load Shifting to Lower Peak Demand and Avoid Emissions (8/15)

Read more and register at www.cleanegroup.org/webinars

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CleanEnergy States Alliance

www.cleanegroup.org | www.cesa.org | info@cleanegroup.org

Batteries 101- BESS Battery Market Safety Regulations, Standards, and Practice

Brian Engle

Director, Business Development

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SAE Battery Standards Steering Committee

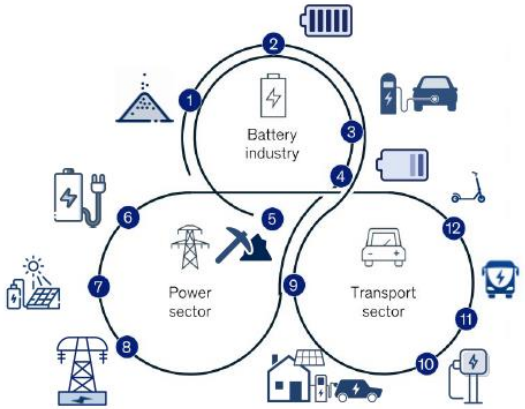
Chair: SAE J2990 First/Second Responders Task Force

President, NAATBATT

Global demand driving Energy Storage market

It's an entire ecosystem

- *Solar/wind farms*
- *Grid Energy Storage*
- *Extracting & Refining raw materials*
- *Battery cell manufacturing*
- *Battery Pack Assembly*
- *Battery Transport*
- *e-Vehicles & e-Machines*
- *Server Farms*
- *Power inverters*
- *Local Energy Storage*
- *Charging – (fast, bidirectional)*
- *Service*
- *Re-use/second life*
- *Decommissioning / Discharging*
- *Recycling*

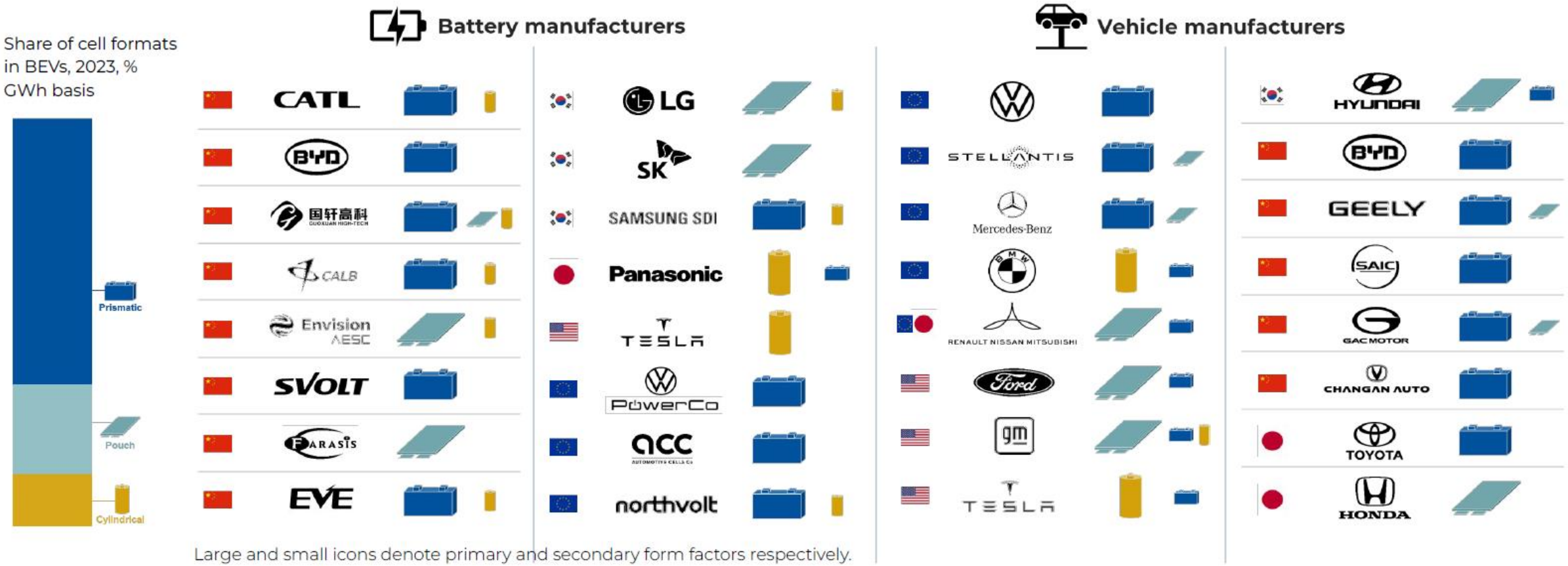


1. Active materials
2. Battery cell and pack
3. Battery application
4. Battery repair and refurbish
5. Mining and Battery recycling
6. Battery 2nd life
7. Decentralized battery energy storage
8. Centralized battery energy storage
9. Vehicle to grid
10. Smart charging
11. Urban EV
12. Shared E-mobility

Electrons are much easier to collect, transport and store than petroleum products

3 basic cell designs…

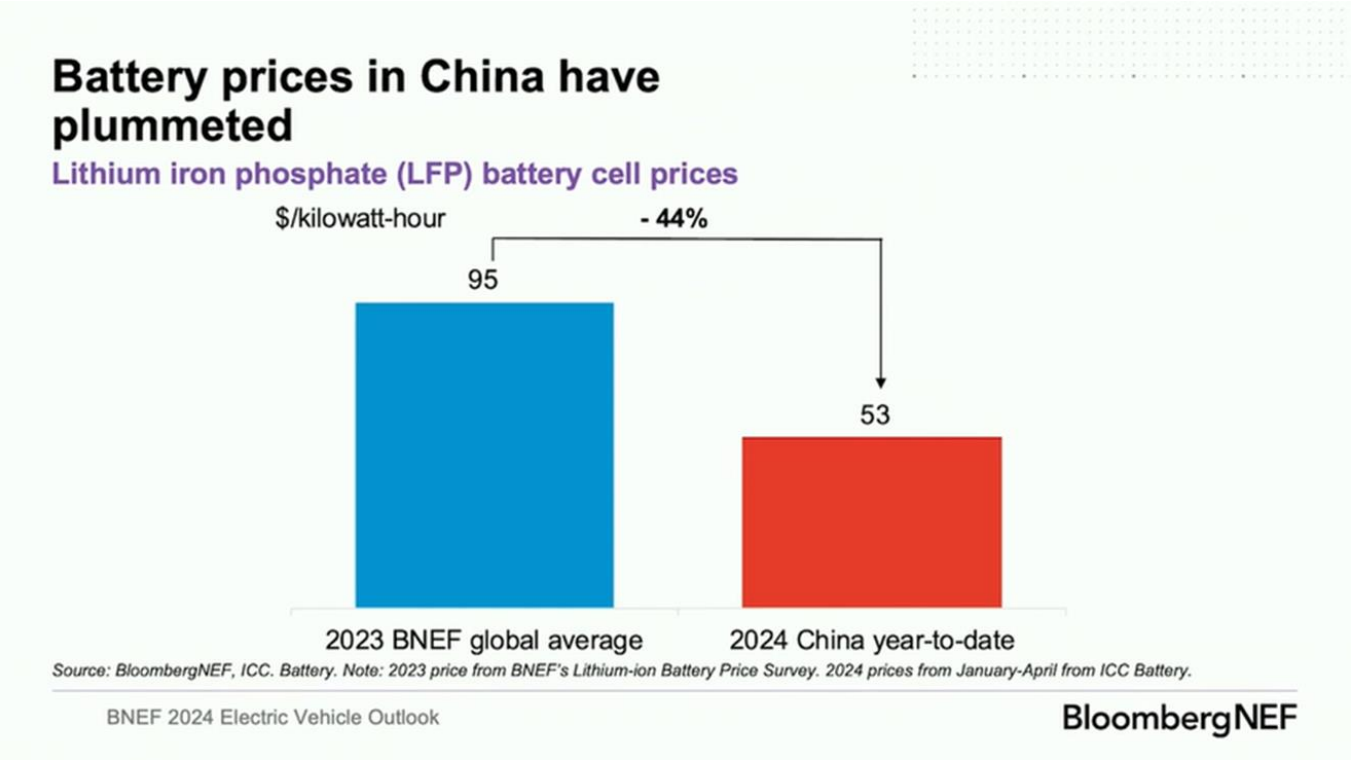
Form Factors: mass market trending towards large-format cells, especially prismatic



Larger format, prismatic cells trending, along with increasing energy density

Volta Foundation, 2023

LFP cell costs reduced by ~50% in less than 1 year



Over the last year, the price for lithium iron phosphate, or LFP, battery cells in China has dropped 51% to an average of ***$53 per*** kilowatt-hour. The average global price of these batteries last year was $95/kWh.

