PERMITTING OUTDOOR ENERGY STORAGE SYSTEMS IN NYC

FDNY INSTALLATION APPROVAL SITE PLAN FOR LARGE SYSTEMS

December 2021

NEW YORK STATE OF OPPORTUNITY. NYSERDA

SMART DG HUB

NYC Mayor's Office of Climate and Sustainability

Overview

The Smart Distributed Generation (DG) Hub, established by Sustainable CUNY of the City University of New York in 2013, is a comprehensive effort to develop a strategic pathway to safe and effective solar and storage installations in New York City. This document was created in collaboration with the NYC Fire Department (FDNY) and is intended to provide guidance regarding the development of an energy storage installation Site Plan, a key component of the site-specific Installation Approval, which is a requirement for permitting large energy storage systems (ESS) in NYC.

As detailed in 3RCNY Rule 608-01, site-specific Installation Approval is a required part of the FDNY's permitting process for all Large ESS (defined as per section (c)(2) of the Rule as >250kWh for Li-ion based battery types and >500kWh for all other battery chemistry types). The submittal package for the Installation Approval must include:

- a detailed Site Plan which must be prepared by a NYS registered design professional with knowledge of ESS failure modes/analysis and should include the information outlined in the following pages.
- official architectural drawings (Construction, Fire Protection, Electrical, etc.) signed and stamped by the Registered Design Professional.
- other elements as described in section (e) of the Rule.

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Site Plan Checklist

Each Site Plan should include a written description of all items listed in Table 1 below (adapted and expanded from section (e) of 3RCNY Rule 608-01). In addition, the Site Plan should also include visual aids – photographs, and/or map images, and/or site drawings – and these visual aids should show the locations of certain elements as indicated below, using labels or symbols.

Table 1: Universal Site Elements

Site Plan Item/Element	Indicate on Visual Aids
Exact location of the stationary storage battery system installation; including location of access panel or enclosure entrance(s)	✓
Surrounding public streets, fire apparatus access roads and pedestrian walkways	✓
All buildings and structures on or adjoining the premises (or within 100 feet of the perimeter of the system), identified by occupancy group and construction type.	✓
➢ Especially note buildings with sensitive occupancies (e.g. schools) or complicated egress (e.g. hospitals)	
➢ Impact on surrounding exposures due to: explosion, heat flux, toxic fumes.	
Any walls or fencing enclosing the installation or the premises on which it is located.	✓
All transportation and utility infrastructure, including electrical power lines, within 250 feet of the installation.	✓ (as image(s) allow)
Location and content of signage.	✓
Location and type of other stationary storage battery systems located on the premises or within 50 feet of the proposed installation (if 50 feet extends to other premises, as determined by visual inspection of the outdoor space or reasonable inquiry of the owner).	✓
E-Stop and emergency shutdown procedures:	
➢ E-stops should be designed as per the requirements of RCNY 608-01(g)(3)(D).	
➢ Specify what is shut down when e-stop is activated	

Additional Site Plan Information

Table 2 lists additional elements that should also be included in Site Plans if they are applicable to a project (many, but potentially not all, elements below will be applicable for most projects). As with the items in Table 1, these items should also be described both in written form as well as denoted on visual aids where relevant.

Table 2: As-Applicable Site Elements

Site Plan Element	Indicate on Visual Aids
Hydrant locations, hydrant main sizes, and hydrant distance(s) to FDC or ESS (whichever is applicable)	✓
Suppression system – number of sprinkler zones, activation of zones (manual or automatic), suppression agent (water-based or other)	
Responder access area(s):	
➢ Fire Department Connection (FDC) locations, distance from ESS, and identifications of which zone each FDC feeds (signage). Ensure FDC is not located within the deflagration hazard zones or high heat flux areas.	✓
➢ E-stop location & distance from ESS. Ensure e-stop is not located within the deflagration hazard zones or high heat flux areas.	✓
➢ Manual smoke/gas purge system controls & distance from ESS. Ensure purge switch is not located within the deflagration hazard zones or high heat flux areas.	✓
Building openings – on building if ESS is located on rooftop, otherwise on buildings in close proximity	
Vehicle Parking	✓
HVAC intakes – on building if ESS is located on rooftop, otherwise on buildings in close proximity	
Rooftop applications should include clear path/landing zones as per FC 504.4	✓
Enclosure/container manual smoke/gas purge exit points	✓
Enclosure/container déflagration vent locations & hazard zone	✓
Flood zone information (FEMA Flood Map Service Center: https://msc.fema.gov/portal/home)	✓ (if applicable)
Any other potential hazard (exposed natural gas piping, co-generation plant, fuel cell, flammables/combustibles, hazardous materials storage, etc.).	✓
Any other measures or additional lines of protection (e.g. blast wall, etc.) to mitigate the impact of battery system failure on the adjoining buildings or structures, or other site-specific hazard mitigations, including those required by a UL Standard 9540 hazard mitigation analysis or conditions of the product's Equipment Approval/Certificate of Approval (COA).	✓ (if applicable)

