

Mary Kopaskie-Brown
Planning Director
City of Mesa
Development Services Department
55 N. Center St.
Mesa, Arizona 85201

October 16, 2025

Re: Draft Mesa Zoning Ordinance Amendments Regarding Battery Energy Storage Systems (BESS)

Dear Ms. Kopaskie-Brown:

As president and CEO of the state's premier trade association representing more than 750 science and technology companies, I respectfully request Mesa's Development Services Department to consider the following information before finalizing amendments to the zoning ordinance that would define and restrict the siting of battery energy storage systems (BESS) within city limits.

At the Arizona Technology Council, we advocate an energy strategy that leverages Arizona's diverse mix of clean and renewable resources. As demand for renewable energy continues to rise, so does the need for utility-scale BESS projects to meet peak energy demand, enhance grid stability and ensure reliable service. These systems are essential for storing excess solar energy for use during evening peaks and outages, reducing reliance on traditional generation and improving grid resilience.

When designed and installed in accordance with the National Fire Protection Association's standard for stationary energy storage systems, BESS facilities are rigorously engineered for safety, reliability and long-term performance. They also support Arizona's broader economic goals, creating high-quality jobs in construction, manufacturing and engineering while strengthening our state's clean energy leadership and competitiveness.

The Council appreciates the City of Mesa's proactive approach to ensuring public safety through application requirements, such as compliance statements, preliminary emergency response plans and decommissioning plans. However, several elements of the draft amendments raise concerns within the industry and merit reconsideration. They are:

- Setback requirements – The proposed 500-foot setback from residential properties is excessive and unsupported by BESS-specific impact data. A more reasonable 150-foot setback combined with appropriate screening, fire safety and sound attenuation measures would balance community safety with practical deployment.
- Zoning restrictions – Limiting BESS facilities solely to general industrial and heavy industrial districts is unnecessarily restrictive, as less than 1% of Mesa's land area falls under these designations. We recommend expanding eligibility to include light industrial zones. BESS facilities are clean, low-impact operations that are more compatible with light industrial uses than most traditional heavy industrial activities.
- Noise standards – Noise regulations should be based on objective decibel levels consistent across comparable land uses. Creating separate standards for BESS projects introduces inequities that could deter investment and delay deployment.



A modern, flexible energy infrastructure is critical to sustaining Arizona's innovation economy. Mesa has long been a leader in supporting advanced industries, and the city's zoning policies should reflect its commitment to future-ready infrastructure that supports both business growth and environmental responsibility.

Thank you for your leadership and commitment to fostering a forward-looking business environment. Please don't hesitate to contact me if the Council can provide additional data, technical expertise or stakeholder engagement to support a balanced outcome.

Respectfully,

ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO





To: City of Mesa Planning Staff

From: Kyle Whittier- NextEra Energy Resources

Date: 10/16/2025

RE: Recommended Changes and Clarifications to the proposed BESS Ordinance

Thank you for providing NextEra Energy Resources with the opportunity to provide comments on the City of Mesa's ongoing efforts to draft a comprehensive Battery Energy Storage System (BESS) Ordinance. Protecting personnel and the community is of paramount importance to NextEra Energy Resources. We respectfully request that the following comments and suggestions be reviewed and carefully considered in shaping the final policy recommendations to be presented to the Mesa City Council for their decision-making.

NextEra Energy Resources has crafted these comments that are intended to support planning staff in creating an ordinance that ensures community safety, meets infrastructure needs, and provides clear regulatory guidelines. The suggestions are organized into three primary categories: A) Recommended Alterations/Changes related to separation and setbacks, B) General Recommended Alterations/Changes related to the draft BESS ordinance, and C) Recommended Clarifications to support developer understanding of the ordinance standards.

A) Recommended Alterations/Changes – Separation Requirements

This section includes comments addresses specifically the separation/setback requirements contained in the draft BESS Ordinance.

(F)(2) Separation Requirements – Recommendation: The separation requirements should be updated to reflect a setback requirement from the Battery Energy Storage System (BESS) with associated mechanical infrastructure, and not the BESS Facility. And replacement of city-specific separation requirement with adherence to the most updated NFPA 855 standards.

Rationale: As currently defined and explained by planning staff, the BESS Facility includes the physical site property boundary of the parcel where the BESS and associated infrastructure is located. With this definition, the current separation requirements cannot be met by designing the site and locating BESS infrastructure away from the edges of the property line, as the property line, and therefore BESS Facility, remains constant. Updating the separation requirement of the BESS Facility to a setback of BESS equipment from the property line enables design-based mitigations to setback requirements. Additionally, national codes are in place to govern safety concerns of BESS Facilities.

(F)(2)(a) Residential Zoning Districts and Uses – Recommendation: Reduce 1,000-foot BESS Facility setback from nearest residential zoning district or residential use to 400-foot BESS setback from residential zoning district.

Rationale: NFPA 855 standards dictate safe distances for Battery Energy Storage System (BESS) equipment from existing infrastructure. At a distance of 100' from property lines and/or existing infrastructure a BESS facility is considered a Remote Location and does not pose a fire risk to the adjacent infrastructure. There is no data to suggest that a 1,000-foot setback is necessary for public safety, nor has a similar setback been required of other types of development with similar infrastructure needs, such as data centers.

Continued advancement of the NFPA 855 and UL 9450A, including large-scale fire testing, have implemented standards in modern BESS to address previous thermal runaway/propagation concerns and explosion risk.

A 400-foot setback is also not required to maintain public safety but can support the city's visual and sound mitigation interests. Other methods contained in the ordinance, including initial & annual sound studies, and screening design requirements address these concerns.

(F)(2)(b) Commercial and Industrial Zoning Districts and Uses – Recommendation: Reduce 150-foot BESS Facility setback from nearest property line to 100-foot setback of BESS to property line or update 150-foot BESS setback to nearest existing Commercial, Employment, or Industrial building.

Rationale: NFPA 855 standards dictate safe distances for Battery Energy Storage System (BESS) equipment from existing infrastructure. At a distance of 100' from property lines and/or existing infrastructure a BESS facility is considered a Remote Location and does not pose a fire risk to the adjacent infrastructure. Having a requirement of 150' back from an adjacent property line is unnecessary to maintain safety standards. Additionally, Industrial/Commercial buildings are commonly setback from property line to accommodate retention areas and/or access, further extending proximity to BESS equipment.

Continued advancement of the NFPA 855 and UL 9450A, including large-scale fire testing, have implemented standards in modern BESS to address previous thermal runaway/propagation concerns and explosion risk.

B) Recommended Alterations/Changes – General

This section includes comments that, if adopted, would change the siting, design, and/or operational standards from what was included in the original BESS ordinance draft. The recommendations below are general recommendations to support development flexibility, city discretion, and alignment with existing national codes.

(B)(1)(a) & (C)(1) – Recommendation: Addition of including Light Industrial (LI) in the base zoning districts approved for Battery Energy Storage System (BESS) development

Rationale: Siting of BESS projects directly adjacent existing electrical infrastructure maximize the project's usefulness to the contracted load serving entity and minimizes transmission line buildout. Both Major and Minor Utilities are allowable in Light Industrial zoning districts and Mesa leadership maintains discretionary ability through PAD.

(F)(2)(c) – Recommendation: Addition of pathway for deviations to Zoning District setbacks. An applicant may request a deviation of these setback requirements if an engineered solution is demonstrated to provide an equivalent level of safety (as prescribed by NFPA 855).

Rationale: This addition would formalize a pathway for deviations from the ordinance, as ultimately adopted, to account for evolutions in technology and safety standards of BESS Facilities without requiring an amendment to the PAD.

(F)(6)(b)(i) – Recommendation: Update to match Data Center Ordinance language for mechanical equipment screening; “a solid masonry wall at least eight (8) feet in height or tall enough to fully screen the tallest piece of equipment.”

Rationale: Data Center Ordinance requires screening of Mechanical Equipment, including battery storage and power generation. Adopting approved language within existing city code ensures consistency.

C) Recommended Clarifications

This section includes comments intended to clarify requirements of the applicant and are not intended to change any of the intent of the current form of the BESS ordinance, as drafted by Mesa planning staff.

(E)(1)(c) – Recommendation: Addition of “preliminary” to proposed phasing or augmentation plan.

Rationale: Augmentation areas representing the eventual total project buildout and anticipated augmentation timelines can, and should, be provided at application. Addition of preliminary acknowledges that specific augmentation timelines and regions may adjust over the life of the project but will not change the Nameplate Power Capacity requirement.

