

**WASHINGTON STATE
BUILDING CODE**

**CHAPTER 51-52
Second Edition**

INTERNATIONAL MECHANICAL CODE

**Includes amendments to
The International Fuel Gas Code
and
the National Fuel Gas Code**



Washington State Building Code Council

Effective July 1, 2005

Copies of the State Building Codes and
complete copies of the 2003 Model Codes
may be obtained from:

Washington Association of Building Officials
Post Office Box 7310
Olympia, Washington 98507-7310
(360) 586-6725 www.wabo.org
or toll free in Washington State at (888) 664-9515

First Edition Titled
International Mechanical Code
Chapter 51-52 WAC
Effective July 1, 2004

Second Edition
Effective July 1, 2005

Second Edition based on
WSR 05-01-015

Preface

Authority: The International Mechanical Code (Chapter 51-52 WAC) is adopted by the Washington State Building Code Council pursuant to Chapters 19.27 and 70.92 RCW. This code was first adopted by reference by the Washington State Legislature in 1974. In 1985, the Legislature delegated the responsibility of adoption and amendment of these codes to the State Building Code Council.

Supersession of Previous Codes: Chapter 51-52 WAC supersedes Chapter 51-42 WAC.

Code Precedence: The State Building Code Act, Chapter 19.27 RCW, establishes the following order of precedence among the documents adopted as parts of the State Building Code:

International Building Code, Standards and amendments -WAC 51-50;
International Residential Code, Standards and amendments – WAC 51-51;
International Mechanical Code, Standards and amendments - WAC 51-52;
International Fire Code, Standards and amendments - WAC 51-54;
Uniform Plumbing Code, Standards and amendments - WAC 51-56, 51-57.

Where there is a conflict between codes, an earlier named code takes precedence over a later named code. In the case of conflict between the duct insulation requirements of the International Mechanical Code and the duct insulation requirements of the Energy Code, the Energy Code, or where applicable, a local jurisdiction's energy code, shall govern.

Where, in any specific case, different sections of this Code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

Organization and Numbering: These rules are written to allow compatible use with the International Mechanical Code. All sections which are amended, deleted, or added are referenced.

Enforcement: The State Building Code Act requires that each local jurisdiction enforce the State Building Code within its jurisdiction. Any jurisdiction can contract with another jurisdiction or an inspection agency to provide the mandated enforcement activities.

Amendments to the State Building Code:

The State Building Code Council has adopted review procedures and approval criteria for local amendments. These procedures and criteria are found in Chapter 51-04 WAC. The Council has exempted from its review any amendments to the administrative provisions of the various codes.

- A. **Amendments of Statewide Application:** On a yearly basis the State Building Code Council will consider proposals to amend the State Building Code. The Council is not scheduled to enter formal rulemaking until 2006 as part of its consideration of adoption of the 2006 series of codes.

Proposals to amend the State Building Code shall be made on forms provided by the Building Code Council.

Code Change Proposal Submittal Deadline: March 1st of each year.

- B. **Local Amendments:** Any jurisdiction may amend the State Building Code provided the amendments do not reduce the minimum performance standards of the codes. There are two areas where local amendments are limited or prohibited:

Prohibited Amendments: Residential provisions of the State Energy Code (WAC 51-11), the Ventilation and Indoor Air Quality Code (WAC 51-13); any provision of the International Building Code or International Residential Code affecting accessibility; and standards specifically adopted in Chapters 19.27 and 19.27A RCW cannot be amended by any local jurisdiction.

Residential Amendments: Amendments by local jurisdictions which affect the construction of single family and multi-family residential buildings must be reviewed and approved by the State Building Code Council before such amendments can be enforced. The State Building Code Act provides the following definition:

Multi-family residential building: means common wall residential buildings that consist of four or fewer units, that do not exceed two stories in height, that are less than 5,000 square feet in area, and that have a one-hour fire-resistive occupancy separation between units.

Application forms for Council review of local amendments are available from the State Building Code Council Staff.

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Printing Format: This version of the rules is published as a series of insert or replacement pages. Each page provides instructions for installing them in the model code book. Amendments to the model code which are new or revised from the previous edition of this code are indicated by a line in the margin next to the revised portions.

Effective Date: These rules were adopted by the State Building Code Council on November 12, 2004. The rules are effective throughout the state on July 1, 2005. (This version of the code is based on WAC 51-52 as published in WSR 05-01-015. It is subject to review by the State Legislature during the 2005 session.)

Building Permit Fees: The activities of the State Building Code Council are supported by permit fees collected by each city and county. Section 19.27.085 of the State Building Code Act requires that a fee of \$4.50 be imposed on each building permit issued by each city and county. In addition, a fee of \$2.00 per unit shall be imposed for each dwelling unit after the first unit, on each building containing more than one residential unit. For the purpose of this fee, WAC 365-110-035 defines building permits as any permit to construct, enlarge, alter, repair, move, improve, remove, convert or demolish any building or structure regulated by the Building Code. Exempt from the fee are plumbing, electrical, mechanical permits, permits issued to install a mobile/manufactured home, commercial coach or factory built structure, or permits issued pursuant to the International Fire Code.