Visual Aids

Visual aids are an important component of the Site Plan and should support thorough communication about the proposed project site and its surroundings to the FDNY plan reviewers. Suggested formats and instructions for visual aids are provided below. However, Site Plans may include any type and number of visual aids that would be helpful in imparting a thorough understanding of the project to FDNY plan reviewers.

The following types of visual aids are suggested:

- Satellite map images of proposed site – aerial, broad-scope view that shows the project site in relation to its surroundings. Basic satellite-based mapping tools such as Google Maps are acceptable.
- Drawings/illustrations of proposed project – more focalized, site-level view that shows a more detailed layout of the ESS and its key fire safety elements.
- Photographs that show key areas of the site, and/or any special or unique elements that should be discussed or highlighted with the plan reviewers.

Be sure to denote items clearly using a legend and/or labels.

Examples of site map screenshots and illustrations are provided on pages 4-7. These are intended as examples only; visual aids should be tailored to an individual site's unique features, layout, requirements, and site elements.

In addition, each visual aid example includes an accompanying legend. A *Legend Template Library* is available in Appendix A (page 9) which contains ready-to-use legend symbols, if desired (note that use of this legend format/structure is optional and provided as a helpful tool, but is not required).

Example Visual Aids With Key Item Labels

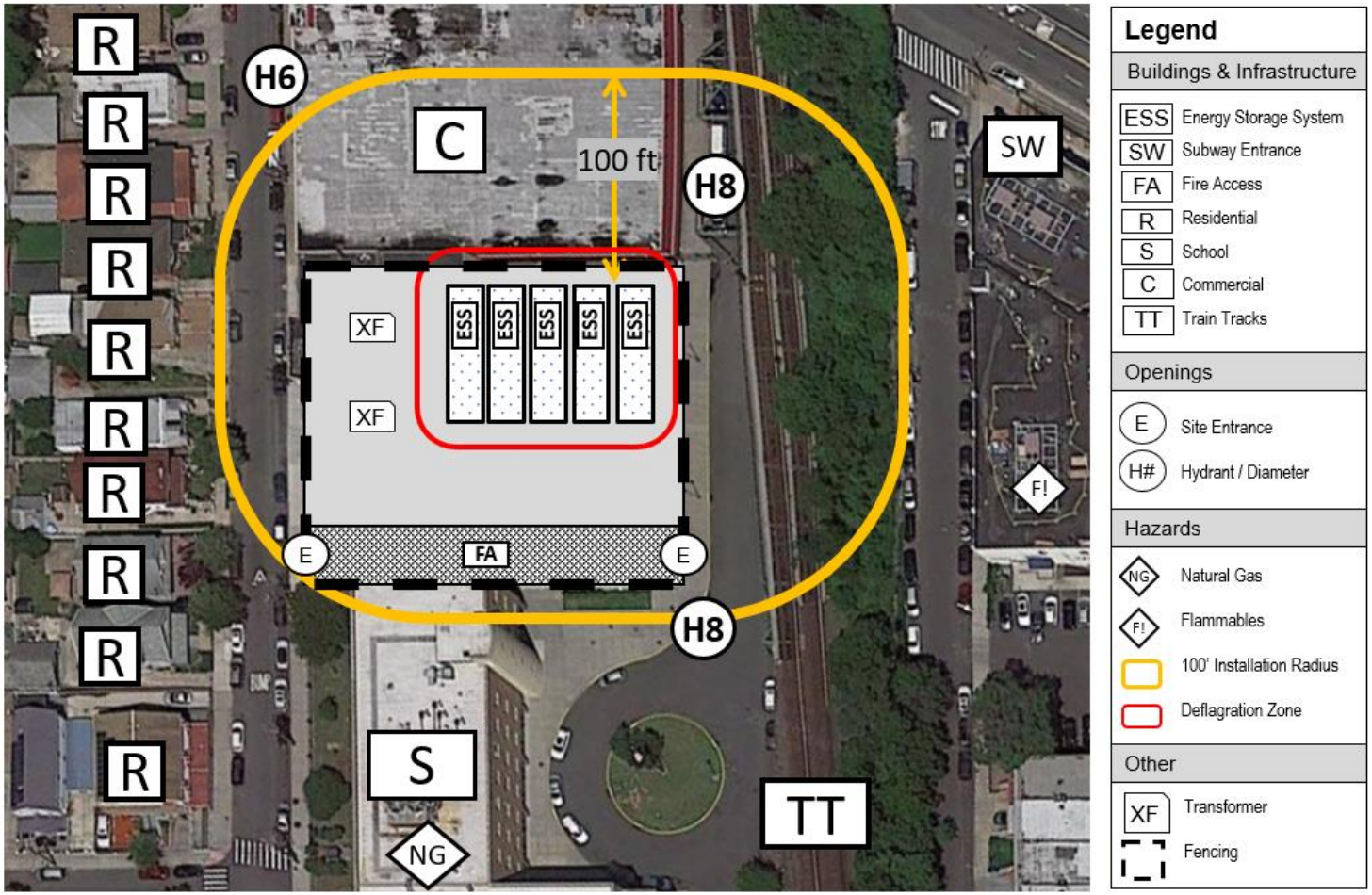
The following four examples illustrate what the visual aids in a site plan could look like, with examples of both a proposed ground-mount and a rooftop installation, as follows:

<u>Example Visual Aid Contents:</u>

1. Ground Mount, Aerial View
2. Ground Mount, Site-Level View
3. Rooftop Mount, Aerial View
4. Rooftop Mount, Site-Level View

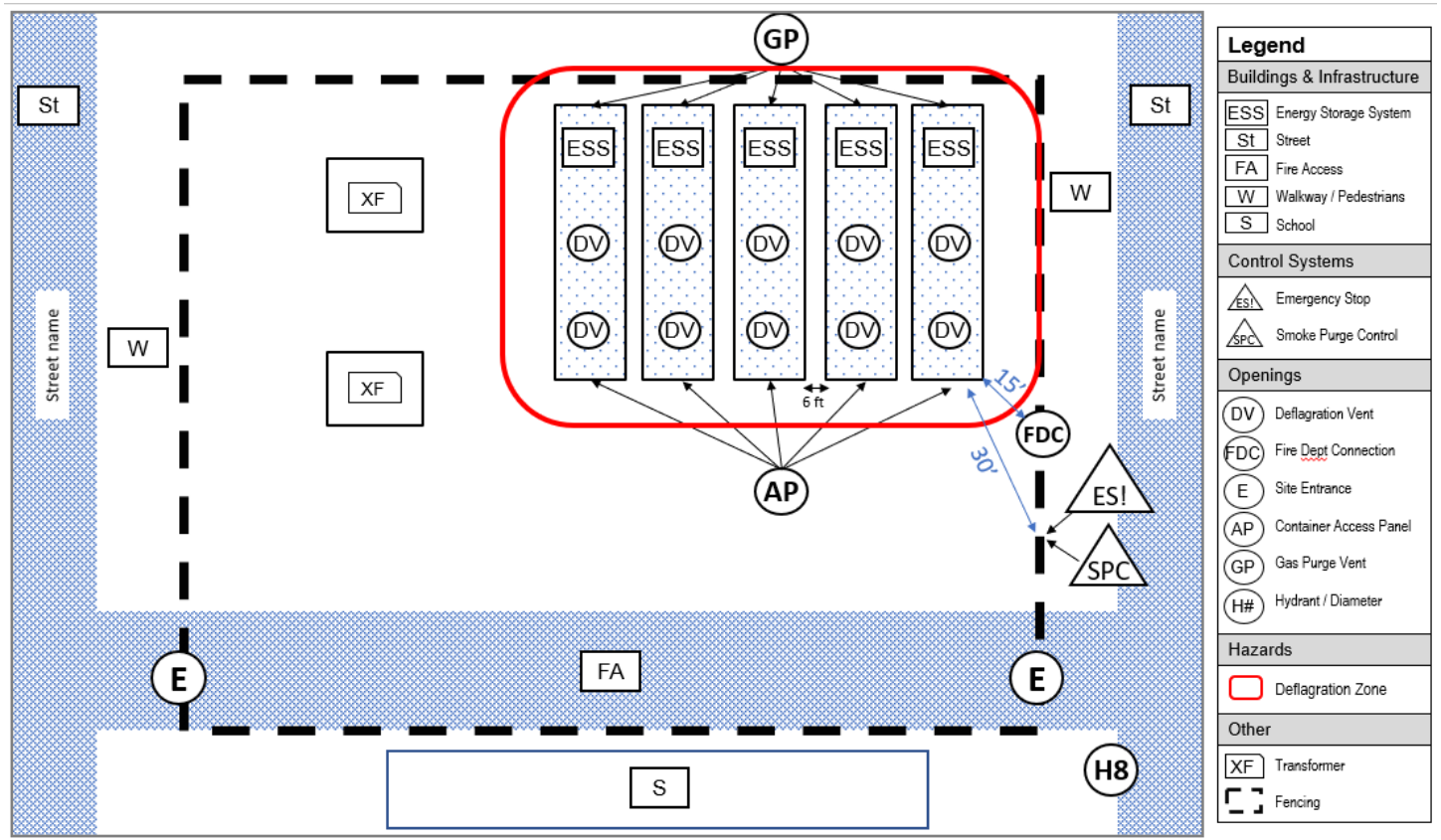
1. Ground Mount Installation, Aerial View

