



Operational Permit Application

Lithium Batteries



www.cityofvancouver.us/departments/fire-department

International Fire Code as adopted by VMC 16.04 (Washington State Fire Code)

Permitting Requirements

A **lithium-ion battery** is defined as a storage battery with lithium ions serving as the charge carriers of the battery. A **lithium metal battery** is a storage battery that is similar to the lithium-ion battery with the exception that it has a lithium metal anode in the place of the traditional carbon or graphite anode.

An **operational permit** is required for an accumulation of more than 15 cubic feet of lithium-ion and lithium metal batteries, where required by Section 322.1 per WSFC 105.5.14.1.

A separate operational permit is required when an Energy Storage Systems (ESS) is provided with more than 20 kWh of lithium-ion batteries. See the Energy Storage System permit for more information.

Project Information

Site Address		Owner Name	
Other			

Applicant Information

Company Name		Address		
Contact Name				
Office Phone		Cellular		Email

Contractor

Company Name		Address		
Contact Name				
Office Phone		Cellular		Email
Related Permits:	RES _____	CMI _____	DEF _____	MPE _____

Description of Work

Electronic Plan Standards

File Naming Standards:

Electronic plans and documents shall be named as specified in the City of Vancouver [ePLANS](#) system:

<https://www.cityofvancouver.us/business/permits-licenses-and-inspections/eplans/>



Acceptable File Types:

Plans, calculations, specifications and supporting documents shall be uploaded as a PDF file.

Plan Sheet Standards:

All plans shall be drawn to scale, as identified in the checklist, and each sheet shall state the scale and show a measurable scale on the page for measurement calibrations.

Document Orientation:

All plans must be uploaded in "Landscape" format in the horizontal position with a north indicator. All other documents can be in "Portrait" format.

Stamped:

Where documentation contains a code analysis or engineering calculations, such documents shall be stamped by the design professional.

Minimum Submittal Checklist for Upload to ePLANS

- Completed Fire Installation Permit Application – Lithium Batteries (this document) Check all *Permit Conditions* checkboxes that are applicable to your project
- Completed Materials Management Plan (HMMP) documents and supplemental documents (*See Document Details* below)
- Site plans and floor plans (*see Plan Details* below)

Document Details

HMMP Guide: <https://www.cityofvancouver.us/wp-content/uploads/2023/10/Hazardous-Materials-Management-Plan.pdf>

See *Vancouver Fire Department HMMP Guide* for direction on completing required HMMP and/or supplemental forms

In the HMMP found above, complete the following:

- Hazardous Materials Inventory Statement (HMIS)
- ESS-LIB Notification, specifically the *Lithium-Ion and Lithium-Metal Battery Storage* Section
- Facility Site Plan & Storage Map

In addition to the HMMP documents listed above, provide the following documents:

- An approved fire safety plan in accordance with WSFC 403.10.6, including emergency response actions to be taken upon detection of a fire or possible fire involving lithium-ion or lithium metal battery storage.

Plan Details

The following is a list of information required on all plan submittals for review of a lithium battery permit. The plan shall be drawn to 1/8"= 1'-0" minimum scale. The applicant is required to submit all applicable information so an accurate and timely review may be completed:

General:

- North arrow, a measurable scale for calibration purposes, fire hydrants, emergency access lanes and doors, vehicle gates, Fire Department Connection, points of assembly/accountability for evacuees, electrical room, gas meters, sprinkler riser, fire alarm control panel, Knox Box, and roof access (if provided).
- High-voltage areas that could be hazardous to emergency responders
- Egress paths and doors, exit hardware, separation from other means of egress
- Portable fire extinguisher types, sizes, and locations
- Electrical disconnects
- Working clearances

- Vehicle impact protection
- Combustible storage
- Toxic and highly toxic gases requiring hazardous exhaust systems (if applicable)

Permit Conditions

The following is a list of WSFC Chapter 3 requirements related to lithium battery operations. Use this form to confirm that all applicable requirements are met. Non-applicable requirements can be left blank.

General:

- The storage of lithium-ion and lithium metal batteries shall comply with WSFC 322 (WSFC 322.1).

Exceptions:

1. New or refurbished batteries installed in the equipment, devices, or vehicles they are designed to power.
2. New or refurbished batteries packed for use with the equipment, devices, or vehicles they are designed to power.
3. Batteries in original retail packaging that are rated at 300 watt-hours or less for lithium-ion batteries or contain 25 grams or less of lithium metal for lithium metal batteries.
4. Temporary storage of batteries or battery components during the battery manufacturing process prior to completion of final quality control checks.
5. Temporary storage of batteries during the vehicle manufacturing or repair process.
6. Batteries with a demonstrated state of charge not exceeding 30 percent shall not be required to comply with WSFC 322.4.2.1, 322.4.2.2, or 322.4.2.5, provided that procedures for limiting and verifying that the state of charge will not exceed 30 percent have been approved (WSFC 322.4.2.6).