(E)(2)(c) – Recommendation: Addition of language documenting that the purpose of decommissioning is ensuring decommissioning activities return the property to its condition prior to use as a BESS Facility.

Rationale: Clarification of the intent of the decommissioning and removal of the BESS Facility, not requiring removal of all subsurface infrastructure not impacting future use of the site (e.g. underground collection).

(E)(4)(b) & (G)(1)(a)(ii) – Recommendation: Addition of “or modeled by a third-party acoustic consultant”

Rationale: Access to nearest property lines or uses, as currently drafted, may be contingent on third party owners unwilling to grant access. In the absence of measurements, modeling by third-party acoustic consultants can meet city intent.

(F)(6)(d)(ii) – Recommendation: Add explicit language that materials are only prohibited on external screening infrastructure.

Rationale: Add clarity to design requirements and differences between BESS Facility and internal screening infrastructure.

(F)(7)(a)(i) – Recommendation: Add clarification of what types of substation equipment are not intended to be screened.

Rationale: “Ground-mounted equipment” does not provide enough clarity as to what is, and is not, required to be screened and materially impacts the screening design height.

(F)(8)(a) – Recommendation: Add voltage limit of 69kV infrastructure for undergrounding, add reasonably to necessity determination, remove sole discretion.

Rationale: Undergrounding electrical infrastructure above 69kV presents significant engineering and construction challenges. Reasonable determination is consistent with

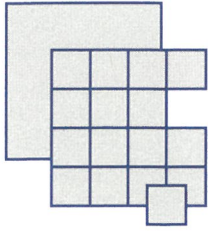
ordinance sensitive receptor and signage location requirements. Clarify that approval of undergrounding requirement is contingent on utility concurrence, not sole discretion of Development Services Department.

(G)(2)(b)(ii) – Recommendation: Addition of language focusing augmentation on Nameplate Power Capacity measured in kilowatts or megawatts.

Rationale: In the generator interconnection process generation and capacity resources, such as a BESS Facility, are governed by their interconnection power capacity, measured in kilowatts or megawatts. Additionally, commercial agreements, commonly a Power Purchase Agreement (PPA) or Energy Storage Agreement (ESA), are contracted utilizing the Nameplate Power Capacity. Contract terms and specific battery technology will dictate overbuild and augmentation schedule to maintain contracted Nameplate Power Capacity.

Definitions – Recommendation: Addition of Nameplate Power Capacity definition.

Rationale: Clarification by additional definition correlating to how BESS Facilities are governed in the interconnection process and commercial agreements.



Pew & Lake, P.L.C.
Real Estate and Land Use Attorneys

W. Ralph Pew
Certified Real Estate Specialist
Sean B. Lake
Reese L. Anderson

To: City of Mesa Planning Staff

From: Pew & Lake, PLC on behalf of NextEra Energy Resources

Date: 10/13/2025

RE: Recommended Changes and Clarifications to the proposed BESS Ordinance

Thank you for providing NextEra with the opportunity to provide comments on the City of Mesa's ongoing efforts to draft a comprehensive Battery Energy Storage System (BESS) Ordinance. Protecting personnel and the community is of paramount importance to NextEra. We respectfully request that the following comments and suggestions be reviewed and carefully considered in shaping the final policy recommendations to be presented to the Mesa City Council for their decision-making.

NextEra has crafted these comments that are intended to support planning staff in creating an ordinance that ensures community safety, meets infrastructure needs, and provides clear regulatory guidelines. The suggestions are organized into three primary categories: A) Recommended Alterations/Changes to the draft ordinance specifically related to the development of the proposed Ellsworth Energy Storage project, B) Recommended Alterations/Changes in general BESS ordinance adoption, and C) Recommended Clarifications.

A) Recommended Alterations/Changes – Ellsworth Energy Storage Specific

This section includes comments that, if adopted, would change the siting, design, and/or operational standards from what was included in the original BESS ordinance draft specifically as they relate to the proposed Ellsworth Energy Storage project.

(F)(2)(b) – Recommendation: Update 150-foot BESS Facility setback from nearest property line to nearest Commercial, Employment, or Industrial building.

Rationale: Updating the setback from Industrial/Commercial maintains public safety intent without unduly restricting BESS Facility siting and design. Additionally, Industrial/Commercial buildings are commonly setback from the property line to accommodate retention areas and/or access, further extending proximity to the BESS Facility.

B) Recommended Alterations/Changes – General

This section includes comments that, if adopted, would change the siting, design, and/or operational standards from what was included in the original BESS ordinance draft. The recommendations below are general recommendations to support development flexibility, city discretion, and alignment with existing national codes.

(B)(1)(a) & (C)(1) – Recommendation: Addition of including Light Industrial (LI) in the base zoning districts approved for Battery Energy Storage System (BESS) development

Rationale: Siting of BESS projects directly adjacent existing electrical infrastructure maximize the project's usefulness to the contracted load serving entity and minimizes transmission line buildout. Both Major and Minor Utilities are allowable in Light Industrial zoning districts and Mesa leadership maintains discretionary ability through PAD.

(F)(2) – Recommendation: Replacement of city-specific separation requirement with adherence to the most updated NFPA 855 standards.

Rationale: National codes are in place to govern safety concerns of BESS Facilities; the city maintains the discretionary ability to implement additional restrictions.

(F)(2)(c) – Recommendation: Addition of pathway for deviations to Zoning District setbacks. An applicant may request a deviation of these setback requirements if an engineered solution is demonstrated to provide an equivalent level of safety (as prescribed by NFPA 855).

Rationale: This addition would formalize a pathway for deviations from the ordinance, as ultimately adopted, to account for evolutions in technology and safety standards of BESS Facilities without requiring an amendment to the PAD.

(F)(6)(b)(i) – Recommendation: Update to match Data Center Ordinance language for mechanical equipment screening; “a solid masonry wall at least eight (8) feet in height or tall enough to fully screen the tallest piece of equipment.”

Rationale: Data Center Ordinance requires screening of Mechanical Equipment, including battery storage and power generation. Adopting approved language within existing city code ensures consistency.

C) Recommended Clarifications

This section includes comments intended to clarify requirements of the applicant and are not intended to change any of the intent of the current form of the BESS ordinance, as drafted by Mesa planning staff.

(E)(1)(c) – Recommendation: Addition of “preliminary” to proposed phasing or augmentation plan.

Rationale: Augmentation areas representing the eventual total project buildout and anticipated augmentation timelines can, and should, be provided at application. Addition of preliminary acknowledges that specific augmentation timelines and regions may adjust over the life of the project but will not change the Nameplate Power Capacity requirement.

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Rationale: Clarification of the intent of the decommissioning and removal of the BESS Facility, not requiring removal of all subsurface infrastructure not impacting future use of the site (e.g. underground collection).

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Rationale: Undergrounding electrical infrastructure above 69kV presents significant engineering and construction challenges. Reasonable determination is consistent with ordinance sensitive receptor and signage location requirements. Clarify that approval of undergrounding requirement is contingent on utility concurrence, not sole discretion of Development Services Department.

(G)(2)(b)(ii) – Recommendation: Addition of language focusing augmentation on Nameplate Power Capacity measured in kilowatts or megawatts.

Rationale: In the generator interconnection process generation and capacity resources, such as a BESS Facility, are governed by their interconnection power capacity, measured in kilowatts or megawatts. Additionally, commercial agreements, commonly a Power Purchase Agreement (PPA) or Energy Storage Agreement (ESA), are contracted utilizing the Nameplate Power Capacity. Contract terms and specific battery technology will dictate overbuild and augmentation schedule to maintain contracted Nameplate Power Capacity.

Definitions – Recommendation: Addition of Nameplate Power Capacity definition.

Rationale: Clarification by additional definition correlating to how BESS Facilities are governed in the interconnection process and commercial agreements.



October 15, 2025

City of Mesa
Development Services
55 N. Center Street
Mesa, AZ 85201

RE: City of Mesa Draft BESS Ordinance (Section 11-31-37)

Council Members, Planning and Zoning Board Members, and Staff,

The Arizona Solar Energy Industries Association (AriSEIA) is the State's solar, storage, and electrification trade association. We are active on energy policy issues at every level of government in Arizona. We have previously engaged on the City of Eloy, Mohave County, City of Buckeye, Town of Chino Valley, Navajo County, Apache County, Town of Gila Bend, City of Surprise, and Yavapai County solar/storage ordinances.