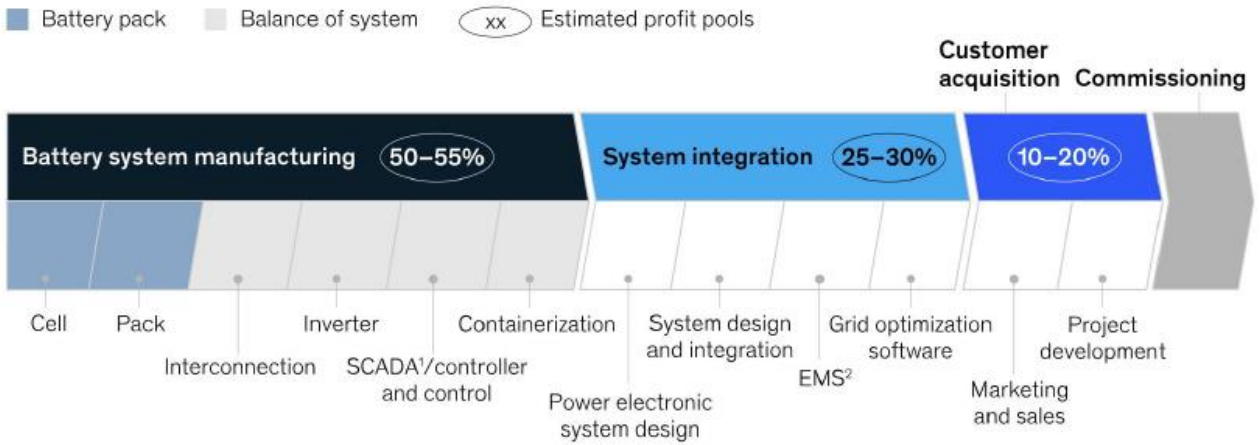
Typical Cathode chemistries include NMC, NCA, and LFP
LFP dominating chemistry, overcapacity driving historically low prices

Battery Energy Storage System (BESS) market growth

BESS is a nascent yet rapidly growing market

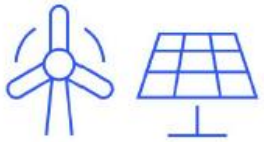
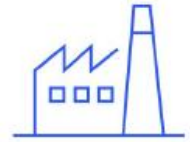
Investment into battery energy stationary storage (BESS) has tripled to $5 billion in 2022 compared to 2021 with the global BESS market expected to reach ~**$120-$150 billion by 2030.** However, there is risk and uncertainty around financiers, integrators, and battery chemistries. From cell to commission, the ecosystem is complex, with 50%+ of the BESS value chain profit pool dominated by battery system manufacturing.

Value chain breakdown of battery energy storage systems (hardware only)



[1]Supervisory control and data acquisition.
[2]Energy management system.

Battery energy storage systems are used across the entire energy landscape.

	Front of the meter (FTM)	Behind the meter (BTM)	
			
	Electricity generation and distribution (Utility)	**Commercial and industrial (C&I)**	**Residential**
Use cases	Price arbitrage Long-term capacity payments Ancillary service markets Derisking renewable generation Investment deferral	Renewable integration (rooftop photovoltaic) Uninterruptable power supply (UPS) Power cost optimization Electric-vehicle (EV) charging infrastructure	Home integration of: Renewable integration (rooftop photovoltaic) EV charging infrastructure

BESS systems address a number of needs in grid management and energy demand

Public charging, server farms, grid level arbitrage competing for resources

Volta Foundation, 2023

Battery Energy Storage System (BESS) Global Suppliers

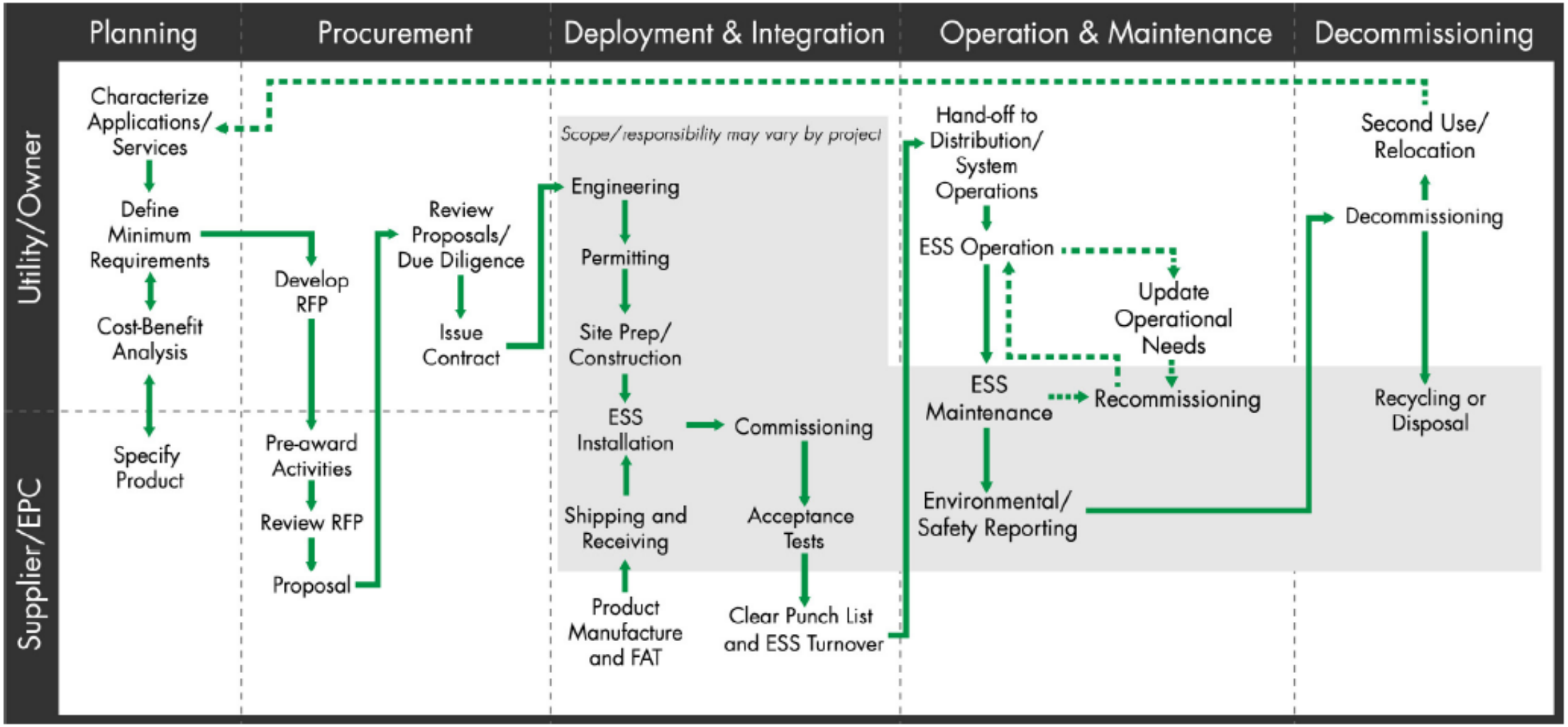
Applications | BESS | Players: Cell Suppliers & Integrators

