



TOPIC: Cannabis Facilities – OSSC 3/#4, OSSC 4/#4, OSSC 5/#1, OSSC 10/#3, OSSC 34/#3, OMSC 4/#2, OMSC 5/#2

CODE(S): Oregon Structural Specialty Code, 2014 edition
Oregon Fire Code, 2014 edition
Oregon Mechanical Specialty Code, 2014 edition
Oregon Energy Efficiency Specialty Code, 2014 edition

APPROVED: April 27, 2017 [Rebecca Esau], Interim Director

REFERENCE: Oregon Structural Specialty Code - Chapters 3, 5
Oregon Fire Code - Chapters 1, 6, 50, 53
Oregon Mechanical Specialty Code - Chapters 4, 5, 11, Appendix C
National Fire Protection Association – Chapter 55

SUBJECT: Cannabis Facilities

QUESTION: Do all cannabis production and processing facilities need a building permit to be considered a legal facility? If so, what are the building and permit requirements for these facilities?

RESPONSE: Cannabis production and processing facilities typically need several building permits to legally operate. This code guide explains building code requirements for cannabis production and processing facilities. Applicants should consult with design professionals as part of their planning process. In most circumstances, plans must be stamped by an architect or licensed engineer to comply with state building code requirements.

I. Definitions

The definitions below are based on the Oregon Liquor Control Commission, Oregon Administrative Rule (OAR) 845-025-1000, the 2014 Oregon Fire Code (OFC) and

the 2014 Oregon Structural Specialty Code (OSSC). Some of the definitions have been modified to meet local applicability.

Cannabinoids are any of the chemical compounds that are the active constituents of marijuana.

Carbon Dioxide is a colorless, odorless gas commonly used in cannabis production and extraction. The OFC addresses CO₂ as an asphyxiant. Asphyxiants are not identified as a hazardous material by the OSSC.

Cubic Feet Per Minute (CFM) is the measurement of the velocity at which air flows into or out of a space.

Hazardous Materials are those chemicals or substances that are *physical hazards* or *health hazards* as classified in the Oregon Structural Specialty Code section 307 and the Fire Code, whether the materials are in usable or waste condition.

Liquefied Petroleum Gas (LPG) is a flammable gas heavier than air that is regulated as a hazardous material under the OSSC and OFC. An LPG is also considered a Volatile Organic Compound (VOC). Propane, butane, mixtures and related flammable liquefied gases are LPGs that are commonly used in cannabis extraction.

Lower Flammability Limit (LFL) is the lower end of the concentration range over which a flammable mixture of gas or vapor in air can be ignited at a given temperature and pressure.

Marijuana is all parts of cannabis plant and the seeds of the plant. It includes industrial hemp, as defined in Oregon Revised Statutes (ORS) 571.300.

Maximum Allowable Quantities (MAQ) are the maximum amount of hazardous materials allowed to be stored or used within a control area inside a building or an outdoor control area. The maximum allowable quantity per control area is based on the material state (solid, liquid or gas) and the material storage or use conditions.

NFPA National Fire Protection Association, Life Safety Code

OLCC Oregon Liquor Control Commission, is the State agency responsible for licensing recreational production, processing and sale of marijuana in Oregon.

OHA Oregon Health Authority is the State agency responsible for registering the production, processing and sale of medical marijuana in Oregon.

Production includes planting, cultivating, growing, manufacturing, and harvesting of cannabis plants. Planting, cultivating and harvesting cannabis is considered an agriculture use by the zoning code.

Processing is the compounding or converting of cannabis into cannabinoid products, cannabinoid concentrates or cannabinoid extracts. Processing is

considered a *manufacturing* use by the zoning code and is classified as either an F-1 or H occupancy by the building code.

Retail includes displaying and selling the plant, or any product processed from the plant, for recreational or medical use in a retail environment. Retail is considered an M occupancy by the building code.

Storage includes structures where plants or any product processed from the cannabis plant after harvest are housed or dried.