Applicability

AriSEIA recommend that Mesa look at the pending Buckeye BESS ordinance as an example. We further recommend significant changes to B(1)(a) and B(2)(b). As written, this ordinance will potentially apply to many commercial and industrial distributed generation projects. 1 MW is much too small, if the ordinance is meant to only apply to utility scale projects. We recommend you not have any size threshold and instead just state that the ordinance applies only to utility-scale BESS projects, such as is seen in Buckeye's ordinance (Section 3.2.2(1)): *"The requirements of this Section shall apply to all utility-scale BESS facilities permitted, installed, or modified after the effective date, excluding general maintenance and repair. Utility-scale BESS facilities constructed or installed prior to the effective date are not required to meet the requirements of this Chapter."* Alternatively, you could state that the ordinance does not apply to distributed generation projects with on-site battery energy storage. If the City feels it is imperative to include a size threshold, we recommend only doing it in B(1) and not B(2). And it should be 5 MW, not 1 MW.

Further, the limitation in B(2)(b)(ii) is problematic because it would preclude commercial and industrial customers from participating in any forthcoming virtual power plant programs offered by the utilities to their business customers. Instead of "exclusively," it should say "primarily."

Additionally, restrictions in B(1)(a) and C(1) to general and heavy industrial are too limited and may actually create a de facto moratorium on BESS within the City of Mesa. Engineers from Arizona utilities, including Salt River Project (SRP), have publicly spoken about the importance BESS technologies play in ensuring continued electrical service in the Valley amid growing demand. SRP expects electricity demands will grow 6% per year for the next decade, compared against the 2% yearly growth seen from 2015-2025.¹ To keep pace with this demand, SRP will

¹ Pinal County, Board of Supervisors meeting, Sept. 10, 2025, *available here*
<https://pinalcountyaz.new.swagit.com/videos/355087?ts=230>.

have to double—and possibly triple—its capacity. Given those electricity demand needs, it is absolutely critical to leverage a variety of technologies, including BESS. We recommend all industrial, including light industrial, be eligible for BESS.

Setbacks

Tying the ordinance to the most recent versions of UL 9540 and National Fire Protection Agency (NFPA) 855 is recommended. Currently, Mesa has a drafted setback of 400 feet in Section F(2)(a).² The American Planning Association found the national setback average for BESS-specific setbacks was 50-150 feet from property lines.³ While the NFPA recommends 100', we recommend no more than 150' from the structures (not the property line) based on the Phoenix Regional Standard Operating Procedures Battery Energy Storage Systems policy.⁴ Also, the setbacks should be measured from the BESS equipment, not the BESS property line. This would align Mesa's ordinance with national standards, improve regulatory defensibility, and ensure that safety requirements scale appropriately with actual risk rather than imposing arbitrary limits that could either under- or over-regulate BESS facilities.

Additionally, modern BESS projects are subject to new and updated safety standards and codes that have addressed and corrected issues found in earlier system design. The American Clean Power Association (ACP) provides a helpful FAQ that covers questions about battery safety and air emissions.⁵ ACP also has a Claims v. Facts one-pager on battery safety, included again as **Attachment A**. "It should also be noted that the average emissions rates of equivalent masses of plastics exceed those of batteries."⁶ Additionally, sampling was done by the Environmental Health Division and the U.S. Environmental Protection Agency (EPA) after the Moss Landing incident and "no threat to human health or the surrounding environment" was found.⁷ All electricity generation and energy storage creates some amount of risk. However, battery incidents represent only 2% of battery installations.⁸ Setbacks for batteries should not be more onerous than setbacks for other energy infrastructure, such as substations. ACP's model BESS ordinance is included as **Attachment B**.

Noise

Sound restrictions for BESS should not be different than those for other land uses. E(4) requires an initial sound study before the project is developed and G requires a mitigation plan should the noise level exceed the level when there was no development. Alternatively, at the applicant's

² This setback is in addition to further setbacks between the BESS installation and its own project boundary.

³ American Planning Association, Zoning Practice, P.10 (Mar. 2024), *available here* https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Zoning-Practice-2024-03.pdf

⁴ City of Phoenix, Battery Energy Storage Systems, April 2023, *available here* <https://www.phoenix.gov/firesite/Documents/205.20A%20Battery%20Energy%20Storage%20Systems.pdf>.

⁵ American Clean Power Association, Energy Storage: Safety FAQ, *available here* <https://cleanpower.org/wp-content/uploads/gateway/2023/07/ACP-ES-Product-4-BESS-Safety-FAQs-230724.pdf>.

⁶ Consolidated Edison and NYSERDA, Considerations for ESS Fire Safety, Feb. 9, 2017, at iii, *available here* <https://www.nyseda.ny.gov/-/media/Project/Nyserda/files/Publications/Research/Energy-Storage/20170118-ConEd-NYSERDA-Battery-Testing-Report.pdf>.

⁷ County of Monterey, Air Quality Testing Information and Process During Moss Landing Fire Incident, Sept. 30, 2022, *available here* <https://www.countyofmonterey.gov/Home/Components/News/News/9345/1336>.

⁸ California Public Utility Commission, Energy Storage Procurement Study: Safety Best Practices, 2023, *available here* https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-storage/2023-05-31_lumen_energy-storage-procurement-study-report-attf.pdf.

election, we recommend capping the decibel level of the project from the nearest residence. In a residence you would have normal conversation at 60 dB, a vacuum at 70-85 dB, an AC unit or TV at 70 dB. AriSEIA recommends the City not require a noise level less than 65 dB from the nearest residence if the ambient noise is below that.

BESS Spacing

Any BESS spacing in F(3) should only be 3 ft. The NFPA 855 sets its threshold at 3 feet between individual BESS units. NFPA 855 allows for adjustment upward or downward based on site-specific hazard data, including through written agreements with adjacent property owners, provided that such agreements are reviewed and accepted by the City and supported by the site's hazard mitigation analysis (HMA). This mechanism allows jurisdictions to maintain safety standards while accommodating site-specific conditions and product design innovations.

Mesa's suggestion to increase cabinet spacing over and above the requirements of the fire code are not without consequences. Projects that require more internal spacing will require more land for development. Consequently, these projects will become bigger in area and be costlier to develop. This will come back to Mesa citizens in the rates they pay for electricity.

(F)(4) requires that all fire access drives and drive aisles within the BESS facility be paved and (F)(6) requires full site screening with opaque walls or fences extending one foot or greater from the top of the equipment. By exceeding NFPA's safety recommendations, these proposed requirements impose significant costs and potentially jeopardize project feasibility without a commensurate increase in safety. Instead, the ordinance should align these standards with NFPA 855 and (1) allow drive aisles to be made of aggregate all-weather surfacing and (2) only require partitions to be one foot higher than BESS units.

Undergrounding

In F(8), the City appears to require undergrounding of distribution and transmission lines. AriSEIA recommends that whether lines are undergrounded or not be left to the BESS Facility, the utility, and the Arizona Corporation Commission's (ACC) Power Plant and Line Siting Committee (if applicable), as the ACC has a policy on undergrounding that disfavors it, as it can be excessively costly.⁹

Waiver Provision

The ordinance should include a waiver provision in the event a project proposal conflicts with some component of the ordinance, but is otherwise an ideal site. The City of Eloy Solar and BESS Ordinance includes such a provision.¹⁰ We recommend adding language such as that included in 21-3-1.39(B) of Eloy's ordinance. A waiver provision gives the city the flexibility when special circumstances and safety demand.

⁹ Arizona Corporation Commission, Decision No. 79140, P.3, L.2-6, Oct. 4, 2023, *available here* <https://docket.images.azcc.gov/0000209995.pdf?i=1760388397879>.

¹⁰ Eloy Ordinance, 21-3-1.39, *available here* https://codelibrary.amlegal.com/codes/elayaz/latest/elay_az/0-0-0-9381.

Other

Additionally, there is an error in the nameplate capacity definition. We recommend an updated definition such as, *“NAMEPLATE CAPACITY: The maximum rated power output that a battery energy storage system (BESS) or facility can discharge or receive under specific conditions designated by the manufacturer. It is also referred to as rated capacity or peak capacity, and is expressed in megawatts (MW) or kilowatts (kW) for power. The associated energy capacity, sometimes referred to as nameplate energy capacity, represents the total amount of energy the system can store or deliver over time, expressed in megawatt-hours (MWh) or kilowatt-hours (kWh).”*

As discussed above, the NFPA 855 provides recognized industry best practices for BESS. Incorporating NFPA 855 by reference into this ordinance will provide Mesa with clear, nationally recognized metrics on maximum system capacity, hazard mitigation, emergency response, and decommissioning.