This is an example image taken from Google's online satellite map. Key site as well as surrounding elements are labeled on the map. Note that the items listed in the legend pertain to elements that are specific to this particular site (e.g. School **S**, Train Tracks , **TT** etc.). Legend labels are to be modified to meet your needs, for example a Hospital building denoted by **H**, or a Nursing Home denoted by **N**.



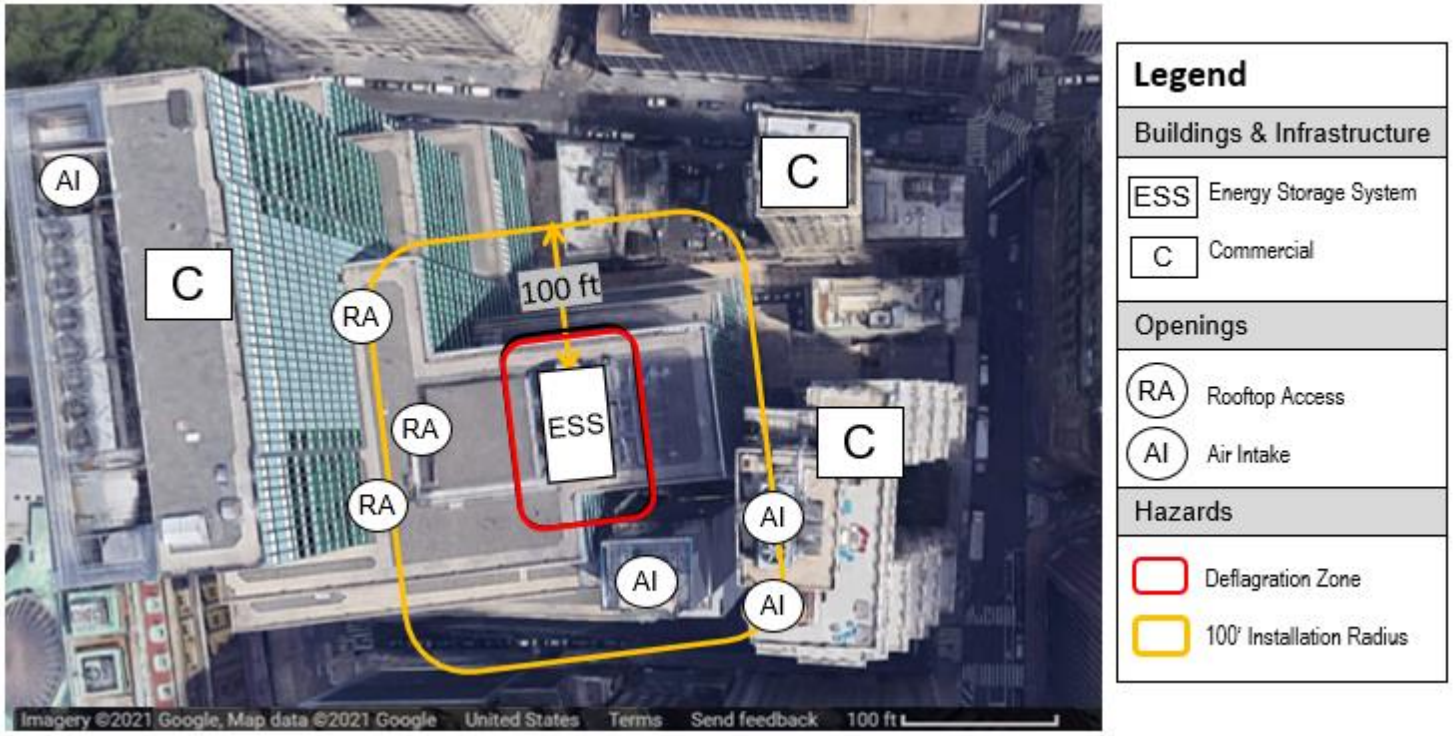
2. Ground Mount Installation, Site-Level View