II. Occupancy Classifications

OSSC Chapters 3, 5, 10, 34

The OSSC sets life safety and construction standards based on different occupancy classifications. A building occupancy classification is based on the activities proposed for the internal space of a building.

Construction types and whether a building is sprinklered, may affect where in a building occupancies can be located. For example, the OSSC limits Type V-B non-sprinklered buildings with F-1, S-1, M and U occupancies to the first story of a building.

Cannabis facilities most commonly fall into one or more of the following classifications:

B or business occupancies apply to testing/laboratories and office spaces within the structure.

F-1 or factory occupancies apply to buildings or portions of buildings used for growing, manufacturing, processing or packaging cannabis and cannabis products that are not classified as H.

H or hazardous occupancies apply to any commercial use where hazardous materials, such as flammable solvents, are present in quantities exceeding those identified in OSSC Tables 307.1(1) and 307.1(2). Uses in this category must meet OSSC Chapter 414 and include a hazardous materials report as further described in this code guide.

M or mercantile occupancies apply to the display and sale of cannabis and cannabinoid products. It involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public.

S or storage occupancies apply to buildings or portions of buildings used for cannabis plant or product storage space that are not classified as hazardous, such as plant drying rooms.

U or agriculture occupancies apply to cannabis plants grown in a detached accessory structure, such as a greenhouse where only natural lighting is provided. No artificial lighting, such as electrical lighting sources, can be part of the growing process. They also may not be part of a mixed occupancy building.

III. Mechanical Permit

A mechanical permit is required for extraction and production facilities to ensure rooms with the potential for hazardous materials or CO₂ concentrations are properly ventilated. Per the OFC and NFPA, CO₂ and Hazardous Materials must be stored, used, and handled in accordance with all local building and fire code amendments. Gas detection and alarm systems must be in place in the event that levels of gas accumulation exceed safe levels as determined by the Occupational Safety and Health Administration (OSHA).

A. CO₂ and Hazardous Material Ventilation and Exhaust

OMSC Chapters 4 and 5; OFC Chapters 5 and 50, NFPA Chapter 55

1. Gas Storage, Processing and Production Room Ventilation

- a. Ventilation rates for storage and processing rooms must equal 1 CFM/SF.
 - b. Production rooms can have either continuous or intermittent ventilation. Continuous ventilation must be at a rate of .06 CFM/SF. Intermittent ventilation must be at a rate of 60 CFM/person. Intermittent ventilation must be activated when the room is occupied for any length of time. Motion activation shall be located near the ingress/egress door.
2. **Exhaust discharge.** Exhaust discharge must be 10 feet away from all operable building opening and all property lines. Intake air must be 10 feet from an exhaust outlet or property line and adjoining grade. All exhaust and relief air should be filtered or scrubbed in accordance with the Zoning Code Odor Standard that states, "continuous, frequent, or repetitive odors may not be produced" (Zoning Code Section 33.262.070).
 3. **Exhaust.** Exhaust air must be taken from a point within 12 inches above the finished floor.
 4. **Isolation and excess flow valve.** Isolation valve and excess flow valves must be installed in the piping system at the source of gas flow.
 5. **Equipment layout.** Equipment locations including generators, bottles, chemical injection tanks and charcoal filter units must be shown on plans.

6. **Room access.** A room access control summary for CO₂, hazardous materials and related equipment storage areas must be provided.
7. **Storage areas.** Storage areas must be ventilated with either mechanical exhaust ventilation or natural ventilation.
8. **Gas location.** The size, number and storage location of CO₂ or hazardous material gas tanks located on the premises must be shown on plans. CO₂ tanks that have a product volume in excess of 5 cubic feet require a separate state boiler installation permit.
9. **Grow areas.** Grow areas designed to incorporate CO₂ generating systems must meet the unvented appliances requirement. Combustion air volume must comply with Appendix C, equation 3-2.

B. Event Ventilation for Processing using Liquefied Petroleum Gas

Event ventilation is required for all facilities that emit hazardous materials.

