Battery Planning: Siting and Other Considerations

Local planners and zoning officials oversee the siting of most energy facilities, including utility-scale Battery Energy Storage Systems (BESS), in their respective jurisdiction. This document provides additional information to help planning officials in Indiana understand the siting, land use, environmental, and fire safety implications of BESS, especially in jurisdictions with no existing facilities.

Land Use and Ecological Impacts

Footprint and siting flexibility: Unlike most other energy generation technologies, BESS do not need to be sited in areas with direct access to any specific natural (e.g., water, sun, wind) or infrastructural (e.g., gas pipeline, highway) resource. As a result, developers generally look to site BESS wherever it is the most economic and easiest to interconnect to the grid. Utility-scale BESS generally require approximately 0.03-0.1 acres per megawatt (MW), as compared to 0.2-0.3 acres/MW for natural gas plants.[1]

Land use zoning: Utility- or energy-related projects are typically allowed within agricultural, commercial and/or industrial land use zones, with special exemptions. BESS are likely compatible with land-use zones that allow utility- or energy-related technologies per current zoning ordinances. Best practice is for zoning ordinances to provide technology-neutral frameworks that are adaptable to innovations in energy and grid technologies.

Environmental regulation: Indiana Department of Natural Resources and Indiana Department of Environmental Management review is required for projects sited in floodways and wetlands, respectively.

Disturbance mitigation: Common strategies to address potential disturbances from BESS are similar to those for other energy technologies.

Disturbance Type	Example	Mitigation
Ground disturbance	Site grading, access roads, cement pads	Siting BESS on former industrial or power plant sites (i.e., brownfield) or co-locating with other energy facilities preserves unaltered land (i.e., greenfield)
Viewshed	Fencing, nighttime lighting	Reducing visibility with landscape buffers or engineered screening can mitigate viewshed and aesthetic impacts
Traffic	Higher local road use during construction	Traffic plans can mitigate traffic to schools and/or commuters
Noise	Construction noise	Constrained work hours can reduce noise interruption

Fire Safety and Setback Requirements

Safety guidelines: National Fire Protection Association (NFPA) 855 standards include setbacks and other conditions that establish minimum requirements for BESS safety.

Egress and vegetation clearance: Best practice is to maintain 10-foot clearances from building exits and flammable vegetation.

Site access: BESS access roads must be wide enough and adequately constructed and maintained to accommodate construction, maintenance, and emergency vehicles.

Safety regulation: The Indiana Department of Homeland Security reviews NFPA 855 compliance, commissioning plans, decommissioning plans, and emergency response plans for BESS projects.

Other setback considerations: NFPA 855 standards differentiate requirements by location and design.

	Remote	Near Exposure	Reduced Setbacks
Applicability	100 feet or more from property lines, roads, and structures	Less than 100 feet from property lines, roads, and structures	When (1) fire-rated barriers or enclosures are used; (2) fire test data shows no harmful heat radiation sufficient to ignite nearby exposures; and (3) system has noncombustible, fire-rated outer walls
Requirement	Exempt from added spacing requirements	Additional 10-foot setbacks and other design considerations	Reductions from 10-ft to 3 ft setback permitted with approval from the Authority Having Jurisdiction (Indiana Department of Homeland Security in Indiana)

Best Practice and Frameworks

NYSERDA Guidebook: The Battery Energy Storage System Guidebook developed by the New York State Energy Research and Development Authority (NYSERDA), last updated in November 2024, offers details on permitting and siting guidance that can serve as a valuable reference.

Codes and standards: A variety of resources exist to help state officials and local planners learn more about best practice requirements for BESS safety, including:

BESS Component	National Codes and Standards
Interconnection	IEEE 1547, IEEE 2800
Overall Installation	NFPA 70, NFPA 855, IFC, UL 9540, IEEE C2
Fire/Gas Detection	IFC, NFPA 72, NFPA 855
Fire/Explosion Detection	IFC, NFPA 13, NFPA 15, NFPA 68, NFPA 69, NFPA 855
Battery Rack	UL 9540A
Power Conversion System	UL 1741
Cell/Battery	UL 1642, UL 1973, UL 9540A
Communications, Battery Management System (BMS)	UL 1741, UL 9540, CSA/ANSI C22.2 No. 340, IEEE 2686, IEEE 2688

Key: IEEE =Institute of Electrical and Electronics Engineers; IFC = International Fire Code ; UL = Underwriters Laboratories; CSA/ANSI = Canadian Standards Association / American National Standards Institute.

For additional information, see Hoyt, M., Kuykendall, O., Cotton, W. et al. (2025). *Utility-Scale Battery Energy Storage System Applications and Impacts in Indiana*. Indiana Office of Energy Development.

[1] Mills, S. & Krol, M. (2024). *Planning & Zoning for Battery Energy Storage Systems.* University of Michigan, Graham Sustainability Institute. https://graham.umich.edu/media/files/BESS-guide.pdf#:~:text=Footprint%20and%20Land%20Availability%3A%20The,solar%20energy%20systems%2C%20BESS%20often.