NFPA 855 requires the following submittals and by incorporating NFPA 855, Mesa will be requiring each of these:

- Hazard Mitigation Analysis (HMA);
- Emergency Response Plan;
- Details of all safety systems, including;
 - UL 1973 – for battery modules and components;
 - UL 9540 – for integrated BESS systems;
 - UL 9540A – for fire propagation testing to evaluate thermal runaway risk; and
- Results of UL 9540A or equivalent testing

Thank you for your time and consideration and we look forward to continuing to engage with the City on this ordinance as the stakeholder process progresses.

Respectfully,
Autumn Johnson
Executive Director
AriSEIA
(520) 240-4757
autumn@ariseia.org

ATTACHMENT A

Energy Storage Leading on Safety

Utility-scale battery energy storage is safe and highly regulated, growing safer as technology advances and as regulations adopt the most up-to-date safety standards.

Background

Energy storage systems (ESS) are critical to a clean and efficient electric grid, storing clean energy and enabling its use when it is needed. Installation is accelerating rapidly—as of Q3 2023, there was seven times more utility-scale energy storage capacity operating than at the end of 2020. This growth is driving job creation, investment in American manufacturing, and is improving grid resilience and energy security.

However, because energy storage technologies are generally newer than most other types of grid infrastructure like substations and transformers, there are questions and claims related to the safety of a common battery energy storage technology, lithium-ion (Li-ion) batteries. All of these questions and claims can be addressed with facts. The industry continues to address these concerns to ensure community confidence in this increasingly essential electric grid infrastructure.

CLAIM: The incidence of battery fires is increasing.

FACTS: Energy storage battery fires are decreasing as a percentage of deployments.

- Between 2017 and 2022, U.S. energy storage deployments increased by more than 18 times, from 645 MWh to 12,191 MWh¹, while worldwide safety events over the same period increased by a much smaller number, from two to 12².
- During this time, codes and standards regulating energy storage systems have rapidly evolved to better address safety concerns.



Photo credit: Fluence

CLAIM: Today's larger battery systems use tens of thousands of cells, so fires are inevitable.

FACTS: Cell failure rates are extremely low, and safety features in today's designs further reduce the probability of fires.

- One estimate from 2012 quotes a failure rate ranging from 1 in 10 million to 1 in 40 million cells³, and there are undoubtedly improvements from these levels.
- Lithium-ion batteries experience extremely low failure rates, as shown by electric vehicle data.
 - Tesla alone sold nearly 900,000 vehicles in the first half of 2023⁴. These sales of new vehicles represent around three-quarters of a billion cells, but safety events involving all EVs on the road globally, from all manufacturers, amounted to just a few dozen fires.
- Today's energy storage systems (ESSs) predominantly use safer lithium-iron phosphate (LFP) chemistry, compared with the nickel-manganese-cobalt (NMC) technology found in EVs.
 - LFP cell failure results in less energy release and a lower probability of fire.
- ESS designs incorporate features to avoid propagation of cell failure within the battery, contributing to improved safety.

1 US Energy Storage Monitor, Q1 2023 full report and 2022 Year in Review, Wood Mackenzie Power & Renewables/American Clean Power Association, <https://www.woodmac.com/industry/power-and-renewables/us-energy-storage-monitor/>

2 Electric Power Research Institute, BESS Failure Event Database, https://storagewiki.epri.com/index.php/BESS_Failure_Event_Database

3 D. Doughty, Vehicle Battery Safety Roadmap Guidance, National Renewable Energy Laboratory, October 2012, <https://doi.org/10.2172/1055366>.

4 EV sales: Hyundai overtakes GM, but Tesla's U.S. dominance continues

CLAIM: E-bike and e-scooter fires have resulted in deaths—so large batteries for energy storage may be even more deadly.

FACTS: No deaths have resulted from energy storage facilities in the United States. Battery energy storage facilities are very different from consumer electronics, with secure, highly regulated electric infrastructure that use robust codes and standards to guide and maintain safety.

- E-mobility devices have been lightly regulated in the past, and some products have used poor-quality battery cells and ineffective safety systems.
- They are also charged inside homes, sometimes along egress routes, creating a high level of risk.
- Like EV batteries, ESS battery systems are highly regulated and subject to stringent certification and testing requirements.
- The difference in regulation is evident in vehicle statistics. Worldwide, for the first half of 2023, EV FireSafe cites 500+ light electric vehicle (E-bike and E-scooter) battery fires, but only 44 passenger EV fires⁵.
- Additionally, utility-scale energy storage systems are located within secure facilities with site plans explicitly designed around maximizing safety of those operating the facilities and their neighbors.
- The ESS industry meets with and shares best practices with first responders and communities.
- Lessons learned from earlier ESS incidents have been reflected in the evolution of codes and standards. Often, companies go beyond mandatory testing to test more extreme failure scenarios.
- Altogether, like other electric grid infrastructure, energy storage systems are highly regulated and there are established safety designs, features, and practices proven to eliminate risks to operators, firefighters, and the broader community.
- The industry is committed to meeting these standards, such as NFPA 855, which are regularly updated to reflect the latest evidence-based best practices.



Photo credit: AES

CLAIM: Battery fires emit toxic fumes and pose a risk to the community

FACTS: Past incidents demonstrate that fires are contained within the facility, and air quality in neighboring areas remains at safe levels.

- Laboratory testing of emissions from Li-ion cells in thermal runaway shows that emissions are similar to those found in plastics fires⁶.
- During an ESS battery fire, only trace amounts of chemicals are detected in sampling around the event, and overall air quality remains at safe levels.
- During a fire at a Tesla Megapack at Moss Landing in California, air-quality testing showed no hazards to human health⁷.

CLAIM: Fire suppression systems should be mandatory for all lithium-ion battery systems.

FACTS: Regulations that aren't vetted by organizations like the National Fire Protection Association or are inconsistent with the International Fire Code may make projects less safe.

- Established national and international codes and standards already require BESS to incorporate the appropriate safety features to contain any potential fires or thermal events.
- Successful suppression of a fire does not guarantee that the underlying thermal runaway event has been terminated, so containing a fire is the best way to protect first responders and communities.
- The energy storage industry is working to avoid events such as the explosion at an installation in McMicken, Arizona, in which four firefighters were injured⁸. Prior to this event, the industry was focused on extinguishing fires as quickly as possible, but McMicken showed that explosion can be a greater hazard and fire containment is a better strategy.
- The accepted best practice for the rare ESS fires that do occur is to contain them, managing the burn of the limited affected unit in a controlled manner while protecting nearby structures and equipment. This strategy eliminates any explosion hazard, avoids issues with stranded energy and reignition, and minimizes contaminated runoff of firefighting water.
- Codes and standards are changing to reflect this practice, placing an emphasis on explosion prevention. One proposal for the 2026 edition of NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems*, would forbid installation of traditional clean-agent or aerosol fire suppression systems unless testing demonstrates that use of such systems does not create an explosion risk.

⁵ EV FireSafe, All Electrified Transport LIB Fire Incidents, Global, 1st January to 30th June 2023, <https://www.evfiresafe.com/ev-battery-fire-overview>.

⁶ DNV-GL, *Considerations for ESS Fire Safety, Report for Consolidated Edison and NYSEERDA*, 2017

⁷ Air quality testing showed no hazards to human health amid battery fire in Moss Landing

⁸ Arizona ESS Explosion Investigation and Line of Duty Injury Reports Now Available

ATTACHMENT B

Utility-Scale Battery Energy Storage Systems

MODEL ORDINANCE



MODEL ORDINANCE

ORDINANCE FRAMEWORK

American Clean Power Association

The American Clean Power Association (ACP) is the leading voice of today's multi-tech clean energy industry, representing over 800 energy storage, wind, utility-scale solar, clean hydrogen and transmission companies. ACP is committed to meeting America's national security, economic and climate goals with fast-growing, low-cost, and reliable domestic power.

About this Document

This document is intended to provide guidance to local governments considering developing an ordinance or rules related to the development of utility-scale battery energy storage systems. The recommendations and considerations included in this framework draw from a variety of sources including: national fire safety standards, guidance established by national energy laboratories, and existing state laws and local regulations.