This supply chain can provide battery products to many application spaces

Volta Foundation, 2023

Battery Energy Storage System (BESS) Lifecycle Process

EPRI BESS deployment model

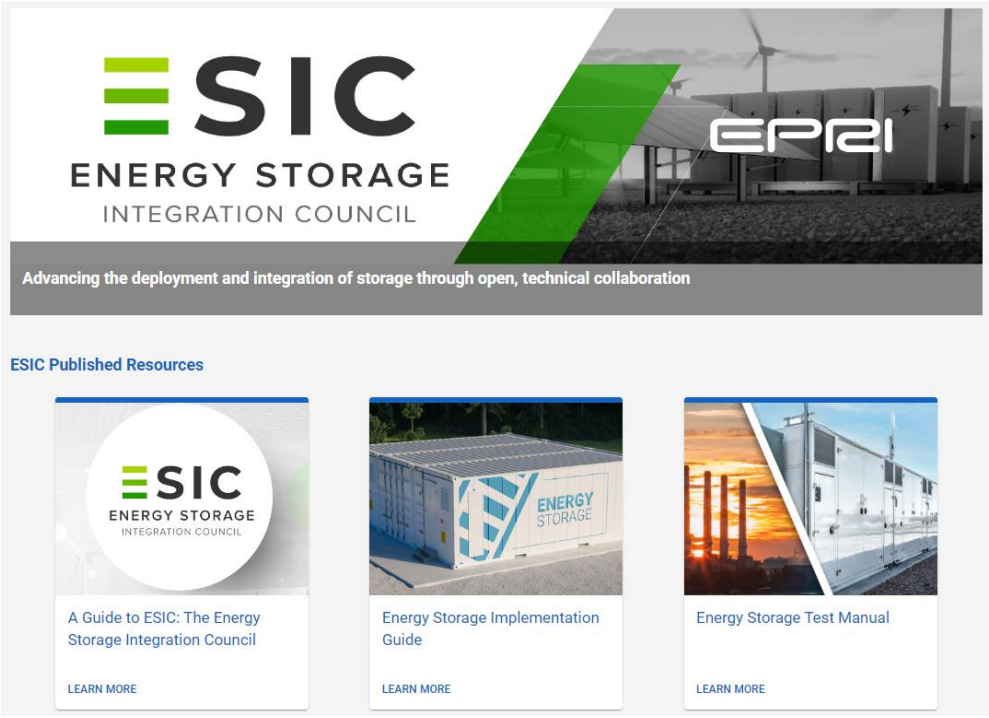


Electric Power Research Institute – Energy Storage Integration Council

A resource for energy storage : www.epri.com/esic

Energy Storage Implementation Guide:

- To serve as an evolving reference guideline for utility project managers, the suppliers they work with, and users investigating energy storage solutions
- To support the development of a practical, short-term industry research agenda to deploy safe, reliable, cost-effective energy storage projects with a one- to three-year time horizon
- To identify common problems and risks that are encountered in the implementation of energy storage projects and provide a path toward resolution
- To provide ongoing updates on the publicly available tools of ESIC



Energy Storage Test Manual:

- Tests should include “metrics of merit” that are important for understanding the value of storage in utility applications.
- Terminology and scope should be consistent with the technical specification template terms/definitions
- Tests should be practical to implement, considering commonly available equipment and analysis needs, with clear acceptance criteria

Additional Resources:

- A Guide to ESIC: The Energy Storage Integration Council
- ESIC Energy Storage Implementation Guide
- Summary of Energy Storage Control Performance Metrics
- ESIC Energy Storage Operation and Maintenance Tracking Tool
- ESIC Energy Storage Reference Fire Hazard Mitigation Analysis
- ESIC Energy Storage Safety Incident Gathering and Reporting List
- ESIC Energy Storage Test Manual
- Electrical Energy Storage Data Submission Guidelines
- ESIC Energy Storage Commissioning Guide
- Storage VET & DER-VET sup porting documentation
- Energy Storage System Taxonomy of Operating Behaviors
- ESIC Energy Storage Request for Proposal Guide
- ESIC Energy Storage Technical Specification Template
- ESIC Energy Storage Cost Template and Tool

Battery incidents catch headlines. Data shows that incident frequency is rare, but outcome of individual events can be have significant impact. New regulations, standards, tools, and training are rapidly evolving to substantially improve outcomes

Firefighters extinguish ‘unpredictable’ blaze at battery storage facility in Otay Mesa

Ohio firefighters battle burning truck carrying li-ion batteries

Officials evacuated an area west of downtown Columbus fearing a possible explosion

April 18, 2024 08:19 AM

4 firefighters injured in Japan BESS incident
2 Firefighters injured in Neermoor, Germany incident

When firefighters opened the building's doors after checking the temperature, they found it was filled with smoke. When they tried to use a smoke exhaust system outside the building, an explosion occurred, injuring four male firefighters in their 20s to 40s.

All of them are conscious, but one of them suffered severe burns to his face and hands and is hospitalized.

Battery Hazards & First Responders

Lithium ion Battery Fire Hazards:

- Flammable gas release
- Hazardous gas release
- High temperatures
- Self sustaining reaction, cell supplies O2 to support combustion
- Difficult to access cells
- Stranded energy can cause reignition
- Potential for arcflash
- Thermite reactions
- Inhalation, ingestion, absorption hazards

First Responder Needs & Considerations:

- Easy, clear Emergency Rescue/Response Guides
- Consistent training across electrified applications
- Consistent SOP
- Consistent and inexpensive tools
- “Let it burn” philosophy can help with stranded energy issues but increase exposure risks
- Water works, but use requires understanding of cell designs
- Workable procedure needed for de-energizing / preventing reignition

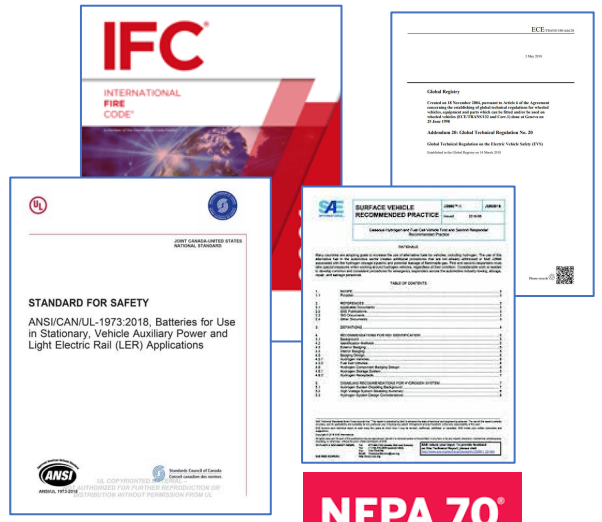
PPE, Defensive planning, lots of water, and patience required - Work with your local First Responders on Response planning!

