

NYC ENERGY STORAGE SYSTEMS ZONING GUIDE

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NYSERDA



SMART DG HUB

NYC Mayor's Office of
Climate and Sustainability

NYC Energy Storage Systems (ESS) Zoning Guide

The City of New York is actively pursuing its ambitious climate agenda through a comprehensive, multi-agency effort that includes policy changes, local mandates, carbon reduction goals, and more. One aspect of these wide-ranging efforts includes updating the City’s zoning regulations and zoning enforcement pertaining to Energy Storage Systems (ESS).

This **NYC ESS Zoning Guide** has been developed by the Smart DG Hub, with input and support from the NYC Mayor’s Office of Climate & Sustainability and NYSERDA. The DG Hub is a strategic initiative of Sustainable CUNY of the City University of New York, which works in collaboration with City and State agencies, industry, utilities, and other stakeholders to remove market barriers to widespread deployment of distributed generation technologies. This document is intended to serve as a high-level navigational guide to understanding zoning provisions applicable to ESS, and to provide a comprehensive summary of the three recent ESS-related zoning changes and how they interrelate.

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NOTE: It is important to be aware that the information supplied here is for high-level guidance only – it is not intended to, nor should it be used for the purposes of, replacing the professional zoning analysis that is required for ESS permit applications.

I. RECENT CHANGES TO NYC ZONING RELEVANT TO ESS

As of the publication of this document, there have been three major developments in zoning as relates to ESS – two NYC Department of Buildings (DOB) *Buildings Bulletins* released in 2019 and 2020 respectively, and a zoning text amendment adopted by the City Council in May 2021. These publications are summarized below.

A. Buildings Bulletin 2019-007 (Sept 2019)

[**Bulletin 2019-007**](#) clarifies the zoning use group for non-accessory battery energy storage systems.

- Classifies **non-accessory ESS** facilities under a specific zoning **Use Group** depending on the square footage of the ESS installation footprint:
 - **Use Group 6D** for ESS occupying less than 10,000 square feet of site area, or
 - **Use Group 17C** for ESS occupying more than 10,000 square feet.
- The use group determines the siting allowances for a given zoning district, including where an ESS can be sited as-of-right, or where siting would require special additional approvals by the Board of Standards & Appeals (BSA) or City Planning Commission (CPC).

B. Buildings Bulletin 2020-023 (Dec 2020)

[**Bulletin 2020-023**](#) defines when battery systems are considered accessory to the principle uses of the zoning lot, clarifies the applicable limitations for such systems, and outlines the relevant filing procedures.

- Defines **accessory ESS** as any ESS for which the total kWh capacity of all systems within a zoning lot does not exceed the maximum kW electrical load of the lot multiplied by 10 hours.
- Designates **accessory ESS** as **accessory mechanical equipment**. This allows accessory ESS to be treated as a **permitted obstruction** (PO) wherever accessory mechanical equipment is treated as such in the Zoning Resolution (primarily rooftops, as well as Yards, Courts, and Open Spaces citywide, per the 2021 ZCFR amendment, as described below).

C. Zoning for Coastal Flood Resilience (ZCFR) Text Amendment (May 2021)

[Zoning for Coastal Flood Resiliency](#) amended the existing [NYC Zoning Resolution \(ZR\)](#) text to include provisions that promote long-term resiliency and support post-disaster recovery. Key provisions within the text amendment pertain specifically to ESS.

- Defines **accessory power systems**, a subset of **accessory mechanical equipment**, to include accessory batteries and other energy storage systems. This represents the first specific inclusion of energy storage technology in the ZR.
- Grants **permitted obstruction** allowance for **accessory power systems** in Yards, Courts, and Open Spaces of districts citywide, making it easier to site outdoor accessory ESS. (Previously this allowance was granted solely in districts within flood hazard areas.)
- Excludes from the **floor area** calculation both the square footage of **accessory mechanical equipment** and the associated square footage needed for access/maintenance, making it more feasible to site accessory ESS indoors.

