

Seattle Fire Department Permit Conditions

1206-
Install

Site Address: _____

Inspector: _____

Installation of Capacitor Energy Storage Systems

Permission is hereby granted under the provisions of the Seattle Fire Code (SFC) to install a Capacitor Energy Storage System in accordance with the Seattle Fire Code, SFD Administrative Rule 12.01.22 and the following conditions:

CAPACITOR ENERGY STORAGE SYSTEMS (INDOOR)

PERMIT CONDITIONS:

1. Capacitor energy storage systems having capacities exceeding 3kWh (10.8 megajoules) shall be required to obtain a permit. [SFC 105.7.3]
2. Permits shall be kept on the premises designated herein at all times and shall be posted in a conspicuous location or shall be kept on the premises in an approved location. [SFC 105.1]
3. Capacitor energy storage systems shall not be located on floors more than 75 feet above the lowest level of fire department access or floor levels that are more than 30 feet below the finished floor of the lowest level of exit discharge.
Exception: Where *approved* by the *fire code official*, installations shall be permitted on higher and lower floors.
4. Rooms and areas containing Capacitor Energy storage systems shall be separated from other areas in the building with 2-hour fire barriers or 2-hour horizontal assemblies.
5. Capacitor arrays shall not exceed 50 kWh (180 megajoules) each and be separated by at least 3 feet from other arrays and from walls. The fire code official is authorized to approve larger capacities or smaller separation distances based on large-scale fire testing complying with Administrative Rule 12.01.22.
6. Signage that indicates "CAPACITOR ENERGY STORAGE ROOM", "THIS ROOM CONTAINS ENERGIZED ELECTRICAL CIRCUITS" and that provides the type of capacitors present and the potential hazards shall be installed on the doors and adjacent to the entrances to the storage rooms.
7. Where the capacitor energy storage system disconnecting means is not within sight of the main service disconnect, placards or directories shall be installed at the main service disconnect identifying the location of the capacitor energy storage system in accordance with NFPA 70.
8. Prepackaged and pre-engineered stationary energy storage systems shall be listed in accordance with UL 9540 and installed in accordance to their listing and manufacturer's instructions.
9. Energy management systems shall be provided for monitoring and balancing capacitor voltages, currents and temperatures within the manufacturer's specifications. These systems shall transmit an alarm signal to approved location if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

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10. Rooms containing capacitor energy storage systems shall be provided with an automatic sprinkler system designed per Administrative Rule 12.01.22.
11. An approved automatic smoke detection system shall be installed per Administrative Rule 12.01.22.
12. Per Table 10.1 of Administrative Rule 12.01.22, capacitor energy storage systems shall be provided with applicable explosion control, ventilation, spill control and neutralization, and thermal runaway protection.

CAPACITOR ENERGY STORAGE SYSTEMS (OUTDOOR)

1. Outdoor installations shall be in accordance with this section and Administrative Rule 12.01.22. Exterior wall installations for individual capacitor energy storage units not exceeding 20 kWh shall be in accordance with number 5 of this section.

**TABLE 12.1
OUTDOOR ESS INSTALLATIONS^a**

COMPLIANCE REQUIRED		REMOTE INSTALLATIONS ^a	INSTALLATIONS NEAR EXPOSURES ^b
Feature	Section		
All ESS installations	8	Yes	Yes
Clearance to exposures	12.4	Yes	Yes
Fire suppression systems	9.6	Yes ^c	Yes
Maximum allowable quantities	9.3	No	Yes
Maximum enclosure size	9.7	Yes	Yes
Means of egress separation	9.9	Yes	Yes
Size and separation	9.2	No	Yes ^d
Smoke and automatic fire detection	9.5	Yes	Yes
Technology-specific protection	10.1	Yes	Yes
Vegetation control	9.8	Yes	Yes

a. See Section 12.2.

b. See Section 12.3.

c. Where approved by the fire code official, fire suppression systems are permitted to be omitted.

d. In outdoor walk-in units, spacing is not required between ESS units and the walls of the enclosure.

2. For the purpose of Table 12.1, remote outdoor installations include ESS located more than 100 feet (30 480 mm) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high-piled stock and other exposure hazards.

3. For the purpose of Table 12.1, installations near exposures include all outdoor ESS installations that do not comply with Section 12.1 remote outdoor location requirements.

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4. ESS located outdoors shall be separated by a minimum of 10 feet (3048 mm) from the following exposures:
1. Lot lines.
 2. Public ways.
 3. Buildings.
 4. Stored combustible materials.
 5. Hazardous materials.
 6. High-piled stock.
 7. Other exposure hazards.

Exceptions:

1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour free-standing fire barrier suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure.
2. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where noncombustible exterior walls with no openings or combustible overhangs are provided on the wall adjacent to the ESS and the fire-resistance rating of the exterior wall is a minimum of 2 hours.
3. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large-scale fire testing complying with Administrative Rule 12.01.22.

5. ESS shall be permitted to be installed outdoors on exterior walls of buildings when all of the following conditions are met:

1. The maximum energy capacity of individual ESS units shall not exceed 20 kWh.
2. The ESS shall comply with applicable requirements in Administrative Rule 12.01.22.
3. The ESS shall be installed in accordance with the manufacturer's instructions and their listing.
4. Individual ESS units shall be separated from each other by at least 3 feet (914 mm).
5. The ESS shall be separated from doors, windows, operable openings into buildings or HVAC inlets by at least 5 feet (1524 mm).

Exception: Where approved, smaller separation distances in Items 4 and 5 shall be permitted based on large-scale fire testing complying with Administrative Rule 12.01.22.

6. Rooftop and open parking garage battery system installations shall comply with Administrative Rule 12.01.22