1. All system controls must be on standby power or battery back-up. Backup systems must be able to operate continuously for 90 minutes.
2. Event exhaust systems must be equipped with both a manual bypass switch outside of the room(s) and automatic system activation controls.
3. Event exhaust systems must be sized at 3 CFM/SF for an LPG rich environment.
4. The piping system must include an isolation valve and excess flow or automatic shut-off control valves.
5. An event ventilation activation switch must be located at the entrance of an extraction room and gas storage room. These shutoffs must be clearly marked. When gas is stored outside of buildings and piped into a building an emergency shutoff valve must be installed at an approved location outside of the building. When the emergency shutoff is activated it must trigger the mechanical exhaust system.
6. Event ventilation must discharge to the outdoors with vents located a minimum distance of 10 feet to all property lines and building openings.

C. Detection and Alarms

OMSC Chapter 5; OFC Chapter 53; NFPA Chapter 55

1. **Detectors.** Continuous gas detection is required in areas where gas can accumulate. Detectors must be shown on plans and activate audible and visual alarms when CO₂ concentration reaches 5000 ppm and CO concentration reaches 9 ppm. Alarms must activate when sensors detect LPG concentration levels exceeding 25% of the lower flammability limit.
2. **Warning signs.** A warning sign must be posted at the entrance to a building, room, enclosure, or confined area where CO₂ or hazardous materials, cylinders, piping, or equipment are located. For areas with the potential for high levels of CO₂ accumulation the warning sign must state the following: "Caution. Carbon Dioxide in use" and include the appropriate NFPA704 placard. For rooms with a potential for high levels of LPG the sign shall state, "Caution. Flammable gas in use" and include the appropriate NFPA704 placard. The sign location must be shown on the appropriate building plan. Signs must be at least 8 inches (200mm) wide and 6 inches (150 mm) high.

D. Oregon Energy Efficiency Specialty Code (OEESC)

The energy code addresses lighting, mechanical systems, and building envelope for commercial building energy provisions.

Chapter 5 OEESC

1. The connected power associated with task lighting for plant growth or maintenance is not included in calculating total connected lighting power (Section 505.5.1).
2. Mechanical systems must be configured to meet one of the following 3 methods (Section 503).
 - a. Method 1: Provide 100% economizer and relief; or
 - b. Method 2: 20% higher efficiency or higher than code minimum; or
 - c. Method 3: Energy modeling showing system is better than code minimum.
3. Increasing the heating and/or cooling capacity of a non-conditioned space shall require the thermal envelope to be brought into compliance with applicable provisions found in Section 502.

IV. Occupant and Live Load Requirements

Unless the building is exempt under OSSC 107, improvements to structures housing a cannabis processing or production facility must be prepared by a licensed design professional. Live loads must be in accordance with the Oregon Structural Specialty Code. Typical Live Loads include the following:

A. OSSC Chapters 10 and 16

1. Manufacturing and Storage occupancies shall be designed for a live load of 125 psf.
2. Heavy manufacturing and heavy storage areas must be designed for a live load of 250 psf.
3. Retail stores shall be designed for a live load of 100 psf.
4. Ceiling framing above grow rooms or other spaces shall be designed for appropriate live loads. Where no specific use is assigned to the ceiling framing, it shall be designed for a minimum storage live load of 125 psf.

Exception: if the ceiling is within 6-inches of the framing for the primary structure; or if adequate barriers are provided that would prevent storage or other uses; or if the ceiling is a non-structural suspended ceiling than the 125 psf minimum storage live load requirement does not apply.

5. If an existing structure is undergoing a change of occupancy or use, calculations must be provided to show the adequacy of existing framing.
6. Structures undergoing a change of occupancy or use are subject to Title 24.85 *Seismic Design Requirements for Existing Buildings*.