II. USER GUIDE

This section provides an overview of the zoning regulations that may apply to ESS installations on a given zoning district/lot. The first section provides definitions and examples for **accessory** and **non-accessory** ESS designations. The subsequent sections provide general guidelines by primary district type, for both Accessory ESS and for Non-Accessory ESS, including an overview of the general zoning regulations, siting criteria, restrictions, and/or special approvals that may be needed. Users should read the *Buildings Bulletins* provided via the links above to aid in understanding the terminology and passages that are referenced below.

NOTE: Zoning regulations may have multiple exceptions or unique applications in a given district or lot. The information below provides high-level guidance, not detailed treatment or analysis of any particular site. Always consult with a registered design professional to provide the requisite zoning analysis required for NYC DOB permit applications.

A. Defining Accessory and Non-Accessory ESS

- 1) Per Bulletin 2020-023, **accessory** designation for ESS is based on the “Maximum 10-Hour Energy Storage Capacity” of the zoning lot (kWh). This is defined to be the maximum electrical load of the zoning lot (kW) multiplied by 10 hours.
 - An ESS is considered to be **accessory** if the total combined kWh capacity of all ESS within the zoning lot does not exceed this kWh threshold.

- An ESS that brings the lot's total energy storage capacity (kWh) above the threshold will be considered **non-accessory**.
- 2) Definitions including "Maximum Electrical Load" and "Maximum 10-Hour Energy Storage Capacity" are found in *Bulletin 2020-023*, section II.A on page 2, and the calculation of Maximum 10-Hour Energy Storage Capacity is found in section II.C.1 on page 3.
 - 3) Simplified examples:
 - a. A zoning lot contains one building and three electric vehicle charging stations, but no ESS. The maximum combined electrical load of the zoning lot is 100kW; the Maximum 10-Hour Energy Storage Capacity of the lot is therefore 1000kWh. An ESS sized at 1000kWh or less will be considered **accessory** for this lot.
 - b. A zoning lot contains two small buildings and 500kWh of existing ESS. The maximum combined electrical load of the zoning lot (excluding existing ESS) is 60kW; the Maximum 10-Hour Energy Storage Capacity of the lot is therefore 600kWh. An ESS sized at 100kWh or less will be considered **accessory** for this lot; any additional ESS proposed would be considered **non-accessory**.
 - 4) If your ESS project meets the criteria for accessory ESS, see the next section, "B. Accessory ESS – General Guidelines by Primary District Type". Otherwise, skip to the following section, "C. Non-Accessory ESS – General Guidelines by Primary District Type".

B. Accessory ESS – General Guidelines by Primary District Type

1) RESIDENCE DISTRICTS

A. Rooftops:

- For the purposes of rooftop siting, ESS are defined as **accessory mechanical equipment**. NYC zoning regulations allow **accessory mechanical equipment** as a **permitted obstruction (PO)** that can penetrate a maximum lot height limit or sky exposure plane in most R-districts, with some exceptions such as specific sub-districts (R2A, R2X, R3, R4, R4-1, R4A, R5A) and other special districts.
- Specific design requirements, including Setbacks, Enclosures/Screening, and Volume/Area/Height, may vary depending on the zoning sub-district, building type, facility type (e.g. Residential Facilities versus Community Facilities), and/or other special district provisions such as Flood Hazard Areas, but generally:
 - **Setbacks:** POs must be located 10' from the street wall of a building (with some exceptions for narrow and wide street lines).

- **Enclosures/Screening:** All ESS must be screened on all sides.
- **Volume/Area/Height:** Volume of the ESS plus its screening must either meet the given volume calculation or must meet a maximum 20% lot coverage of the building plus specific height limits (25' for buildings <120' and 40' for buildings >120').