Regulations and practice

Evolving EV & Battery Safety Regulations & Standards:

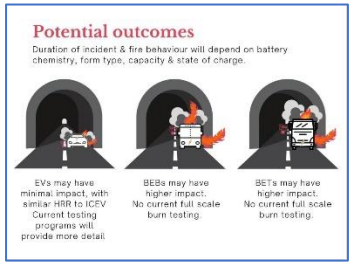
- CFR-49 Part 173: Lithium cells & Batteries: https://www.ecfr.gov/current/title-49/section-173.185
- UN 3090, Lithium metal batteries (shipped by themselves)
- UN 3480, Lithium ion batteries (shipped by themselves)
- UN 3091, Lithium metal batteries contained in equipment or packed with equipment
- UN 3481, Lithium ion batteries contained in equipment or packed with equipment Code of Federal Regulations 40: Protection of the Environment Part 273
- UN38.3: Certification for Lithium-ion batteries
- IFC: 2024; Chapter 3: Section 321 Rechargeable Battery Storage
- UL 1973: Batteries for use in Stationary, Vehicle Aux Power and light rail apps
- UL9540: Safety for Energy Storage Systems
- NFPA 70: Electrical Safety
- ISO-17840: Road vehicles — Information for first and second responders
- SAE J2990: Hybrid and EV First and Second Responder Recommended Practice
- SAE J3235: BEST- PRACTICES FOR THE STORAGE OF LITHIUM-ION BATTERIES
- UL TC 1487: Battery Containment Enclosures

Code of Federal Regulations
A point in time eCFR system



ISO

NFPA 70
nec
NFPA
National Electrical Code®



Courtesy EVFiresafe

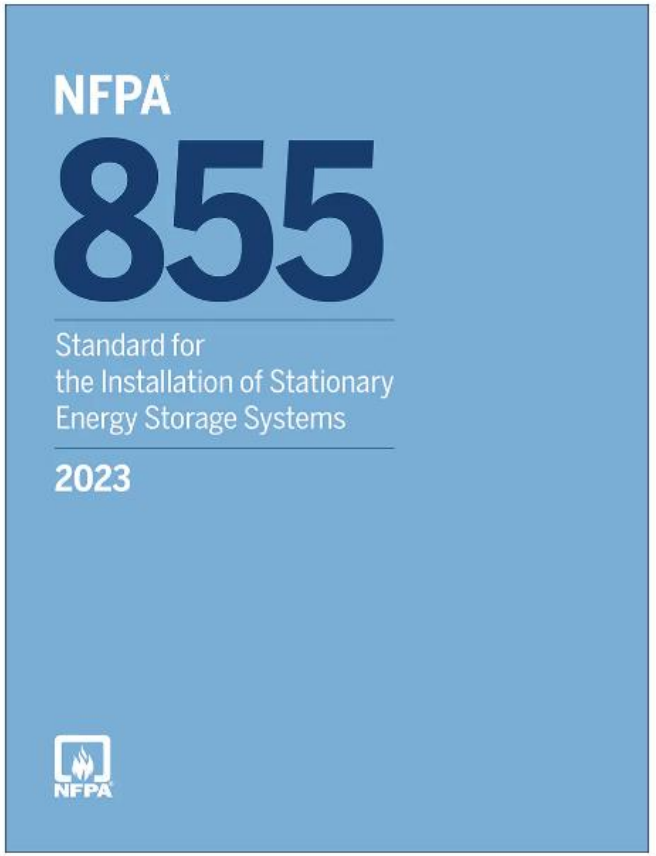
UL Standards & Engagement

Regs & Standards challenged to keep up with technology changes in the field

NFPA 855

Standard for Installation of Energy Storage Systems

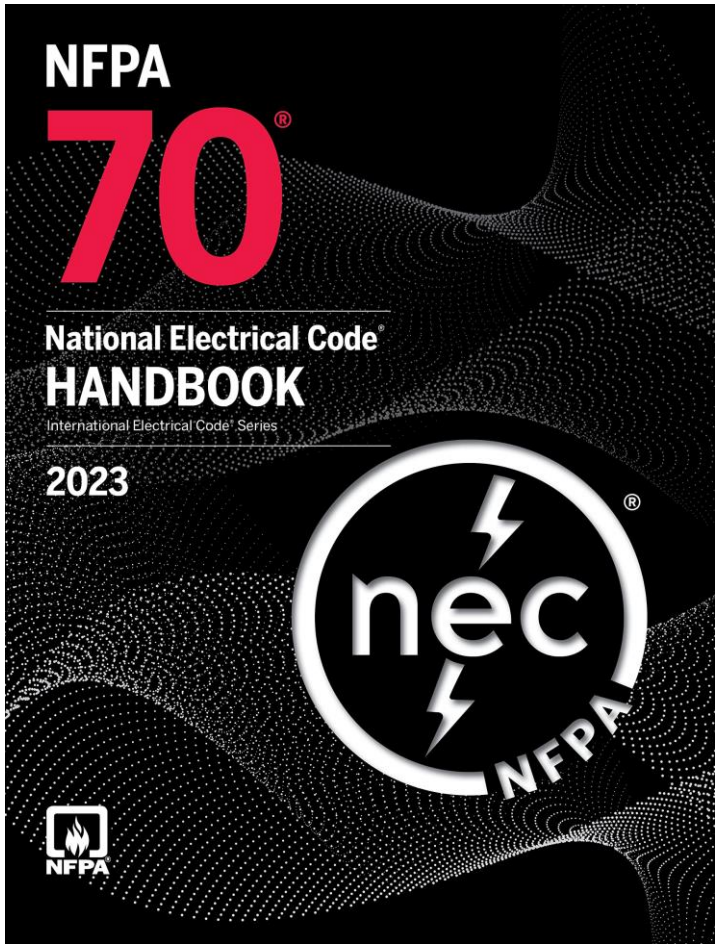
- ***Defines the design, construction, installation, commissioning, operation, maintenance, and decommissioning of stationary energy storage systems (ESS),*** including traditional battery systems used by utilities. The standard aims to help ensure that installations are performed appropriately and mitigate risks while considering life safety.
- NFPA 855 includes ***requirements for monitoring and managing ESS*** to reduce the risk of thermal runaway. It also defines an Energy Storage Management System (ESMS) that can ***monitor, control, and optimize ESS performance, and disconnect the ESS in the event of abnormal conditions***. For example, the ESMS can electrically isolate ESS components or place them in a safe condition if hazardous temperatures or other conditions are detected.
- NFPA 855 also sets rules for residential settings, including ***spacing requirements, the number of kWh per unit, and the energy rating of individual units.*** For example, the standard states that multiple storage units must be at least three feet apart, and that individual ESS units can have a maximum stored energy of 20 kWh.
- https://www.nfpa.org/codes-and-standards/nfpa-855-standard-development/855



NFPA 70

National Electrical Code:

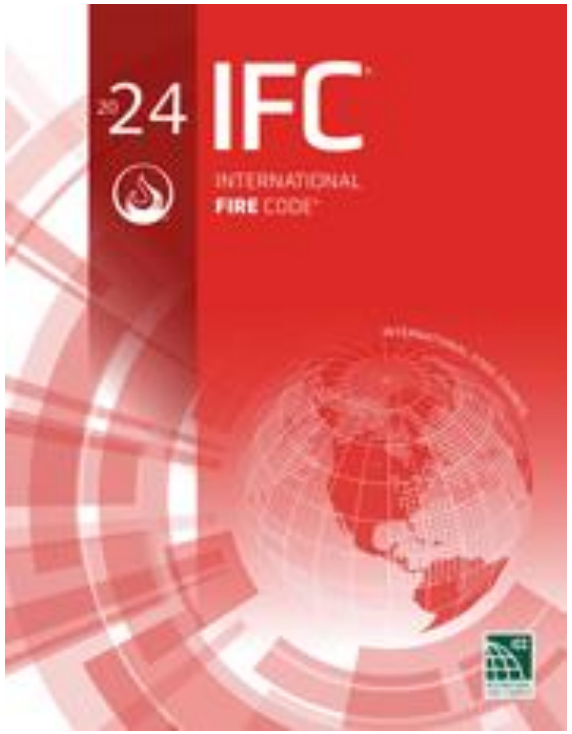
- NFPA 70, also known as the National Electrical Code (NEC), is a standard that establishes ***guidelines for the safe design, installation, and inspection of electrical systems***. It's intended to protect people and property from electrical hazards by providing practical safeguarding practices. NFPA 70 is written for high-level electricians and engineers and is enforced in all 50 states
- NFPA 70 covers the electrical installation that supplies power to equipment, but does not apply to the equipment's internal wiring, controls, or components. Instead, it covers the materials and methods used outside of the equipment. For example, NFPA 70 ***provides guidance on how to install equipment, run conduit and cable, and mount boxes***.
- NFPA 70E is another NFPA standard that provides guidance on safe electrical work practices. It defines terms such as ***arc flash, arc flash boundary, shock hazard, and arc rating***
- ***https://www.nfpa.org/codes-and-standards/nfpa-70-standard-development/70***