The American Clean Power Association **supports the adoption of NFPA 855**, the national fire protection safety standard for grid-connected energy storage. This safety standard, developed by firefighters, fire protection professionals, and safety experts, provides comprehensive requirements and guidance on the design, installation, and operation of energy storage facilities for all site and community contexts.

Instructions for Use

This document is designed to inform the development of individual ordinances or state regulations to guide the development of utility-scale energy storage facilities. It may not be appropriate for the Model Ordinance to be adopted precisely as it is written. It is intended to be advisory, and users should not rely upon it as legal advice. Local government officials are urged to seek legal advice from their attorneys before enacting a battery energy storage system ordinance. Local governments must consider how the language in this Model Ordinance may or should be modified to suit local conditions, comprehensive plans, existing land use and zoning provisions.

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Section I: Definitions & Applicability

A. Definitions

"Energy Storage" means any technology that is capable of absorbing electricity, storing the electricity for a period of time, and redelivering the electricity.

"Battery Energy Storage System" (BESS) means electrochemical devices that charge, or collect, energy from the grid or a generation facility, store that energy, and then discharge that energy at a later time to provide electricity or other grid services.

"National Fire Protection Association" (NFPA) is a nonprofit organization dedicated to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. Established in 1896, the NFPA develops and publishes over 300 consensus codes and standards intended to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation in the United States and internationally. The NFPA's mission extends beyond code development; it also focuses on research, training, education, and advocacy to promote safety and preparedness.

"National Electric Code" (NEC) also known as NFPA 70, is a set of standards for the safe installation of electrical wiring and equipment in the United States. Its primary purpose is to ensure the safety of electrical installations by setting forth requirements to protect people and property from electrical hazards. The NEC covers the installation of electrical conductors, equipment, and raceways; signaling and communications conductors and equipment; and fiber optics. It is updated every three years to incorporate new technologies and improve safety measures

"NFPA 855" the *Standard for the Installation of Stationary Energy Storage Systems*, provides comprehensive guidelines for the safe installation of stationary energy storage systems (ESS), including those using lithium batteries. This standard addresses various aspects of installation to mitigate fire and explosion risks associated with energy storage technologies. It covers topics such as system design, construction, operation, and maintenance to ensure safety and reliability.

"UL 9540" is a standard for Energy Storage Systems (ESS) and Equipment. It is designed to ensure the safety of these systems and covers their construction, performance, and testing requirements. UL 9540 certification is essential for verifying that energy storage systems, such as batteries and related equipment, meet rigorous safety standards to prevent hazards related to electrical, mechanical, and environmental conditions.

B. Applicability

The requirements of this ordinance shall apply to all battery energy storage systems with a rated nameplate capacity of equal to or greater than 1,000 kilowatts (1 megawatt).

The requirements of this ordinance shall apply to all battery energy storage systems permitted and installed in [County/Village/Town/City] after the effective date of this ordinance.

This ordinance does not extend to the general maintenance and repair of battery energy storage systems permitted, installed, or modified prior to the effective date of this ordinance.

C. Application Approval

Applications for permits shall be approved in accordance with Section [XXX] of [County/Village/Town/City] ordinances.

D. Timeline for Review and Approval

The [County/Village/Town/City] shall complete an initial review of the application to determine compliance with the requirements established within this ordinance and shall provide written approval or issue a notice of deficiency within 30 days of receipt of the application.

The notice of deficiency must include a list of each requirement included in this ordinance with which the applicant has not sufficiently demonstrated compliance and issue a recommendation for achieving sufficient compliance.

If no written approval or notice of deficiency is provided within 30 days of receipt of the application, the application shall be considered approved.

Section II: Land Use & Siting Standards

A. Land Use Zones

Battery energy storage systems that comply with the requirements established in this ordinance shall be permitted in all land use zones.¹

Agricultural: Permitted-by-Right

¹ **Land Use Zoning** definitions differ between local jurisdictions, so it is important for each community to assess the right process for permitting energy storage across zones. Because battery energy storage technologies are uniquely flexible and modular, they can be safely sited within any land use context. In some contexts, battery energy storage systems, which serve as critical grid infrastructure and present minimal impacts to adjacent land, can be sited by right – this includes land use zones being utilized primarily for agricultural, industrial, and commercial functions. Energy infrastructure, like substations, are seamlessly integrated into these zones.

Other zones may present contextual considerations that local jurisdictions may wish to consider, thus battery energy storage facilities may be subject to discretionary permitting in public, mixed use, and residential zones. However, similar to transformers and distribution transmission lines, energy storage facilities can provide critical services while safely operating in these land use zones. Battery energy storage systems may also provide important services, such as lowering electricity costs, to residences as part of community energy infrastructure, or provide reliability-focused services to other critical infrastructure such as hospitals,

Industrial: Permitted-by-Right

Commercial: Permitted-by-Right

Public & Institutional: Discretionary Permit

Mixed Use: Discretionary Permit

Residential: Discretionary Permit

B. Setbacks

Battery energy storage systems shall comply with NFPA 855 requirements related to setbacks and buffers.²

An applicant may request a waiver of these requirements under circumstances that an engineered solution may satisfy setback requirements outlined in NFPA 855.

C. Lighting Requirements

Battery energy storage systems shall comply with NFPA 855 requirements related to lighting.³

Lighting requirements applicable to other infrastructure within the [County/Village/Town/City], or requirements specified in state statute or code for electrical infrastructure are appropriate to apply to BESS so long as they do not conflict with NFPA 855.

D. Security and Screening

Battery energy storage systems shall have a perimeter fence of at least 7 feet in height, consistent with requirements established in NFPA 70.⁴

Battery energy storage systems shall also comply with specifications established in NFPA 855 relating to barriers and buffering.⁵

² **NFPA 855** includes specifications for setbacks and buffering between the energy storage system and property lines, buildings, and other potential exposures. These distances are determined based on type and size of the energy storage system, its energy capacity, and the surrounding environment.

³ **NFPA 855** and **NFPA 70** identifies lighting requirements for energy storage systems. These requirements are designed to ensure adequate visibility for safe operation, maintenance, and emergency response. Lighting provisions typically cover areas such as access points, equipment locations, and signage. The specific lighting requirements may vary depending on factors such as the size and configuration of the energy storage system, as well as the surrounding environment.

⁴ **NFPA 70** requires all large electrical installations, including utility-scale energy storage systems, to have a perimeter fence of at least 7 feet to prevent unauthorized access to the facility.

⁵ **NFPA 855** and **NFPA 70** includes requirements for security and barriers to enhance the safety and protection of energy storage systems. These requirements are aimed at preventing unauthorized access, as well as containing and securing the site. Security barriers may involve measures such as fencing, gates, locks, access controls, and

E. Auditory Requirements

The average noise generated from the battery energy storage systems, components, and associated ancillary equipment, measured at the nearest building, lot line that can be built upon, or public way, shall not exceed any auditory limits established for each land use zone.⁶

Section III: Permitting & Environmental Compliance

A. Site Plan Applications

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

B. Special / Conditional Use Permits

Applications for special use or conditional use permits shall be considered and approved in accordance with Section [XXX] of [County/Village/Town/City] ordinances.

C. Environmental Compliance

An applicant shall comply with, and receive the necessary permits for, relevant state environmental and wildlife laws prior to commencing construction and operation of the battery energy storage system.⁷

D. Review of Augmentation Plans

Battery energy storage system applicants may include a plan for periodic augmentation to maintain the capacity of the system or nominally increase the capacity of the system for approval as part of the site plan application.

surveillance systems. Some barriers may be designed to compartmentalize and contain the energy storage system and in the rare case an incident occurs on site. The specific requirements for security and fire barriers outlined in NFPA 855 may vary depending on factors such as the size, type, and location of the energy storage system.

⁶ BESS have demonstrated minimal or limited auditory impact on adjacent properties. At close distances, sound caused by BESS can range from 60 to 80 decibels, equivalent to the sound of a conversation (60db) and the sound of being inside a car (80db). Beyond property lines, and with the setbacks and screening specifications in **NFPA 855**, neighboring properties should experience minimal impact. For more information, consult the Pacific Northwest National Laboratory publication on Energy Storage in Local Zoning Ordinances.