Indoor Storage Requirements:

- Not more than 15 cubic feet of lithium-ion or lithium metal batteries shall be permitted to be stored in containers in accordance with the following (WSFC 322.4.1):
 1. Containers shall be open-top and constructed of noncombustible materials or shall be approved for battery collection.
 2. Individual containers and groups of containers shall not exceed a capacity of 7.5 cubic feet .
 3. A second container or group of containers shall be separated by not less than 3 feet of open space, or 10 feet of space that contains combustible materials.
 4. Containers shall be located not less than 5 feet from exits or exit access doors.
- Indoor storage areas for lithium-ion and lithium metal batteries, other than those complying with WSFC 322.4.1, shall comply with the following (WSFC 322.4.2):
 - Where required by the fire code official a technical opinion and report complying with WSFC 104.8.2 shall be prepared to evaluate fire and explosion risks associated with the indoor storage area. In addition to the requirements of WSFC 104.8.2, the technical opinion report shall specifically evaluate the following (WSFC 322.4.2.1):
 1. The potential for deflagration of flammable gases released during a thermal runaway event.
 2. The basis of design for automatic sprinkler system or approved fire suppression system. Such design basis shall reference relevant full-scale fire testing or another approved method of demonstrating sufficiency of the recommended design.
 - Where indoor storage areas for lithium-ion and lithium metal batteries are located in a building with other uses, battery storage areas shall be separated from the remainder of the building by 2-hour rated fire barriers in accordance with Section 707 of the International Building Code (IBC) or horizontal assemblies in accordance with IBC 711 (WSFC 322.4.2.2).

Exceptions:

1. Where battery storage is contained in one or more approved prefabricated portable structures providing a complete two-hour fire resistance rated enclosure, fire barriers and horizontal assemblies are not required.

2. Where battery storage is limited to new batteries in packaging that has been demonstrated to and approved by the fire code official as sufficient to isolate a fire in packaging to the package interior, fire barriers and horizontal assemblies are not required.

- Indoor storage areas for lithium-ion and lithium metal batteries shall be protected by an automatic sprinkler system complying with WSFC 903.3.1.1 or an approved alternative fire suppression system. The system design shall be based on recommendations in the approved technical opinion and report required by WSFC 322.4.2.1 (WSFC 322.4.2.3).
- Indoor storage areas for lithium-ion and lithium metal batteries shall be provided with an approved automatic fire detection and alarm system complying with WSFC 907. The fire detection system shall use air-aspirating smoke detection, radiant energy-sensing fire detection, or both (WSFC 322.4.2.4).
- Where the approved technical opinion and report required by Section 322.4.2.1 recommends explosion control, explosion control complying with WSFC 911 shall be provided (WSFC 322.4.2.5).

Outdoor Storage:

- Outdoor storage of lithium-ion or lithium metal batteries, including storage beneath weather protection in accordance with IBC 414.6.1, shall comply with one of the following (WSFC 322.4.3.1):
 1. Battery storage shall be located not less than 20 feet from any building, lot line, public street, public alley, public way, or means of egress.
 2. Battery storage shall be located not less than 3 feet from any building, lot line, public street, public alley, public way, or means of egress, where the battery storage is separated by a 2-hour fire-resistance rated assembly without openings or penetrations and extending 5 feet above and to the sides of the battery storage area.
 3. Battery storage shall be located not less than 3 feet from any building, lot line, public street, public alley, public way, or means of egress, where batteries are contained in approved prefabricated portable structures providing a complete 2-hour fire-resistance rated enclosure.
- Outdoor storage areas for lithium-ion or lithium metal batteries, including storage beneath weather-protection in accordance with IBC 414.6.1, shall not exceed 900 square feet. The height of battery storage in such areas shall not exceed 10 feet. Multiple battery storage areas shall be separated from each other by not less than 10 feet of open space (WSFC 322.4.3.2).
- Outdoor storage areas for lithium-ion or lithium metal batteries, regardless of whether such areas are open, under weather protection or in a prefabricated portable structure, shall be provided with an approved automatic fire detection and alarm system complying with WSFC 907. The fire detection system shall use radiant energy-sensing fire detection (WSFC 322.4.3.3).

High Piled Combustible Storage:

- Lithium ion and lithium metal batteries are considered a high-hazard commodity for high-piled combustible storage (WSFC Table 3203.8) and must comply with the requirements for fire safety for high hazard commodities in high-piled combustible storage listed within WSFC Table 3206.2.

NOTE: *This is not intended to be an all-inclusive list. The WSFC requirements listed are intended to ensure that we have adequate information to begin a review of the application. Additional information may be required.*

I understand that all applicable codes apply and that other regulatory codes may also apply. Errors and/or omissions on the plans and corrections from field inspections are the responsibility of the owner/contractor. All work is subject to compliance with City of Vancouver ordinances and laws of the State of Washington.

APPLICANT NAME: _____ APPLICATION DATE: _____

APPLICANT SIGNATURE: _____