Each city and county shall remit moneys collected to the state treasury quarterly. No remittance is required until a minimum of \$50.00 has accumulated.

These permit fees are the amounts current in January 2005. Such fees may be changed by the State Legislature.

Opinions: Only at the request of local enforcement official, the State Building Code Council may issue interpretations/opinions of those provisions of the State Building Code created by the Council, or provisions of the model codes amended by the Council. Final interpretation authority for any specific permit resides with the local enforcement official.

**WASHINGTON STATE AMENDMENTS
INTERNATIONAL MECHANICAL CODE**

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**CHAPTER 51-52 WAC
STATE BUILDING CODE ADOPTION AND AMENDMENT
OF THE 2003 EDITION OF THE INTERNATIONAL MECHANICAL CODE**

WAC 51-52-001 AUTHORITY

These rules are adopted under the authority of Chapter 19.27 RCW.

WAC 51-52-002 PURPOSE

The purpose of these rules is to implement the provisions of Chapter 19.27 RCW, which provides that the State Building Code Council shall maintain the State Building Code in a status which is consistent with the purpose as set forth in RCW 19.27.020. In maintaining the codes the Council shall regularly review updated versions of the codes adopted under the act, and other pertinent information, and shall amend the codes as deemed appropriate by the Council.

WAC 51-52-003 INTERNATIONAL MECHANICAL CODE

The 2003 edition of the International Mechanical Code published by the International Code Council is hereby adopted by reference with the exceptions noted in this Chapter of the Washington Administrative Code.

WAC 51-52-004 CONFLICT BETWEEN INTERNATIONAL MECHANICAL CODE AND STATE ENERGY CODE CHAPTER 51-11 WAC

In the case of conflict between the duct sealing or insulation requirements of Section 603 or Section 604 of this code and the duct sealing or insulation requirements of Chapter 51-11 WAC, the Washington State Energy Code, or where applicable, a local jurisdiction's energy code, the provisions of such energy codes shall govern.

WAC 51-52-005 CONFLICT BETWEEN INTERNATIONAL MECHANICAL CODE AND STATE VENTILATION AND INDOOR AIR QUALITY CODE CHAPTER 51-13 WAC

In the case of conflict between the Group R ventilation requirements of this code and the Group R ventilation requirements of Chapter 51-13 WAC, the Washington State Ventilation and Indoor Air Quality Code, the provisions of the Ventilation and Indoor Air Quality Code shall govern.

WAC 51-52-007 EXCEPTIONS

The exceptions and amendments to the International Mechanical Code contained in the provisions of Chapter 19.27 RCW shall apply in case of conflict with any of the provisions of these rules.

The provisions of this code do not apply to temporary growing structures used solely for the commercial production of horticultural plants including ornamental plants, flowers, vegetables, and fruits. "Temporary growing structure" means a structure that has the sides and roof covered with polyethylene, polyvinyl, or similar flexible synthetic material and is used to provide plants with either frost protection or increased heat retention. A temporary growing structure is not considered a building for purposes of this code.

Codes referenced which are not adopted through RCW 19.27.031 or RCW 19.27A shall not apply unless specifically adopted by the authority having jurisdiction.

WAC 51-52-008 IMPLEMENTATION

The International Mechanical Code adopted by Chapter 51-52 WAC shall become effective in all counties and cities of this state on July 1, 2004.

WAC 51-52-0101 Section 101 – General

101.2 Scope. This code shall regulate the design, installation, maintenance, alteration and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate those mechanical systems, system components, equipment and appliances specifically addressed herein. The installation of fuel gas distribution piping and equipment, fuel gas-fired appliances and fuel gas-fired appliance venting systems shall be regulated by the *International Fuel Gas Code*.

Exceptions:

1. Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the International Residential Code.
2. Mechanical systems in existing buildings undergoing repair, alterations, or additions, and change of occupancy shall be permitted to comply with the International Existing Buildings Code.
3. The standards for liquefied petroleum gas installations shall be the 2001 edition of NFPA 58 (Liquefied Petroleum Gas Code) and the 2002 Edition of ANSI Z223.1/NFPA 54 (National Fuel Gas Code).

101.5 Other authorities. In addition to the International Mechanical Code, provisions of WAC 480-93 regarding gas pipeline safety may also apply to single meter installations serving more than one building. The provisions of WAC 480-93 are enforced by the Washington Utilities and Transportation Commission.

UNUSUALLY TIGHT CONSTRUCTION. Construction meeting the following requirements:

1. Walls exposed to the outside atmosphere having a continuous water vapor retarder with a rating of one perm or less with openings gasketed or sealed; and
2. Openable windows and doors meeting the air leakage requirements of the International Energy Conservation Code, Section 502.1.4; and
3. Caulking or sealants are applied to areas such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical, and gas lines, and at other openings; or
4. Buildings built in compliance with the 1986 or later editions of the Washington State Energy Code, WAC 51-11, Northwest Energy Code, or Super Good Cents weatherization standards or equivalent.