⁷ During normal operations, battery energy storage systems do not create any emissions or discharge any pollutants. During rare instances of an incident or operational errors, **NFPA 855** details requirements related to the containment of any potential hazards, including spill control measures. Historical investigations into the effects of fire-related incidents have determined there were no harmful levels of toxins detected at the site, adjacent properties, and there was no risk to the broader community.

The owner of an operating battery energy storage system shall provide notice to the [County/Village/Town/City] at least 90 days prior to the commencement of augmentation activities at the site of the battery energy storage system.

The owner shall also provide an updated site plan that identifies any changes resulting from augmentation of the battery energy storage system. Augmentation modifications that require the issuance of a building permit may be considered under the special / conditional use permitting process in accordance with Section [XXX] of [County/Village/Town/City] ordinances.

Section IV: Commissioning, Safety Standards & Certifications

A. Commissioning Plan

Prior to issuance of a building permit, battery energy storage system Applicants shall submit a commissioning plan that contains:

4. A 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.
5. 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 the building permit.
6. 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.
7. A commissioning report meeting the requirements of NFPA 855 section 6.1.5 shall be submitted prior to final inspection.

B. Safety Requirements

Battery energy storage systems shall comply with the latest published version of the National Fire Protection Association (NFPA) 855, *Standard for Installation of Stationary Energy Storage Systems*, at the date of the submission of the application.⁸

Prior to issuance of a building permit, battery energy storage system Applicants are required to:

⁸ **NFPA 855**: is the standard developed by the National Fire Protection Association (NFPA) that addresses the design, installation, and operation of energy storage systems (ESS). The purpose of NFPA 855 is to ensure the safety of ESS installations and provides prescriptive requirements including, but not limited to: site plans, equipment designs and specifications, fire protection, emergency response, training, maintenance, testing and certifications. Local jurisdictions can comprehensively address safety by simply requiring applicants to comply with the latest version of NFPA 855. The **International Fire Code** (IFC) is harmonized with NFPA 855.

- i. Submit an emergency response plan as an appendix to the project application.
- ii. Submit a plan as an appendix to the project application for offering site-specific training to the fire service and emergency personnel of jurisdiction prior to commencing operation.
- iii. Conduct hazard mitigation analyses if specified by NFPA 855.

C. Equipment Certification

All batteries integrated within the battery energy storage system shall be listed under UL 1973. The battery energy storage system shall be listed in accordance with UL 9540, either from the manufacturer or by field evaluation.⁹

Section V: Decommissioning

A. Decommissioning Plan

A decommissioning plan that is consistent with agreements reached between the applicant and other landowners of participating properties and that ensures the return of all participating properties to a useful condition, including removal of above-surface facilities and infrastructure that have no ongoing purpose, shall be provided by the applicant.

The decommissioning plan shall include, but is not limited to, financial assurance in the form of a bond, a parent company guarantee, or an irrevocable letter of credit, but excluding cash, to be determined by applicant. The amount of the financial assurance shall not be less than the estimated cost of decommissioning the energy facility, after deducting salvage or recycling value, as calculated by a third party with expertise in decommissioning, hired by the applicant.

However, the financial assurance may be posted in increments as follows:

- i. At least 25% by the start of full commercial operation.
- ii. At least 50% by the start of the fifth year of commercial operation.
- iii. 100% by the start of the tenth year of commercial operation. (s) Other information reasonably required by the commission.

⁹ **UL 9540 Certification:** When a battery energy storage system is listed under UL 9540, it means that it has been tested and certified by a Nationally Recognized Testing Laboratory (NRTL) to meet the safety requirements outlined in UL 9540, which specifically covers energy storage systems and equipment. This certification indicates that the battery has undergone rigorous testing to ensure it meets safety requirements related to fire, electrical, and other potential hazards associated with energy storage systems. UL 9540 listing provides assurance to consumers, regulators, and insurers that the battery meets recognized safety standards for use in energy storage applications.

Section VI: Resources

As state and local jurisdictions consider the recommended framework for siting and permitting battery energy storage facilities outlined in this model ordinance, ACP seeks to provide communities with resources and technical guidance. ACP encourages the review of the following materials:

NFPA 855: Guiding Energy Storage System Safety: NFPA 855 (2023), the Standard for the Installation of Stationary Energy Storage Systems, provides mandatory requirements for, and explanations of, the safety strategies and features of energy storage systems (ESS). Applying to all energy storage technologies, the standard includes chapters for specific technology classes. The depth of this standard makes it a valuable resource for all Authorities Having Jurisdiction (AHJs). The focus of this fact sheet is on how the standard applies to electrochemical (battery) energy storage systems in Chapter 9 and specifically on lithium-ion (Li-ion) batteries.

U.S. Codes & Standards for Battery Energy Storage Systems: This document provides an overview of current codes and standards (C+S) applicable to U.S. installations of utility-scale battery energy storage systems. This overview highlights the most impactful documents and is not intended to be exhaustive. Many of these C+S mandate compliance with other standards not listed here, so the reader is cautioned not to use this document as a guideline for product compliance. This guide provides a graphic to show the hierarchy and groupings of these C+S, followed by short descriptions of each. This document also summarizes some of the changes in the 2023 edition of one of the most important standards, NFPA 855, and provides a more detailed bibliography of the featured documents.

First Responders Guide to Lithium-Ion Battery Energy Storage System Incidents: This document provides guidance to first responders for incidents involving energy storage systems (ESS). The guidance is specific to ESS with lithium-ion (Li-ion) batteries, but some elements may apply to other technologies also. This guide provides recommendations for pre-incident planning and incident response. Additional tutorial content is provided for each of the hazard categories. The Bibliography provides references to applicable codes and standards, and other documents of interest.

Energy Storage Emergency Response Plan Template: This document is the result of a collaborative effort to develop a standardized template to guide the development of project-specific emergency response plans, informed by the latest evidence-based strategies and recommendations established by the National Fire Protection Association. This document is intended to be adapted by users as needed to be appropriate to the conditions, environment, staffing, structure, technologies, and blueprint of a given site.

Energy Storage & Safety: Safety is fundamental to all parts of our electric system, including energy storage, and the safe operation of our energy infrastructure is critical to provide the electricity that keeps our lights on, our refrigerators running, our homes air conditioned and heated, and our businesses operating. This fact sheet provides a brief overview of how energy

storage is safe by design, with built in features and strategies used to promote and maintain safe operation.

Frequently Asked Questions (FAQs) about Energy Storage Systems: ACP has compiled a comprehensive list of Battery Energy Storage Safety FAQs for your convenience. Read ACP's FAQ document to learn more in detail.

The Role of Energy Storage on the Electric Grid: Energy storage technologies are uniquely positioned to reduce energy system costs and, over the long-term, lower rates for consumers by: optimizing the grid; bolstering reliability; and enabling a clean grid. Energy storage is, at its core, a resilience enabling and reliability enhancing technology. Across the country, states are choosing energy storage as the best and most cost-effective way to improve grid resilience and reliability.

Claims vs. Facts: Energy Storage Safety: Because energy storage facilities are generally newer than most other types of critical grid infrastructure like substations and transformers, communities may have questions about the safety and reliability of the technology. Amidst these questions, some inaccurate claims have been made about energy storage – this resource addresses some of the most common inaccurate claims about energy storage safety.

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**Re: Comments on City of Mesa Draft Ordinance – Chapter 31, Section 11-31-37:
Battery Energy Storage Systems**

Dear Mary and Rachel:

We appreciate the opportunity to provide comments on the City of Mesa’s proposed ordinance titled, Chapter 31 – Standards for Specific Uses and Activities, Section 11-31-37: Battery Energy Storage Systems (“BESS”) and BESS Facilities.

Our comments are intended to assist the City of Mesa (“City”) in finalizing an ordinance that is technically sound, legally durable, and consistent with prevailing codes, standards, and best practices governing the design, installation, and operation of BESS facilities. Establishing a clear, evidence-based regulatory framework will support safe deployment, ensure consistent application across projects, and provide regulatory certainty necessary to facilitate continued investment in Mesa’s energy infrastructure. The following correspondence summarizes the changes we recommend and includes specific redline suggestions for implementing those changes at the conclusion of each section.