International Fire Code

2024 Updates:

- Energy Storage Systems (ESS). Continued focus on ESS. Now referencing NFPA 855 along with IFC Section 1207 to regulate Energy Storage system. The provisions continue to evolve with technologies.
- Lithium-ion batteries. Research, storage, and manufacturing of such technologies are being regulated through active systems including automatic sprinkler systems and detection requirements along with proper overall building design and construction. The IFC contains a specific section to provide tools to manage the collection of lithium-ion batteries.
- Powered micromobility devices. A section dedicated to the hazards associated with charging such devices are addressed in the IFC. This includes a number of requirements focusing on issues such as product listings, separation requirements, and use of detection systems.
- ***https://codes.iccsafe.org/content/IFC2024P1***



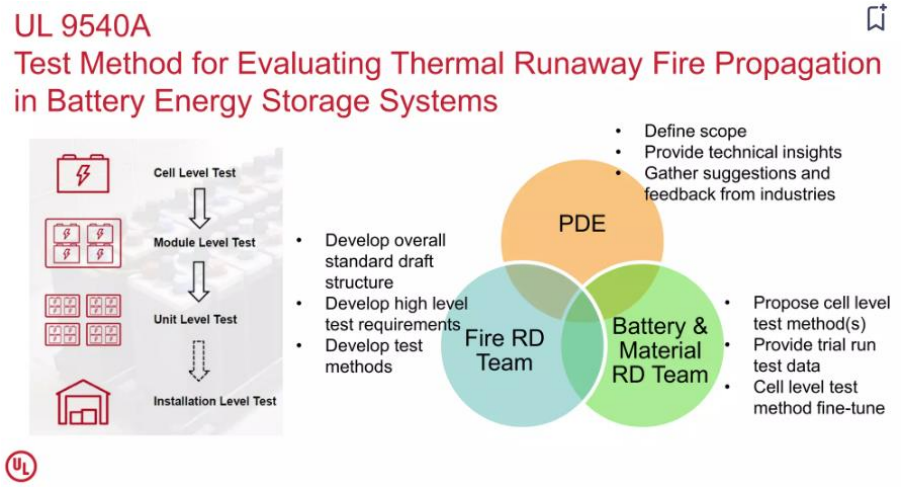
Standard – UL 9540 and UL9540a

UL9540:

- UL 9540 provides a ***basis for safety of energy storage systems that includes reference to critical technology safety standards and codes***, such as UL 1973, the Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications; UL 1741, the Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources; IEEE 1547 and 1547.1; CSA FC1; NFPA 70; NFPA 2; ASME Boiler and Pressure Vessel Code; and ASME B31 piping codes. It includes additional criteria to ***address materials, enclosures, including walk-in enclosures, controls, piping, utility grid interaction, including special purpose interactive systems, hazardous moving parts, signage and instructions.***

UL9540A:

- UL 9540A is a ***test method to evaluate the fire safety hazards*** associated with propagating thermal runaway within battery systems. The tests establish that a storage technology is capable of reaching thermal runaway and then assess the fire and explosion hazards of that technology
- ***https://www.ul.com/services/ul-9540a-test-method***



Transport: CFR49

Code of Federal Regulations

A point in time eCFR system

CFR49 173.185 Lithium cells and batteries:

As used in this section, consignment means one or more packages of hazardous materials accepted by an operator from one shipper at one time and at one address, receipted for in one lot and moving to one consignee at one destination address. Equipment means the device or apparatus for which the lithium cells or batteries will provide electrical power for its operation. Lithium cell(s) or battery(ies) includes both lithium metal and lithium ion chemistries. Medical device means an instrument, apparatus, implement, machine, contrivance, implant, or in vitro reagent, including any component, part, or accessory thereof, which is intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, of a person.

https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-C/part-173/subpart-E/section-173.185

Transport: UN3480 and UN 38.3:

- **UN3480:**
- UN3480 is the UN ID for lithium ion batteries that are ***not packed with or installed in equipment***. There is one entry in the DOT Hazardous Materials Table for UN3480. UN3480 - Hazard Class 9, Lithium ion batteries [including lithium ion polymer batteries]

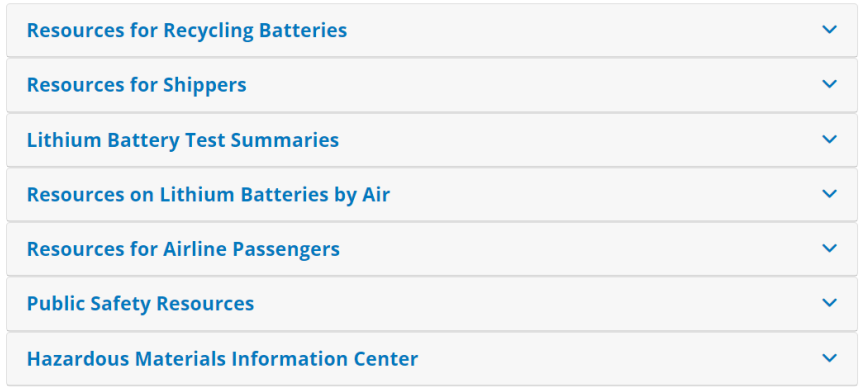
UN38.3:

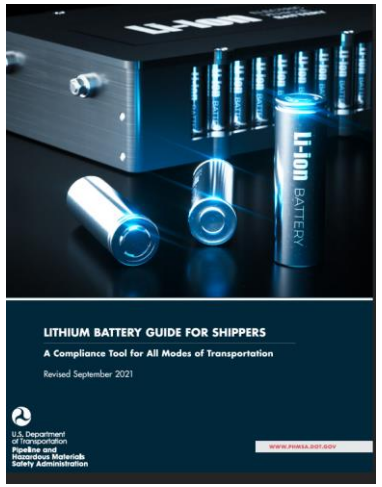
- UN 38.3 is a United Nations (UN) standard that ***regulates the transportation of lithium batteries and cells. It applies to all stages of transportation, including when batteries are in or out of products, being returned, or in non-original packaging***. The standard also covers the design, manufacturing, and distribution of lithium batteries and products that use them
- https://unece.org/fileadmin/DAM/trans/danger/ST_SG_AC.10_11_Rev6_E_WEB_-With_corrections_from_Corr.1.pdf

Resources:

DOT PHMSA - Transporting Lithium Batteries:

- https://www.phmsa.dot.gov/lithiumbatteries
- https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2021-09/Lithium-Battery-Guide.pdf





Sandia National Lab – Energy Storage Safety:

- Informs updates and enhancements to codes and standards
- Facilitates the use of the provisions of adopted codes and standards
- Helps educate the public and relevant stakeholders in the application of ESSs and how to best respond to any safety-related ESS incidents
- https://www.sandia.gov/energystoragesafety/

Resources:

NFPA Battery Safety

- https://www.nfpa.org/education-and-research/home-fire-safety/lithium-ion-batteries
- https://www.nfpa.org/forms/energy-storage-systems-safety-fact-sheet

UL Electrochemical Safety Research Institute:

- https://ul.org/research/electrochemical-safety
- In recent years, renewable energy technologies have emerged as one of the highest priority solutions to climate change. But they also present very real risks; for example, key chemicals inside lithium-ion batteries pose life-threatening harm if they aren't manufactured, stored, and recycled correctly. Our scientists explore the safety and performance limits of storage batteries and other renewable energy technologies and investigate how we can overcome those limits safely

News
February 29, 2024

ULRI Scientist Calls for Building Fire Suppression Aid Into Lithium-Ion Battery Design

BESS & First Responders: Tools, Tips, and Truth

Size Up Starts Now!