B. Yards/Courts/Open Space:

- For the purposes of siting in Yards/Open Spaces, ESS may be defined as both ***accessory mechanical equipment***, and more specifically as ***accessory power systems***. NYC zoning regulations allow ***accessory mechanical equipment*** as a ***PO*** in Yards or Rear Yard Equivalents, Courts, and Open Space only in Flood Hazard Areas; whereas ***accessory power systems*** are allowed as ***POs*** in Yards, Rear Yard Equivalents, Courts, and Open Space citywide. Different allowances apply, so if you are locating in a Flood Hazard Area, take these differing allowances into account when determining how to classify the installation.
- Specific design requirements, including Enclosures/Screening, Size/Area, and Height, may vary depending on the zoning sub-district, the type of facility (e.g. Residential Facilities versus Community Facilities), space type (e.g. Yards, Courts, Open Space), and/or other special district provisions such as Flood Hazard Areas, but generally:
 - **Size:** ESS equipment, including any screening or enclosure, is limited in size to <25% of a yard/court/open space, and front yards are limited to <25 square feet, with some exceptions.
 - **Height:** R1-R5 districts limit heights to 10' above adjoining grade in rear/side yards and courts, and 5' above grade in front yards, while R6-R10 districts require a limit of 15'.
 - **Enclosures/Screening:** ESS may be unenclosed if located at least 5' from a lot line. ESS that exceed a certain square footage will need to be fully screened, and for any ESS sited in a front yard, the street-facing side must be fully screened by vegetation.

2) COMMERCIAL DISTRICTS

A. Rooftops:

- For the purposes of rooftop siting ESS are defined as ***accessory mechanical equipment*** and are therefore allowed as ***POs*** that can penetrate a maximum lot height limit or sky exposure plane.

- Specific design requirements, including Setbacks, Enclosures/Screening, and Volume/Area/Height, may vary depending primarily on the zoning sub-district and/or other special district provisions such as Flood Hazard Areas, but generally:
 - **Setbacks:** *POs* must be located 10' from the street wall of a building (with some exceptions for narrow and wide street lines).
 - **Enclosures/Screening:** All ESS must be screened on all sides.
 - **Volume/Area/Height:** The ESS plus its screening must be contained in a volume that meets zoning regulations - either the volume calculation specified in the zoning text, or a maximum 20% lot coverage of the building plus specific height limits (25' for buildings <120' and 40' for buildings >120').

B. Yards/Rear Yard Equivalents: For the purposes of siting in Yards/Open Spaces, ESS are considered *accessory power systems*, which are allowed by the Zoning Resolution as *POs* in Yards or Rear Yard Equivalents. ESS must not exceed a height of 23' above curb level (with some modifications for districts located in flood hazard areas).

C. Public Plazas: ESS are not considered *POs* in public plazas. However, for any mechanical equipment that is located adjacent to a public plaza, any exhaust vents must be at least 15' above the level of the adjacent public plaza and the equipment must be separated via a barrier sufficient to substantially conceal their presence and operation both visually and audibly.

3) MANUFACTURING DISTRICTS

A. Rooftops:

- For the purposes of rooftop siting ESS are defined as *accessory mechanical equipment* as per Bulletin 2020-023 and are therefore allowed as *POs* that can penetrate a maximum lot height limit or sky exposure plane.
- While requirements among M-districts are generally more uniform than R- and C-districts, specific design requirements, including Setbacks, Enclosures/Screening, and Volume/Area/Height, may vary depending on the zoning sub-district and/or other special districts or Flood Hazard Areas, but generally:
 - **Setbacks:** *POs* must be located 10' from the street wall of a building (with some exceptions for narrow and wide street lines).
 - **Enclosures/Screening:** All ESS must be screened on all sides.
 - **Volume/Area/Height:** The ESS plus its screening must be contained in a volume that meets zoning regulations - either the volume calculation specified in the

zoning text, or a maximum 20% lot coverage of the building plus specific height limits (25' for buildings <120' and 40' for buildings >120').

- B. Yards/Rear Yard Equivalents:** Per ZCFR, for the purposes of siting in Yards/Open Spaces, ESS are considered **accessory power systems**, which are allowed by the Zoning Resolution as **POs** in Yards or Rear Yard Equivalents. ESS must not exceed a height of 23' above curb level (with some modifications for districts located in flood hazard areas).