Table 1: Occupant Load Factors (OSSC Section 1004.1.2)

Use	Occupancy	Occupant Load
Testing/laboratory	B	1/100
Dispensary/Retail	M	1/30
Production/Grow (Agriculture Use)	F-1	1/300
Processing/Extraction	F-1	1/100
Commercial Kitchen	F-1	1/200
Storage (in an M Occupancy)	S-1	1/300
Storage (in a Warehouse)	S-1	1/500
Greenhouse	U	1/300

Alterations that include a change of occupancy must meet submittal requirements for the City of Portland Brochure #30.

V. Cannabis Production and Processing Using Hazardous Materials or CO2 Extraction

Permit applications must meet all of the OSSC use and occupancy requirements for either an F-1 or H occupancy. The amount of hazardous materials stored on the site will determine the occupancy classification of the proposed use. Facilities exceeding

the maximum allowable quantities (MAQ) found in the OSSC and the OFC are considered an H occupancy.

Hazardous materials, in any quantity, must conform to the requirements of the Building Code and Fire Code. A building code appeal will be required if any of the reporting information in this section is not submitted at the time of application.

Please note that carbon dioxide and hazardous substances are prohibited in all environmental zones in accordance with Zoning Code Section 33.430.090.

OSSC Chapter 4; OFC Chapters 50 and 53

A. Reporting

1. Hazardous Materials. Life Safety reviewers will request a Hazardous Materials Report in compliance with OSSC Section 414.1.3 (also known as the 414 report) for the use and storage of all hazardous materials located at a cannabis processing facility. The design professional who prepares the building plans may also prepare the Hazardous Materials report. The report must identify the actual quantities of hazardous materials as they relate to the MAQs in the building to include any chemical classification listed in OSSC Table 307.1(1). Hazardous materials include common materials such as, isopropyl alcohol and household bleach. The storage or use of materials for agricultural purposes on the premises is exempt from a hazardous classification. If no hazardous materials are needed for the process nor will be stored in the building than a statement to that effect must be provided on the plans.
2. Extraction Rooms, Gas Storage Areas. When the extraction process includes the use of a flammable gas, all electrical equipment and wiring methods must be identified for use in a Class I, Division 1 location. Electrical equipment located in other areas where there is a potential for high concentrations of flammable gas, such as gas storage rooms or refining areas must be identified for use in a Class I, Division 2 location (NFPA 70 article 501).
3. Extraction Equipment. All extraction equipment and associated devices including machinery and gas detection and alarm systems must be listed, or a technical opinion report prepared and stamped by a registered Oregon mechanical engineer must be provided (OFC 5003.2.3). For LPG equipment, the requirements listed below for the technical opinion report can be incorporated into the 414 report. A separate report is not required. A technical opinion report must be submitted when a 414 report is not required.

4. Technical Opinion Report. The technical opinion report will determine the acceptability of technologies, processes, and overall equipment safety. The firm or person(s) preparing the report must have the technical ability to evaluate the design of the equipment and the operational process in question. The report must provide a Life Safety and Fire Safety analysis of the extraction procedures, equipment and facility. The technical opinion report must include the following information:
 - a. A report narrative including a table of contents, report scope, code analysis, exceptions and recommendations, and conclusions.
 - b. Engineer Peer Review verification.
 - c. Indicate any separate permits that will be obtained in connection with the extraction process such as hazardous materials tank permit from the Fire Marshal's Office and/or a separate mechanical permit for the extraction equipment.
 - d. Include the manufacturer and model number of extraction equipment.
 - e. Identify the quantity and use open or use closed based on OSSC Tables 307.1(1) and 307.1(2) of the 2014.
 - f. Show and explain design requirements including pressure, leak tight, and hazard analysis.
 - g. Provide a component analysis with material type, construction, structural, thermal and hazard analysis.
 - h. Provide a system description including system function and analysis as well as a structural and hazard analysis.
 - i. Show emergency shut off valves.
 - j. Show pressure relief valves.
 - k. Clearly identify the following equipment on the plans:
 - (1) Extraction room
 - (2) Ventilation systems
 - (3) Electrical systems
 - (4) LPG or extraction material source
 - (5) Gas detection systems
 - (6) Evacuation and abatement systems provided for the extraction machine.