Research

Outreach

Planning

Training

U.S. Codes and Standards for Battery Energy Storage Systems

https://cleanpower.org/wp-content/uploads/gateway/2023/07/ACP-ES-Product-6-ESS-Codes-and-Standards-Overview-6.28.23.pdf

cleanpower.org

AMERICAN CLEAN POWER

Fire Service Research Sources

https://fsri.org/research/impact-batteries-fire-dynamics

Fire Service Research Sources

https://www.nfpa.org/education-and-research/electrical/energy-storage-systems

Fire Service Considerations with Lithium-Ion Battery Energy Storage Systems

https://training.fsri.org/course/104/fire-service-considerations-with-lithium-ion-battery-energy-storage-systems

Considerations for Fire Service Response to Residential Battery Energy Storage System Incidents

https://www.iaff.org/wp-content/uploads/IAFF_DOE_ResidentialESSConsiderations_Final.pdf

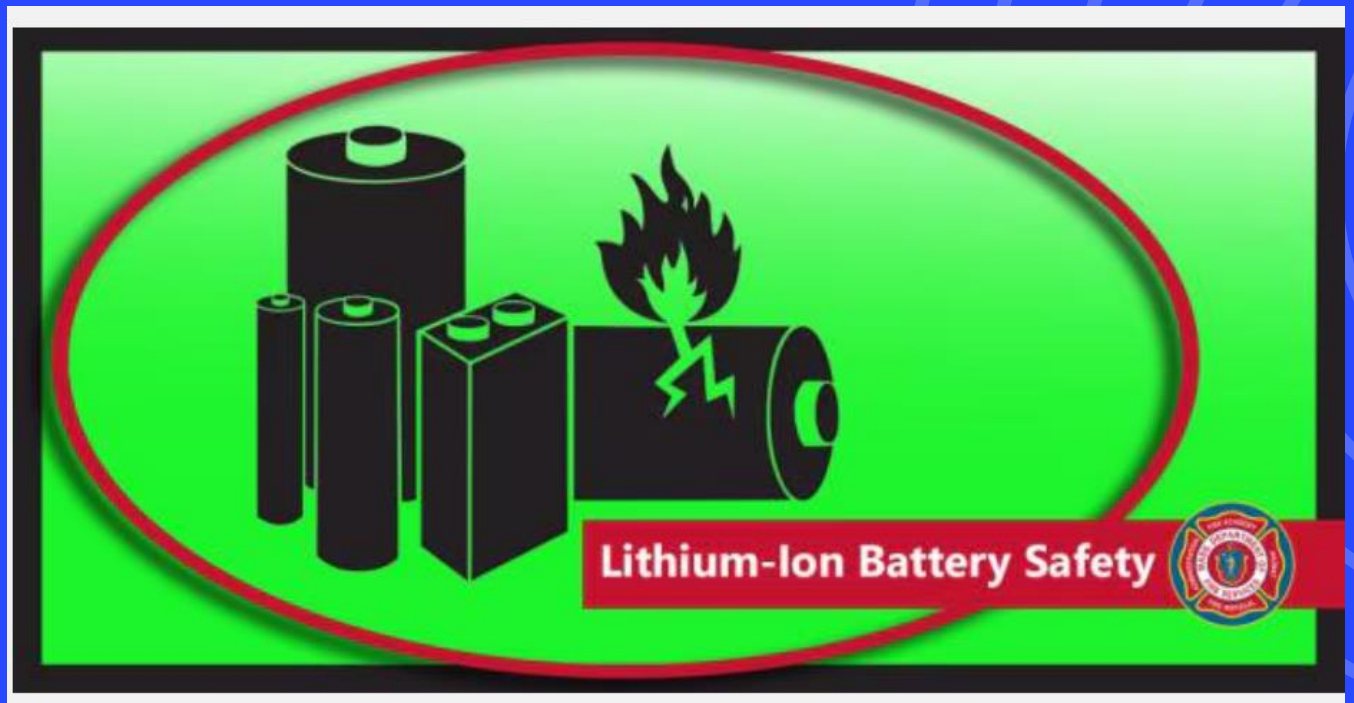
Prepared for the International Association of Fire Fighters

ENERGY STORAGE AND SOLAR SYSTEMS SAFETY ONLINE TRAINING

https://www.nfpa.org/for-professionals/training-for-me/electrical-training/energy-storage-and-solar-systems-safety-online-training

MA DFS 2023 Lithium-Ion Battery Symposium

- https://www.youtube.com/watch?v=BxUAXjuINhk



Lithium-Ion Battery Fires: Investigation Checklist (FP-031)

Read the advisory introducing the checklist.

Advisory- Lithium-Ion Battery Fire Investigations

Tips for Coding Lithium-Ion Battery Fires in the Massachusetts Fire Incident Reporting System

MFIRS Coding for Lithium-Ion Battery Fires

Read this advisory about the dangers of lithium-ion batteries.

Advisory - Dangers of Lithium Batteries (2023)

View the Department of Fire Services' Lithium-Ion Battery Symposium

2023 Lithium-Ion Battery Symposium

Lithium-Ion Batteries →

NFPA: Lithium-Ion Battery Safety →

USFA: Battery Fire Safety →

LAFD: Lithium-ion Battery Safety →

IAFF: Preventing Lithium-Ion Battery Fires →

Take C.H.A.R.G.E. of Battery Safety

PHMSA: Transporting Lithium Batteries →

Thank you

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Batteries 101, Part 3: Wetland Permitting Considerations for Battery Energy Storage in Massachusetts

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MASSDEP

Agenda

- Wetlands Protection Act Jurisdiction
- Overview of Permitting Pathway
- Performance Standards and Stormwater Requirements
- When does MassDEP Review?
- Medway Case Study

The Wetlands Protection Act

Public Interests Protected by the Act

Protects

- Public and Private Water Supply
- Groundwater Supply
- Fisheries
- Wildlife Habitat
- Land Containing Shellfish

Prevents

- Pollution
- Storm Damage

Controls

- Flooding

310 CMR 10.02: Statement of Jurisdiction

(1) AREAS Subject to Protection Under M.G.L. c. 131, § 40.

(a) Any bank

any freshwater wetland

any coastal wetland

any beach

any dune

any flat

any marsh

or any swamp

BORDERING ON

the ocean

any estuary

any creek

any river

any stream

any pond

or any lake

310 CMR 10.02 (1)

Areas Subject to Protection Under M.G.L. c. 131, § 40.