This is an example of a drawing of the proposed project at site-level view. Details pertaining to the location of equipment-specific elements (e.g. fire safeties, controls) are denoted. Likewise, any legend labels should be modified to meet the needs of your project. Additional layout details, such as the 6 foot spacing shown between containers in the example below, provide helpful context for plan reviewers.



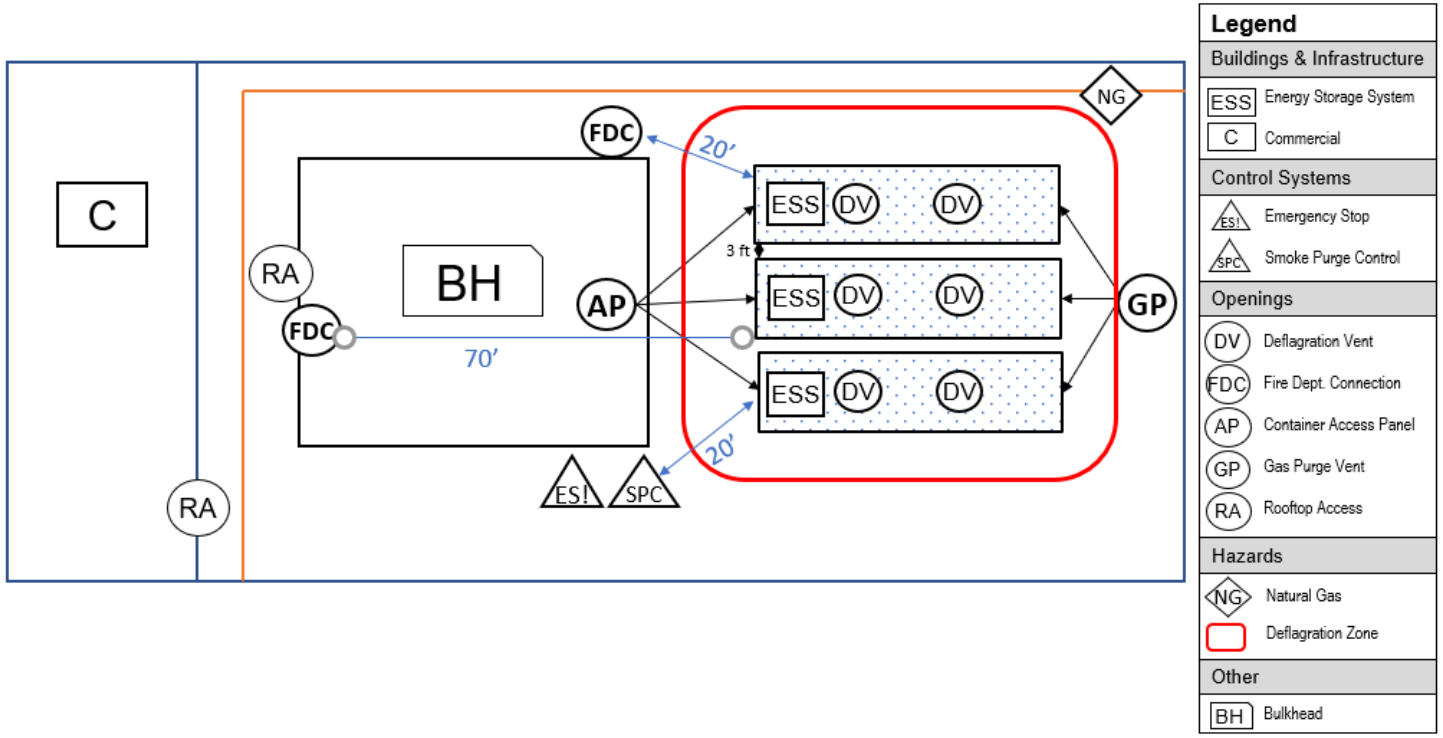
3. Rooftop Installation, Aerial View

This is an example map image of a proposed rooftop installation. Note that this contains several of the same elements that are shown in Example 1 above (Aerial view, Ground-Mount installation), but some key elements are different due to the nature of the rooftop setting – for example, there are no hydrants to be denoted on the image, while Rooftop Access (RA) points are a key item for rooftop installations. Again, all elements must be adapted/modified to meet the unique needs and features of your project.