I. Recommended Revisions to Draft Section 11-31-37

a) Separation and Setback Requirements

Section 11-31-37(F)(2) of the draft ordinance establishes fixed setback distances of 400 feet from residential zoning districts, residential uses, churches, parks, schools, and other sensitive uses, and 150 feet from the property line of the nearest commercial, employment, or industrial zoning district or use. Because these setbacks are measured from the property line, and the ordinance also requires a 100-foot minimum separation between the BESS installation and the project site boundary, the effective setback distances increase to approximately 500 feet from residential and sensitive uses and 250 feet from commercial and industrial uses. The City is also reported to be considering 10 feet of internal spacing between individual BESS units, with additional fire access and clear zone requirements governed by Title 7 – Fire Regulations.

The separation distances, as drafted, are unduly burdensome, technically unsupported, and inconsistent with the hazard-based approach established under NFPA 855. By far exceeding the distances necessary to mitigate risks associated with properly designed and tested BESS installations, the proposed setbacks lack a clear, evidence-based nexus to demonstrable hazard conditions and risk profiles. As such, they risk imposing arbitrary and unreasonable siting restrictions that could materially impede the deployment of energy storage facilities without a corresponding improvement in public safety. Adoption of a hazard-based setback framework grounded in UL 9540A testing, site-specific Hazard Mitigation Analyses, and NFPA 855 criteria would achieve the City's safety objectives while providing a technically defensible and legally durable basis for permitting and enforcement.

Under the NFPA 855 framework, separation distances are determined by a hazard mitigation analysis (HMA) that incorporates results from UL 9540A fire propagation testing and evaluates the potential for thermal runaway, fire spread, and other site-specific hazards. These distances are not arbitrary; they are derived from empirical data and real-world testing reflecting the energy capacity of the system, the presence and type of fire suppression systems, and the proximity and characteristics of adjacent structures or exposures.

NFPA 855 Table 4.4.2.1¹ and related sections establish baseline separation distances as follows:

- Between BESS containers or units: A minimum of 3 feet (0.9 m) separation between individual outdoor enclosures, unless UL 9540A testing and the HMA demonstrate that reduced spacing will not increase fire propagation risk.
- From property lines, public ways, or lot lines: A minimum of 5 feet (1.5 m), or as otherwise supported by site-specific hazard analysis.
- From buildings, including residential dwellings or other occupied structures: Typically 10 feet (3 m), with larger distances recommended where sensitive uses (e.g., schools, hospitals, daycares) are present or where hazard analysis indicates higher risk.
- From critical infrastructure, hazardous materials storage, or similar high-consequence exposures: Setbacks may exceed 25 feet (7.6 m), subject to the findings of the HMA and the characteristics of the exposure.

These baseline distances are starting points; NFPA 855 allows for adjustment upward or downward based on site-specific hazard data. For example, installations that demonstrate limited propagation potential through UL 9540A testing and incorporate active fire suppression may support reduced separation, while systems that have not undergone testing or are without these safety measures may require increased separation.

¹ See *National Fire Protection Association (NFPA) 855: Standard for the Installation of Stationary Energy Storage Systems* § 4.4.2.1 & tbl. 4.4.2.1 (2023 ed.) (establishing minimum separation distances for stationary energy storage systems, including 3 ft (0.9 m) between individual outdoor enclosures, 5 ft (1.5 m) from property lines or public ways, 10 ft (3 m) from buildings and other occupied structures, and 25 ft (7.6 m) or greater from critical infrastructure or hazardous exposures, subject to site-specific hazard mitigation analysis and UL 9540A testing results).

Replacing fixed setback distances in Section 11-31-37 with this hazard-based, data-driven approach would align Mesa's ordinance with national standards, improve regulatory defensibility, and ensure that safety requirements scale appropriately with actual risk rather than imposing arbitrary limits that could either under- or over-regulate BESS facilities.

PROPOSED ORDINANCE AMENDMENTS:

Separation Setback Requirements. A BESS Facility and all associated mechanical equipment, including but not limited to power generation, cooling, ventilating, or other equipment that supports the BESS Facility, shall be ~~separated~~ setback from the following uses as follows:

- a. *Residential Zoning Districts and Uses.* ~~A minimum distance of 400 feet from the property line of the nearest residential zoning district, residential use, church, park, school, or other sensitive use as reasonably determined by the Planning Director.~~ A minimum distance shall be established consistent with the applicable setback requirements in NFPA 855,
- b. *Commercial and Industrial Zoning Districts and Uses.* ~~A minimum distance of 150 feet from the property line of the nearest Commercial or Employment zoning district or Commercial, Employment, or Industrial use.~~ A minimum distance shall conform to NFPA 855 separation requirements applicable to non-residential property lines or structures.

BESS Spacing (Internal Separation). ~~The spacing of BESS within a BESS Facility shall be designed to comply with all requirements of Title 7 – Fire Regulations of the Mesa City Code as it relates to internal setbacks and clear zones around all structures.~~ The spacing of BESS within a BESS Facility shall be established in accordance with UL 9540A test results and the applicable provisions of NFPA 855, as adopted by the Mesa City Code, to determine required separation distances between energy storage system units, adjacent structures, and fire barriers.

b) *Design Standards and Access.*

Section 11-31-37(F)(4) of the draft ordinance requires that all fire access drives and drive aisles within a BESS facility be paved in accordance with Section 11-32-2(C) and comply with Title 7 – Fire Regulations, while Section 11-31-37(F)(6) mandates full site screening with an opaque wall or fence that extends at least one foot above the tallest piece of equipment. Although these provisions are intended to ensure safe emergency access and minimize visual impacts, they impose prescriptive requirements that exceed what is necessary under nationally recognized safety standards and could limit project feasibility without corresponding safety benefits.

NFPA 855 establishes performance-based criteria for emergency vehicle access but does not require paved surfacing. Instead, the standard allows aggregate or other all-weather surfaces provided they meet load-bearing and accessibility requirements for fire apparatus. Moreover, paved roads can impede or complicate access to underground utilities for maintenance or repair. Allowing aggregate surfacing in lieu of paving would satisfy NFPA 855's fire access objectives while preserving subgrade permeability site disturbance, and reduced need for on-site flow

management, particularly in industrial settings where aggregate drives are common and code-compliant. We raised this issue in informal discussions with the Mesa Fire Department representatives at the City's first open house held on this Ordinance and perceived this suggested change to be acceptable.

Further, Section 11-31-37(F)(6) of the draft ordinance provides that "a BESS Facility shall be fully screened with an opaque wall or fence" and that "the height of the wall or fence shall be one (1) foot above the tallest piece of equipment." This provision should be revised for greater clarity and precision. In comments made during the October 6 City Council Study Session, City staff confirmed that the tallest piece of equipment that this provision is intended to apply to at a BESS facility is the BESS container itself. The ordinance should explicitly codify this interpretation by stating that screening height is measured relative to the BESS container, rather than any ancillary equipment or temporary components.

PROPOSED ORDINANCE AMENDMENTS:

Fire Access Drives and Drive Aisles. Each BESS within a BESS Facility shall be provided fire access to emergency response personnel via a fire access drive meeting all of the following requirements:

- a. ~~All drive aisles shall be paved in accordance with Section 11-32-2(C) of this Ordinance.~~
All fire access drives and drive aisles shall be constructed of paved or aggregate all-weather surfacing consistent with NFPA 855 performance-based access criteria, provided such surfaces meet the load-bearing, grade, and accessibility requirements for fire apparatus as determined by the Fire Code Official.

Site Screening. A BESS Facility shall be fully screened with an opaque wall or fence and shall meet all of the following standards:

- a. Substations. Substations are not subject to these requirements and are regulated by the screening requirements of Section (F)(7) below.
- b. Height. The height of the wall or fence shall be one (1) foot above the tallest ~~piece of equipment~~ BESS container.

c) *Ongoing Sound Studies*

Section 11-31-37(G)(1) of the draft ordinance establishes requirements for ongoing sound studies associated with BESS operations. While we support the implementation of protections for the community dealing with sound, we are concerned that the proposed language is unintentionally ambiguous and flawed. It provides that "[w]ithin 30 days of the issuance of a certificate of occupancy or certificate of completion, whichever occurs first, the operator shall conduct a sound study performed by a third-party acoustical consultant demonstrating sound levels do not exceed the modeled sound output of the facility in the initial sound study conducted prior to operations ('the baseline sound levels')." The study must "document noise levels emanating from the BESS Facility, during peak routine operation measured at the property line of the nearest residential

zoning district, residential use, church, park, school, or other sensitive use as reasonably determined by the Planning Director.” If noise levels exceed the baseline sound levels, a mitigation plan must be submitted outlining the measures that will be taken to reduce sound levels to baseline levels, and “[a]ll mitigation measures identified in the sound study shall be implemented, and proof provided to the City, within 60 days.” The ordinance further requires an annual sound study for five years following the initial study, measured at the same locations, with similar mitigation and reporting obligations if exceedances occur.