(b) Land under any of the water bodies listed above

(c) Land subject to tidal action

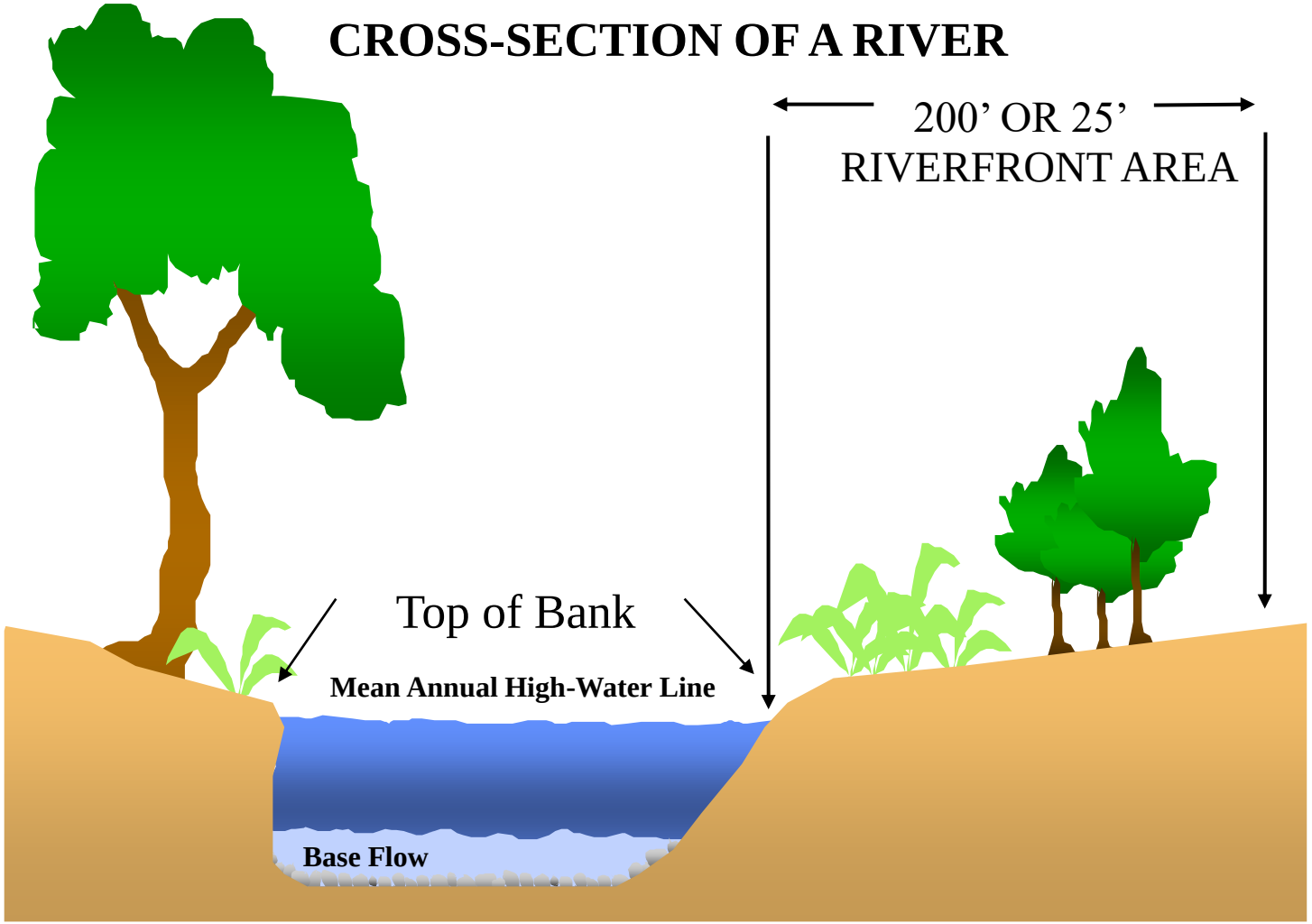
(d) Land subject to coastal storm flowage

(e) Land subject to flooding

(f) Riverfront area.

Riverfront Area

- Found along jurisdictional rivers
- Extends 200 Ft from Mean Annual High Water
- Extends 25 Ft in Densely Developed Areas as listed in the Regulations
- No Buffer Zone
- May Overlap Other Wetland Resources



Buffer Zone

100 feet from Inland Wetland Resource Areas

Bank

streams
lakes
ponds

Bordering Vegetated Wetlands

marshes
swamps
bogs
wet meadows

NOTE: Land Subject to Flooding, Land Under Water and Riverfront Area DO NOT have a buffer zone

MassDEP

What is the Permitting Process?

Submission	Application submitted to municipal **Conservation Commission** (issuing authority) and MassDEP.
Review	Commissions are required to review applications to ensure compliance with the WPA and its Regulations, as well as local wetland laws.
Appeals	Appeal requests under the WPA are submitted to MassDEP and MassDEP becomes the issuing authority. Appeal requests under a local bylaw or ordinance go to Superior Court.

Performance Standards

All wetland resource areas have performance standards listed in the regulations that must be met.

The performance standards are different for each wetlands resource area.

Projects must be designed and conditioned to meet the performance standards.

Stormwater Requirements 310 CMR 10.06(6)(k)-(q).

Stormwater runoff must be managed by stormwater best management practices that comply with the ten (10) Stormwater Management Standards as further defined and specified in the Massachusetts Stormwater Handbook.

Required for all projects in an Area Subject to Jurisdiction or Buffer Zone that are:

Industrial

Residential Developments

Commercial

Institutional

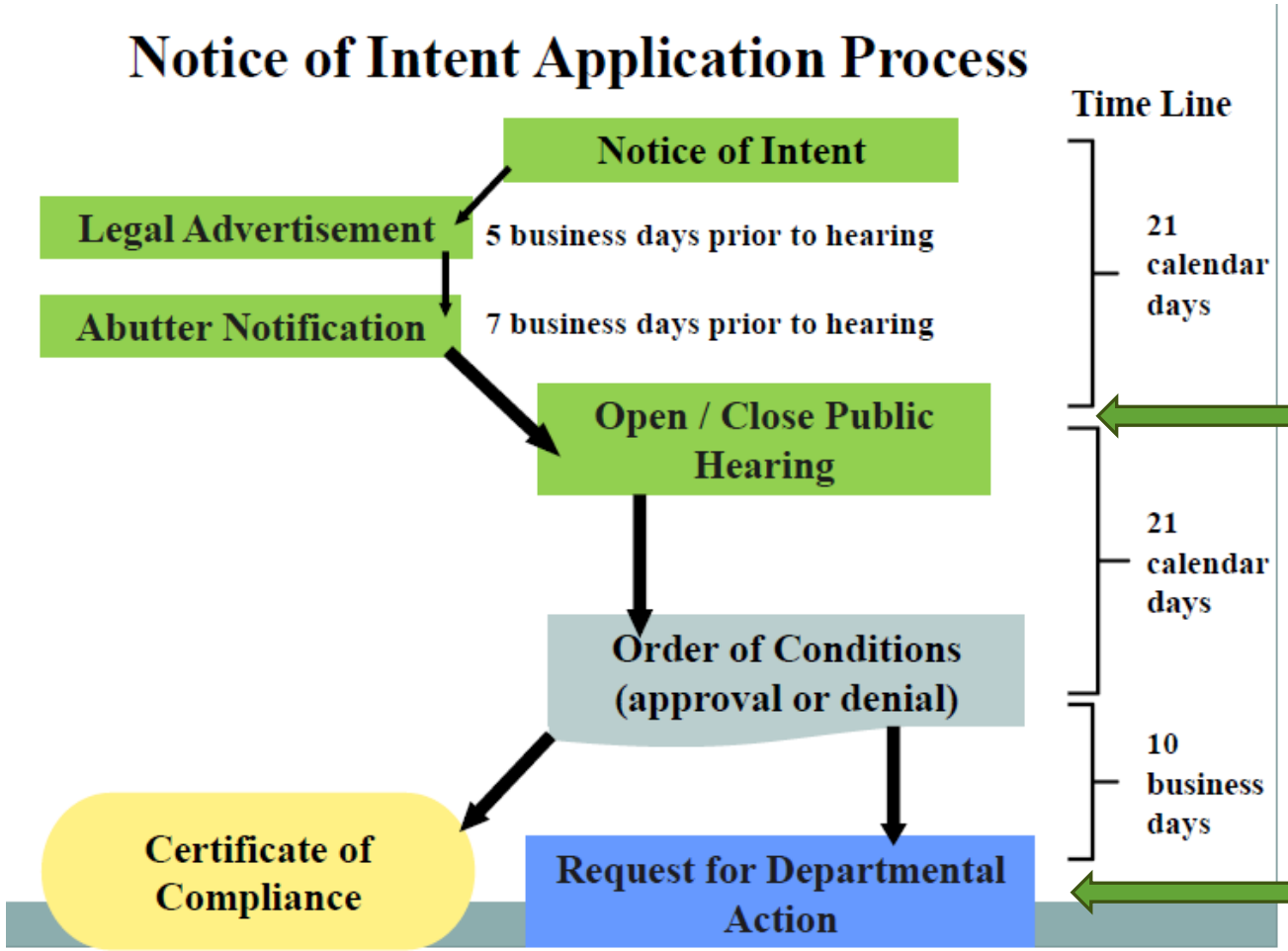
Office

Transportation

The Stormwater Standards

Standard 1: No New Untreated Discharges
Standard 2: Peak Rate Attenuation
Standard 3: Recharge to Groundwater
Standard 4: Water Quality
Standard 5: Land Uses with Higher Potential Pollutant Loadings (LUHPPL)
Standard 6: Critical Areas
Standard 7: Redevelopment
Standard 8: Construction Period Pollution Prevention and Sediment Control
Standard 9: Operation and Maintenance Plan Required
Standard 10: No Illicit Discharges (i.e., non-stormwater discharges)

Permitting Timelines: What to Expect



Multiple meetings

Site Visits

Project Revisions and Plan Changes

Note: Many Commissions can only meet monthly.

Appealed to MassDEP

Site Visit & Informal Hearing

Project Revisions and Plan Changes

Who can **appeal** a Conservation Commission decision?

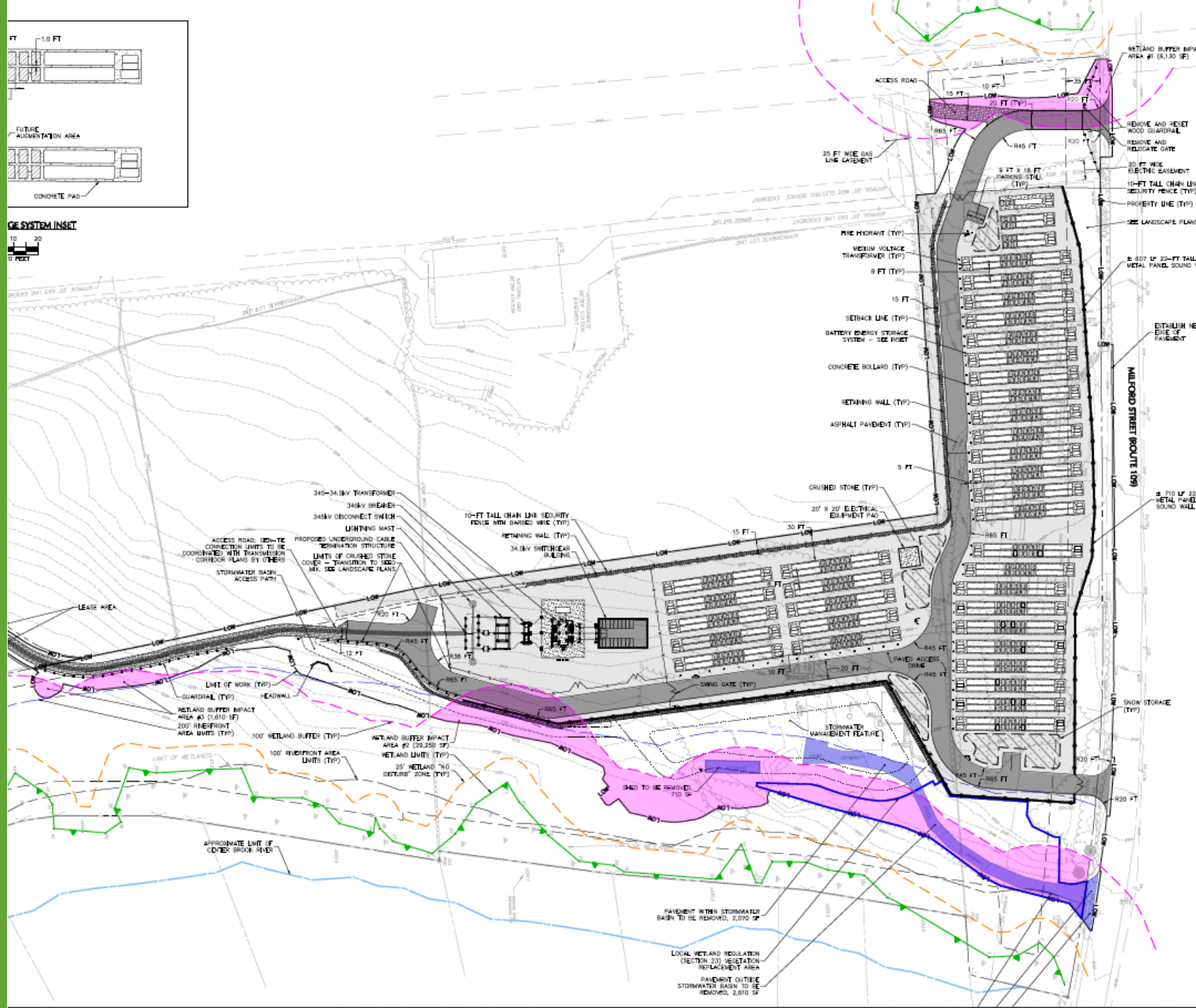
Applicant	Property / Landowner, if not the applicant	Aggrieved person
A direct abutter	Any 10 residents	MassDEP- known as an “Intervention”

Medway Grid

Appealed by Group of Ten Residents to MassDEP

Impacts to Riverfront Area and Buffer Zone

Stormwater Requirements



The Appeal

- Location adjacent to wetlands and Center Brook – a tributary to Charles River.
- A single, unlined stormwater basin, and the possibility that contaminated surface water runoff from a thermal event or other incident would impact groundwater or nearby wetland resource areas.
- Air pollution concerns due allowing a thermal event to burn out.
- A rainstorm during a fire or application of firefighting waters could wash contaminants into the brook.
- Emergency Response Plan (ERP) lacks details and requirements that no firefighting water be applied, be discharged outside of basin, or be allowed to infiltrate as required by a DPU decision.
- Plan submitted does not meet requirement of DPU decision and no SOC should be issued until there is compliance with DPU requirements and with WPA Regulation.

MassDEP Affirmation

Held a site visit and informal hearing with all parties.

Conducted review of all application materials and the Order of Conditions issued by Medway Conservation Commission.

Affirmed the Order as Conditions adequately addressed WPA issues.

Condition 30 requires the Applicant to investigate the feasibility of remote shut-off technologies and install remote shut-off technologies if available.

Condition 96 requires additional protective measures to prevent the migration of potentially contaminated discharges to wetland resource areas during a hazardous spill or thermal event.

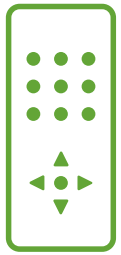
Appealed by Resident Group to Adjudication.

Final Order of Conditions

Negotiation between parties settled prior to an Adjudicatory hearing.

"The Applicant shall install a system at the facility that allows for closure of the valves or gates on the stormwater lines leading from the deep sump catch basins and on the outlet control structure of the stormwater infiltration basin from a remote point when manual closure at the valves or gates is not possible due to conditions during an emergency event at the facility."

Considerations



Include safety measures in a stormwater design for worst case scenarios including remote shut off measures.

Include emergency response and hazardous waste clean up in the Stormwater Operations & Maintenance plan.

Establish emergency response plans prior the wetland permitting stage.

Thanks!