- (7) Vapor levels must be monitored in the extraction room. Monitors must be shown on plans.
5. System Verification. Once the equipment regulated by this code guide is installed it must meet the following conditions before a final building inspection will be approved.
 - a. Equipment shall be inspected by a third party mechanical engineer.
 - b. Prior to final inspection an independent commissioning report, signed and sealed by the mechanical engineer who performed the inspection must be submitted. The report must confirm that the equipment onsite meets the approved equipment specifications submitted with the technical opinion report or the 414 report.
 - c. All equipment must operate in strict accordance with the manufacturer's instructions. Any modification of equipment from the approved engineering report voids the approval of the extraction equipment.

VI. Production and Processing - Building Plan, General Construction and Maintenance Requirements

OFC, OSSC

- A. When flammable vapor/air mixtures could exist under normal operations indoor equipment must be Class I Division I (OFC Table 5703.1.1). The location adjacent to the Class 1 Division 1 location must be classified by the design engineer.
- B. Extraction room doors must have self-closers.
- C. All control, detection and alarm systems must be maintained in operable condition. Each device and system must be tested a minimum of once each year, and in accordance with the manufacturer's requirements. Written records of such tests must be maintained on the premises for a minimum of three years and be available to the fire department upon request.
- D. Shipping containers may be used inside a building, outside as a single unit or grouped. However, they must meet all of the same Zoning and Building Code requirements as any other permitted structure. This includes but is not limited to a permanent foundation, location on property, accessibility, egress etc. Cargo containers used as accessory storage structures must be in conformance with the City of Portland Code Code Guide IBC/3#1 *Cargo Containers Used as Accessory Storage Structures*.

- E. Marijuana facilities typically utilize high security hardware. Egress hardware must be readily openable from the egress side without the use of a key or special knowledge or effort. The unlatching of any door shall not require more than one operation. If the main door exception is requested at the main door which allows use of a key operated locking device, note as such on the plans and provide signage text stating the following “This door to remain unlocked when the building is occupied. Thumb turn latches are not allowed” (OSSC, chapter 10).
- F. Corridors may not be used for the storage of materials without a successful building code appeal (OSSC Section 1014.2).
- G. Equipment layout must be shown on plans to ensure minimum aisle width is provided (OSSC Section 1017.5). The type and size of equipment should be clearly labeled.
- H. Storage rooms for over 100 sf utilized for plant waste materials must meet the requirements for incidental use (OSSC Section 509.4.2).
- I. The means of egress shall have a ceiling height of not less than 7’ 6”. Exceptions apply at stairs, ramps, sloped ceilings, corridors, doors, mezzanines and ceiling mounted equipment (OSSC Section 1003.2).
- J. When two or more exits are required, exit signage (OSSC Section 1011.1) and emergency egress lighting must be included as part of the egress plan (Section 1006.3).
- K. Up to 25 percent of the total cost of improvements may be required to be applied to accessibility upgrades (OSSC Section 3411.1).
- L. CO2 must be generated by propane or natural gas or supplied by a CO2 tank.

VII. Establishing a Code-Compliant Facility

A. Building Permits

BDS reviews building plans and proposed uses for compliance with the local Zoning Code and State Building Codes. There are no unique requirements or exceptions in the Zoning or Building Codes for cannabis facilities. Table I summarizes permits that are typically required for cannabis production and processing operations. Not all permits are necessary for every facility and other permits, not listed in the table, may be required. Building plans for cannabis facilities must also be reviewed by the Bureaus of Environmental Services, Water , Fire & Rescue, and Transportation. These agencies will typically have additional permit requirements. Compliance with all City agency rules at the time the initial permit application is submitted will help avoid permitting delays and potential code violations.