C. Non-Accessory – General Guidelines by Primary District Type

- 1) **Non-accessory ESS** will be designated under a certain **use group**, based on physical installation footprint size, as per *Buildings Bulletin 2019-007*:
 - **Non-accessory ESS** with an installation footprint less than 10,000 sq. ft. are categorized under **Use Group 6D**, “Electric or gas utility substations, open or enclosed, limited in each case to a site of not more than 10,000 square feet”.
 - **Non-accessory ESS** with an installation footprint greater than 10,000 sq. ft. are categorized under **Use Group 17C***, “Public transit, railroad or electric utility substations, open or enclosed, with no limitation as to size”.
- 2) The **use group** designation determines the requirements for each **non-accessory ESS** project, as summarized in the table below.

Size / Use Group	Dist.	Special Permit Requirements	Other Additional Requirements
USE GROUP 6D Non-Accessory ≤ 10,000 sf	R	BSA special permit	CEQR and new/amended Cert of Occupancy
	C	None for zones C1, C2, C4, C5, C6 (except C6-1A), and C8. For zones C3, C6-1A, and C7, use group 6D is not allowed as of right.	None
	M	None	None
USE GROUP 17C* Non-Accessory > 10,000 sf	R	CPC special permit (if 17/17C)	CEQR and new/amended Cert of Occupancy (if 17/17C)
	C	BSA special permit (if 17C, size 10,000-40,000 sq. ft.) CPC special permit (if 17C, size >40,000 sq. ft.)	CEQR and new/amended Cert of Occupancy (if 17/17C)
	M	None	None

*As per Bulletin 2019-007 depending on the size, characteristics, and technical specification of the facility, it may be classified under Use Group 17C, “Public transit, railroad or electric utility substations, open or enclosed, with no limitation as to size”, or may be considered as other uses permitted by special permits.

D. Special Permit Processes

There are two avenues for requesting special permits for proposed projects that do not fall under existing allowable uses of the site's zoning district:

- 1) **BSA: The Board of Standards and Appeals** exists as part of the City's system for regulating land use, development, and construction and was established as an independent board to grant "relief" from the zoning code. The BSA is composed of five commissioners appointed by the Mayor, and reviews and grants applications for **special permits** for certain proposed developments and uses. Under certain circumstances, a BSA **special permit** may be sought to allow a **non-accessory** ESS installation in an R-district under the definition of an "electric or gas utility substation," as described in ZR 73-14. The BSA also considers requests for **variances** from zoning requirements, and hears appeals of determinations made by other agencies, such as DOB. While a **variance** may be sought to allow an ESS installation contrary to the zoning regulations applicable to the proposed site, it would only be granted in a highly unusual circumstance for sites with unique hardships, due to high standards required to meet the requirements for a **variance**.
 - For general information on the BSA, visit <https://www1.nyc.gov/site/bsa/index.page>.
 - For details on the BSA **special permit** for ESS, see ZR 73-14 <https://zr.planning.nyc.gov/article-vii/chapter-2#73-14>.
 - For more information on **variances** granted by the BSA, see ZR 72-20 <https://zr.planning.nyc.gov/article-vii/chapter-2#72-20>.
- 2) **CPC: The City Planning Commission** is a 13-member panel responsible for the conduct of planning relating to the orderly growth and development of the city. The Commission meets regularly to hold hearings and review and vote on applications related to the use, development, and improvement of real property subject to City regulation and an assessment of their environmental impacts where required by law. The CPC considers site-specific special approvals for projects that would involve a more significant departure from existing allowable uses than the permits issued by the BSA. In addition, the CPC can consider changes to the underlying zoning district (a **rezoning**) either on its own initiative or at the request of a private applicant. However due to the length of this process, and the costs associated with private applications, a **rezoning** is generally an infeasible solution for siting an ESS installation.
 - For more information visit <https://www1.nyc.gov/site/planning/applicants/overview.page>.
 - For more information on the CPC special permit for ESS, see ZR 74-61 <https://zr.planning.nyc.gov/article-vii/chapter-2#74-61>.

ABOUT

The City University of New York formed the Smart Distributed Generation Hub (Smart DG Hub) to develop a strategic pathway to a more resilient distributed energy system. The Smart DG Hub, working in collaboration with NYS municipalities and partners across the state, has developed an extensive portfolio of educational resources about solar+storage, including guidance for permitting these systems.

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