(Insert Facing Page 18)

401.5.2 Exhaust openings. Outdoor exhaust openings shall be located in accordance with Chapter 5. Exhaust air shall not be directed onto walkways.

403.3 Ventilation rate. Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with Table 403.3 based on the occupancy of the space and the occupant load or other parameter as stated therein. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3. Ventilation rates for occupancies not represented in Table 403.3 shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

Exception: Where occupancy density is known and documented in the plans, the outside air rate may be based on the design occupant density. Under no circumstance shall the occupancies used result in outside air less than one-half that resulting from application of Table 403.3 estimated maximum occupancy rates.

501.5 Termination point/exhaust outlet. The termination point or exhaust outlet for exhaust ducts discharging to the atmosphere shall be located with the following minimum distances:

1. **For ducts conveying explosive or flammable vapors, fumes or dusts:** 30 feet (9144 mm) from the property line; 10 feet (3048 mm) from openings into the building; 6 feet (1829 mm) from exterior walls and roofs; 30 feet (9144 mm) from combustible walls and openings into the building which are in the direction of the exhaust discharge; 10 feet (3048 mm) above adjoining grade.
2. **For other product-conveying outlets:** 10 feet (3048 mm) from the property line; 3 feet (914 mm) from exterior walls and roofs; 10 feet (3048 mm) from openings into the building; 10 feet (3048 mm) above adjoining grade.
3. **For environmental air duct exhaust:** 3 feet (914 mm) from the property line, 3 feet (914 mm) from openings into the building for all occupancies other than Group U, and 10 feet (3048 mm) from a mechanical air intake. This includes environmental air regulated by Sections 504 and 505, but does not include enclosed parking garage exhaust outlets regulated by Section 404.

Exceptions:

1. The separation between an air intake and exhaust outlet on a single listed package HVAC unit.
2. Exhaust from environmental air systems other than garages may be discharged into an open parking garage.
3. Except for I occupancies, where ventilation system design circumstances require building HVAC air to be relieved, such as during economizer operation, such air may be relieved into an open or enclosed parking garage within the same building.

2. If maintained under a positive pressure with respect to the surrounding duct or plenum, the exhaust duct will be sealed to prevent leakage; or
3. The surrounding air stream is an exhaust air stream not intended for recirculation to the building and cross contamination of the two air streams will not create a hazardous condition.

601.2 Air movement in egress elements. Exit access corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

Exceptions:

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
3. Where located within tenant spaces of 1,000 square feet (93 m²) or less in area, utilization of corridors for conveying return air is permitted.
4. Where such air is part of an engineered smoke control system.
5. Corridors conforming to the International Building Code in Group I occupancies.
6. Corridors serving residential occupancies shall be permitted to be supplied without specific mechanical exhaust subject to the following:
 - 6.1 The supply air is 100% outside air, and
 - 6.2 The units served by the corridor have conforming ventilation independent of the air supplied to the corridor, and
 - 6.3 For other than high-rise buildings, the supply fan will automatically shut off upon activation of corridor smoke detectors which shall be spaced at no more than 30 feet (9144 mm) on center along the corridor, or
 - 6.4 For high-rise buildings, corridor smoke detector activation will close required smoke/fire dampers at the supply inlet to the corridor at the floor receiving the alarm.

601.3 Contamination Prevention. Exhaust ducts under positive pressure, chimneys, and vents shall not extend into or pass through ducts or plenums.

Exception: Exhaust ducts conveying environmental air shall be permitted to pass through a duct or plenum provided that:

1. The duct is maintained under sufficient negative pressure to prevent leakage of the exhaust air to the surrounding duct or plenum; or

**WAC 51-52-1000 – Chapter 10 – Boilers, water heaters
and pressure vessels.**

Sections 1003 through 1011 are not adopted.

Pressure Vessels and Boilers are regulated by Chapter 70.79
RCW.

WAC 51-52-21000 – International Fuel Gas Code

WAC 51-52-21404 Section 404 – Piping System Installation.

404.8 Protection against corrosion. Metallic pipe or tubing exposed to corrosive action, such as soil condition or moisture, shall be protected in an approved manner, and cathodically protected in accordance with NACE RP-01-69. █

Zinc coatings (galvanizing) shall not be deemed adequate protection for gas piping underground. Ferrous metal exposed in exterior locations shall be protected from corrosion in a manner satisfactory to the code official. Where dissimilar metals are joined underground, an insulation coupling or fitting shall be used. Piping shall not be laid in contact with cinders.

WAC 51-52-22000 National Fuel Gas Code

WAC 51-52-22006 Chapter 6 – Gas Piping Installation

6.1.3 Protection Against Corrosion. Metallic gas piping in contact with earth or other material that could corrode the piping shall be protected against corrosion in an approved manner, and cathodically protected in accordance with NACE RP-01-69. When dissimilar metals are joined underground, an insulating coupling or fitting shall be used. Piping shall not be laid in contact with cinders. Uncoated threaded or socket welded joints shall not be used in piping in contact with soil or where internal or external crevice corrosion is known to occur.