



Construction Permit Application

Fuel Cell Power Systems



www.cityofvancouver.us/departments/fire-department

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

Permitting Requirements

A stationary fuel cell power system (SFCPS) is a stationary energy generation system that converts the chemical energy of a fuel and oxidant to electric energy by an electrochemical process. Types of stationary fuel cell power systems include field-fabricated fuel cell power systems, pre-engineered fuel cell power systems, and pre-packaged fuel cell power systems, which are defined in the WSFC.

A **construction permit** is required to install and operate stationary fuel cell power systems.

Project Information

Site Address			Business Name		
Office Phone		Cellular			
Type of SFCPS:	<input type="checkbox"/> Field-fabricated FCPS	<input type="checkbox"/> Pre-Engineered FCPS	<input type="checkbox"/> Pre-packaged FCPS		

Applicant Information

Company Name			Address		
Contact Name					
Office Phone		Cellular		Email	

Contractor

Company Name			Address		
Contact Name					
Office Phone		Cellular		Email	
Installation By	<input type="checkbox"/> Contractor	<input type="checkbox"/> Owner	<input type="checkbox"/> Tenant		
Related Permits	RES_____	CMI_____	DEF_____	MPE_____	

Building

Fire Sprinklers	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Alarm	<input type="checkbox"/> Yes <input type="checkbox"/> No	Emergency Power	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Description of Work

Electronic Plan Standards

File Naming Standards:

Electronic plans and documents shall be named as specified in the City of Vancouver [ePLANS](https://www.cityofvancouver.us/business/permits-licenses-and-inspections/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. One page per upload in plans.

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. Multiple pages allowed per upload in documents.

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 Construction Permit Application – Stationary Fuel Cell Power Systems (this document) Check all *Permit Conditions* checkboxes that are applicable to your project
- Supporting documents listed below (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

- Equipment and product listing sheets **or** if field fabricated, a technical report prepared and stamped by a qualified individual.
- Narrative listing the fire protection systems covering the proposed SFCPS, in accordance with NFPA 853.
- Documentation of the SFCPS compliance with applicable NFPA 2 and NFPA 853 construction requirements.
- Safety data sheets (SDS) for any chemicals or materials used in the fuel cell system, such as hydrogen or other fuel sources.

Plan Details

The following is a list of information required on all plan submittals for review of a stationary fuel cell power systems 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:

- Site plan to include a north arrow, a measurable scale for calibration purposes, fire hydrants, emergency access lanes and doors, vehicle gates, Fire Department Connection, points of assembly for evacuees, electrical room(s), gas meters, sprinkler riser, fire alarm control panel, Knox Box, and roof access (if provided).
- Scale drawings showing the equipment location within or outside the building
- Building occupancy and adjacent rooms occupancy (for indoor installations)
- Portable fire extinguisher types, sizes, and locations
- Fire-rated construction
- Vehicle impact protection in accordance with WSFC 312 (where required)
- Combustible and/or hazardous material storage locations in proximity to the installation
- Location and layout diagram of the room or area in which the system is to be installed.
- Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust, and deflagration venting systems, if provided or as required by NFPA 853

Permit Conditions

The following is a list of WSFC requirements related to stationary fuel cell power system construction. Use this form to confirm that all applicable requirements are met. Non-applicable requirements can be left blank.

General:

- SFCPS shall be installed and maintained in accordance with NFPA 70 and NFPA 853, the manufacturers installation instructions, and the listing. SFCPS fueled by hydrogen shall be installed and maintained in accordance with NFPA 2 and NFPA 70, the manufacturers installation instructions, and the listing (WSFC 1206.4).
- SFCPS shall not be installed in Group R-3 and R-4 buildings, or dwelling units associated with Group R-2 buildings unless they are specifically listed for residential use (WSFC 1206.5).
Exception: The temporary use of a fuel cell-powered electric vehicle to power a Group R-3 or R-4 building while parked shall comply with WSFC 1206.14.
- Where SFCPS are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with WSFC 312 (WSFC 1206.7).
- The design, location, and installation of the fuel supply for stationary fuel cell power systems shall comply with WSFC chapters 53, 58 and the International Fuel Gas Code, based on the particular fuel being supplied to the system (WSFC 1206.9).
- Access to a manual shutoff valve shall be provided for the fuel piping within 6 feet of any fuel storage tank serving the fuel cell and within 6 feet of the power system. If the fuel tank and the SFCPS are less than 12 feet apart, a single shutoff valve shall be permitted. If the SFCPS is located indoors, the shutoff valve shall be located outside of the room in which the system is installed, unless otherwise granted (WSFC 1206.10).
- Ventilation and exhaust for SFCPS shall be provided in accordance with NFPA 853 (WSFC 1206.11).
- Fire protection systems for SFCPS installations shall be provided in accordance with NFPA 853 (WSFC 1206.12).

Equipment:

- SFCPS shall comply with the following (WSFC 1206.3):
 1. Prepackaged FCPS shall be listed and labeled in accordance with CSA FC 1.
 2. Modules and components in a pre-engineered fuel cell power systems shall be listed and labeled in accordance with CSA FC 1 and interconnected to complete the assembly of the system at the job site in accordance with the manufacturer's instructions and the module and component listings.
 3. Field-fabricated fuel cell power systems shall be approved based on a review of the technical report provided in accordance with WSFC 104.8.2. The report shall be prepared by and bear the stamp of a registered design professional and shall include:
 - A fire risk evaluation.
 - An evaluation demonstrating that modules and components in the fuel cell power system comply with applicable requirements in CSA FC 1.
 - Documentation of the fuel cell power system's compliance with applicable NFPA 2 and NFPA 853 construction requirements.

Indoor Installation: (areas with a roof and 50% or more of the perimeter enclosed by walls):

- SFCPS installed indoors shall be specifically listed and labeled for indoor use (WSFC 1206.1).
- Rooms containing SFCPS shall be separated from the following occupancies by fire barriers or horizontal assemblies, or both, constructed in accordance with the IBC (WSFC 1206.6.2)
 1. Group B, F, M, S, and U occupancies shall have 1-hour fire rated construction.
 2. Group A, E, I, and R occupancies shall have 2-hour fire rated construction.

Exception: SFCPS with an aggregate rating less than 50 kW shall not be required to be separated from other occupancies provided that the systems comply with section 9.3 of NFPA 853.

- SFCPS shall be provided with a gas detection system. Detection shall be provided in locations in the fuel cell power system enclosure, the exhaust system, or the room that encloses the fuel cell power system. The system shall be designed to activate

at a flammable gas concentration of not more than 25 percent of the lower flammability limit. The activation of the gas detection system shall automatically (WSFC 1206.6.3):

1. Close valves between the gas supply and the fuel cell power system.
2. Shut down the fuel cell power system.
3. Initiate local audible and visible alarms in accepted locations.

Outdoor installations:

- SFCPS located outdoors shall be separated by not less than 5 feet from the following (WSFC 1206.8):
 1. Lot lines.
 2. Public ways.
 3. Buildings.
 4. Stored combustible materials.
 5. Hazardous materials.
 6. High-piled stock.
 7. Any portion of a designated means of egress system.
 8. Other exposure hazards.

Gas Detection Systems:

- SFCPS shall be provided with a gas detection system. Detection shall be provided in locations in the fuel cell power system enclosure, the exhaust system or the room that encloses the fuel cell power system. The system shall be designed to activate at a flammable gas concentration of not more than 25 percent (25%) of the lower flammable limit (WSFC 1206.13).
- The activation of the gas detection system shall automatically (WSFC 1206.13.1):
 1. Close valves between the gas supply and the fuel cell power system.
 2. Shut down the fuel cell power system.
 3. Initiate local audible and visible alarms in approved locations.

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: _____