We understand and support the City’s objective of ensuring that BESS operations remain within acceptable sound levels and are compatible with surrounding land uses. Modern BESS facilities can be modeled to predict operational sound output at sensitive receptors, taking into account existing uses of surrounding properties, such as data centers, warehouse distribution centers, and other industrial activities. Consistent with the approach outlined in Section 11-31-37(G)(1) and applicable City zoning sound-performance thresholds, the applicant can provide a pre-construction sound study establishing baseline sound levels based on modeled conditions for the relevant zoning district. Post-construction verification testing can be conducted to confirm that facility operations comply with those modeled levels and applicable sound limits specified under the zoning code. This standards-based and zoning-specific framework aligns with accepted acoustic engineering practices and ensures consistency, predictability, and enforceability in permitting and compliance review.

To improve clarity and regulatory certainty, the City should consider clarifying in the ordinance that compliance with the sound standard is determined relative to the modeled baseline sound levels established in the pre-operation study, and that mitigation obligations arise only where BESS operational sound levels exceed those modeled levels. Explicitly stating this principle in Section 11-31-37(G)(1) would reduce ambiguity during post-construction enforcement and align the ordinance with the intent of the sound study requirements. It would also ensure that BESS projects are evaluated consistently with other industrial uses in similar zoning districts, reflecting the broader acoustic environment in which these facilities operate.

PROPOSED ORDINANCE AMENDMENTS:

Initial Sound Study. An initial sound study performed by a third-party acoustical consultant, which documents the following: The average noise generated from the battery energy storage systems, components, and associated ancillary equipment, measured at the nearest building, lot line that can be built upon, or public way, and demonstrates that it does not exceed any auditory limits established for the relevant land use zone.²

~~a. The baseline sound levels on the project site.~~

² BESS have demonstrated minimal or limited auditory impact on adjacent properties. At close distances, sound caused by BESS can range from 60 to 80 decibels, equivalent to the sound of a conversation (60db) and the sound of being inside a car (80db). Beyond property lines, and with the setbacks and screening specifications in NFPA 855, neighboring properties should experience minimal impact. For more information, consult the Pacific Northwest National Laboratory publication on Energy Storage in Local Zoning Ordinances.

~~b. The baseline sound levels measured at the property line of the nearest residential zoning district, residential use, church, park, school, or other sensitive uses as reasonably determined by the Planning Director~~

II. Incorporation of NFPA 855 and UL BESS Safety and Design Standards

a) Adoption of NFPA 855 by Reference

To ensure a technically robust and clearly defined regulatory framework for the permitted use of BESS in the City of Mesa, we recommend that Section 11-31-37 explicitly incorporate the latest published edition of NFPA 855 as the controlling standard for all new BESS installations, including requirements related to design, installation, commissioning, operation, maintenance, and decommissioning. This approach provides Mesa's Authorities Having Jurisdiction (AHJ) with clear, nationally recognized metrics governing maximum system energy thresholds, module spacing, fire detection, hazard mitigation analyses (HMA), emergency response planning, and decommissioning requirements.

b) Equipment Certification and Testing Requirements

Consistent with NFPA 855, all energy storage components should be required to demonstrate compliance with the following safety standards:

- UL 1973 – for battery modules and components;
- UL 9540 – for integrated BESS systems; and
- UL 9540A – for fire propagation testing to evaluate thermal runaway risk.

NFPA 855 mandates UL 9540A testing to ensure thermal propagation and fire-mitigation compliance. These results support hazard analyses submitted to the AHJ.

c) Submittal Requirements to the Authority Having Jurisdiction (AHJ)

NFPA 855 requires the following submittals to the AHJ:

- Hazard Mitigation Analysis (HMA);
- Emergency Response Plan;
- Details of all safety systems; and
- Results of UL 9540A or equivalent testing.

These submittals enable transparent, consistent, data-driven safety reviews and should be reviewed by the Mesa Fire and Medical Department prior to permit approval.

III. Conclusion

We commend the City of Mesa for proactively developing standards for Battery Energy Storage Systems. Incorporating NFPA 855 and associated UL standards will ensure the ordinance is technically defensible, enforceable, and consistent with national best practices. The proposed

revisions establish a performance-based safety and zoning framework that enhances community protection, regulatory clarity, and industry feasibility.

We respectfully urge adoption of the recommended revisions to Section 11-31-37 to support Mesa's long-term energy reliability, economic development, and resiliency goals.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Rich', with a stylized flourish at the end.

Court S. Rich

Sean Pesek

From: Mesa Development Services <noreply@openforms.com>
Sent: Monday, October 13, 2025 11:52 AM
To: Long Range Planning
Subject: Proposed Text Amendments Comment

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Proposed Text Amendments Comment

Name	Jeanne Blaes
Are you submitting feedback as a:	Resident
I have a comment or question regarding:	Battery Energy Storage System
Battery Energy Storage Systems Text Amendments – please indicate the draft code section and your questions/comments	As a representative of Veterans Forward and a resident of Mesa, I would like to take this opportunity to express my/our support for the use of BESS by the city. As a electric car owner and solar roof power generator, I am fully in favor of employing more sustainable and affordable ways of energy production and storage. The use of an effective and efficient BESS, whether by utility companies or individual customers could potentially be a win-win for all. I would like to see the city offer incentives for solar customers (decentralized) to use larger battery storage units and be able to use/share that stored energy during times of high use instead of sending all the generated power back to the grid. Not as much money making

	opportunities for the utility company, but better for customers.
Administrative Review Text Amendments – please indicate the draft code section and your questions/comments	
Middle Housing Text Amendments – please indicate the draft code section and your questions/comments	
Nonconforming and Procedurally Conforming Text Amendments – please indicate the draft code section and your questions/comments	
Please provide your general question/comments	
Would you like a response to your question(s)?	No
Would you like to be notified of future public meetings?	Yes
Email	blaesjj@gmail.com

From: [Mesa Development Services](#)
To: [Long Range Planning](#)
Subject: Proposed Text Amendments Comment
Date: Wednesday, October 1, 2025 3:05:27 PM

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Proposed Text Amendments Comment

Name	Anthony Grinevich
Are you submitting feedback as a:	Resident
I have a comment or question regarding:	Battery Energy Storage System
Battery Energy Storage Systems Text Amendments – please indicate the draft code section and your questions/comments	Please ensure significant screening is required
Administrative Review Text Amendments – please indicate the draft code section and your questions/comments	
Middle Housing Text Amendments – please indicate the draft code section and your questions/comments	
Nonconforming and Procedurally Conforming Text	

Amendments – please indicate the draft code section and your questions/comments	
Please provide your general question/comments	
Would you like a response to your question(s)?	No
Would you like to be notified of future public meetings?	No
Email	

From: [Rachel Phillips](#)
To: [Noah Bulson](#)
Cc: [Sean Lake](#)
Subject: FW: Proposed Text Amendments Comment
Date: Tuesday, October 7, 2025 3:13:10 PM

I started a public comment folder in sharepoint. Can you save this there?

Thanks,
Rachel

From: Mesa Development Services <noreply@openforms.com>
Sent: Monday, October 6, 2025 3:14 PM
To: Long Range Planning <longrangeplanning@mesaaz.gov>
Subject: Proposed Text Amendments Comment

This Message Is From an External Sender

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[Report Suspicious](#) ?



Proposed Text Amendments Comment

Name	
Are you submitting feedback as a:	Business Owner
I have a comment or question regarding:	Battery Energy Storage System
Battery Energy Storage Systems Text Amendments – please indicate the draft code section and your questions/comments	Please follow the well-researched setbacks and other safety measures listed in NFPA 855. NFPA 855 ensures safe siting of BESS projects balanced with the need to enable energy development to foster local economic growth.
Administrative Review Text	

Amendments – please indicate the draft code section and your questions/comments	
Middle Housing Text Amendments – please indicate the draft code section and your questions/comments	
Nonconforming and Procedurally Conforming Text Amendments – please indicate the draft code section and your questions/comments	
Please provide your general question/comments	
Would you like a response to your question(s)?	No
Would you like to be notified of future public meetings?	Yes
Email	tgrubbs@theadjacent-possible.com