B. Licensure

The Bureau of Development Services (BDS) and the Office of Neighborhood Involvement (ONI) both have regulatory oversight for marijuana businesses in the City of Portland. However, the two bureaus act independently and are responsible for implementing two different sets of requirements. BDS reviews building permit applications for compliance with the local Zoning Code and the State Building Codes in the City of Portland and in some County pocket areas. ONI is responsible for ensuring compliance with City Code Chapter 14B.130, Licensing Requirements for Marijuana Businesses. BDS is not responsible for processing, reviewing or administering any marijuana business licensing requests. BDS involvement in licensing is limited to providing applicants information on existing permits for a given property and information on development permit requirements. Any building permits necessary for extraction and production facilities must receive final inspection approval as a condition of ONI licensure.

Customers seeking a Marijuana Regulatory License from ONI can obtain the following written documentation for their Marijuana Regulatory License by visiting the DSC in the Development Services Center (DSC) located at 1900 SW 4th Avenue, Portland Oregon 97201. Applicants may need to visit the DSC several times to obtain all of the necessary documentation. The following list includes documents that BDS can provide:

1. **Zoning Verification.** This information will verify the zoning designation of the property and whether the use is allowed in the zone. This information must be provided to ONI who will evaluate if a property is meeting distance requirements.
2. **Permit Evidence.** Provide evidence of cannabis building-related permits.
3. **Proof of “final” building permit.** BDS will print documentation showing final building permit approval to allow a marijuana business at a given location.
4. **Proof of an Electrical Permit for a Limited Energy Security Alarm.** BDS can provide documents showing that an application has been applied for or issued for a security alarm and other related systems. *Please note that BDS does not accept or complete the OLCC LUCS forms for marijuana businesses. A LUCS’ is processed by ONI, and is necessary as part of OLCC application submittal requirements. Additionally, the 1,000-foot buffer requirement is measured and confirmed by ONI.

Table 1 Building Permit Applicability*

Permit Type	Production	Processing	Applicable Code	Link to Resource
Change of Use or Occupancy	[1]	[1]	Zoning Code State Building Code	https://www.portlandoregon.gov/bds/article/125287
Conditional Use Review	[2]	[2]	Zoning Code	https://www.portlandoregon.gov/bds/article/72427
Boiler or Pressure Vessel	x	x	Mechanical Code	https://www.oregon.gov/bcd/Forms/Library/2502a.pdf
Mechanical (ventilation, equipment)	x	x	Mechanical Code Zoning Code (landscaping/screening)	https://www.portlandoregon.gov/shared/cfm/image.cfm?id=71708 https://www.portlandoregon.gov/bds/article/104897
Tenant Improvement	x	x	Structural Code Zoning Code (non-conforming upgrades)	https://www.portlandoregon.gov/bds/38578 https://www.portlandoregon.gov/bds/45064
Electrical	x	x	Electrical Code	https://www.portlandoregon.gov/bds/36681
Plumbing	x		Plumbing Code	https://www.portlandoregon.gov/bds/36680
Handouts				
	Description		Applicability	Link to resource
Building code summary worksheet	Guide for design professionals		All cannabis facilities	https://www.portlandoregon.gov/bds/34532
Building permit application	General application		All cannabis facilities	https://www.portlandoregon.gov/shared/cfm/image.cfm?id=71706
System development charges	Commercial projects		All cannabis facilities	https://www.portlandoregon.gov/bds/article/92694
Plumbing, Mechanical, Electrical work	General guidance		All cannabis facilities	https://www.portlandoregon.gov/bds/45064

* This list describe typical permits needed for specific portions of buildings that are used for cannabis production and processing.

Other permits maybe necessary based on the scope of each project.

[1] A change of use or occupancy may be required for some projects and can increase permit requirements and review times. Applicants are encouraged to visit the Development Services Center to research the existing and previous use of a building to determine if a change of use or occupancy is necessary.

[2] A Conditional Use Review is a type of land use review that is necessary to allow some uses that are not allowed outright in a particular zone. Check with the Bureau of Development Services to determine if a land use review is required for your project.