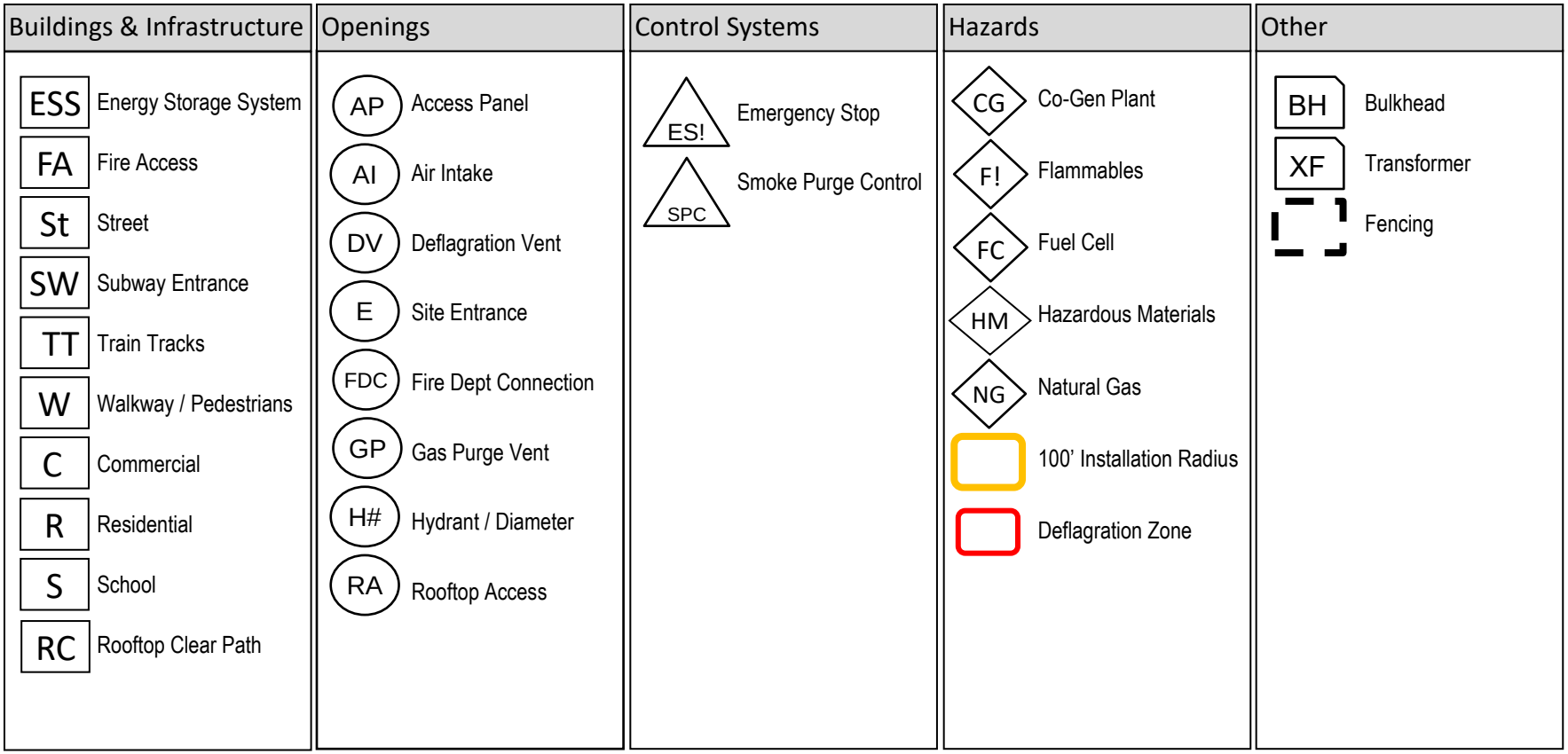


4. Rooftop Installation, Site-Level View

The drawing below provides an example of the site-level view of the same proposed rooftop installation as shown in example 3 above.



Appendix A: Legend Template Library



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.

smartdghub.org

SMART DG HUB

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