

Seattle Permits
— part of a multi-departmental City of Seattle series on getting a permit

Smoke Alarms in Residences and Family Day Care Homes

Updated October 18, 2005

Smoke alarms are important in alerting sleeping people to a fire. They must be located and operate in such a way that they are effective both in detecting smoke and in alerting residents. This Tip describes the requirements for smoke alarms in residences, both single family and multifamily, and in home day cares (Groups R-2 and R-3 occupancies). It addresses new construction and alterations (see Seattle Fire Code Section 907.3 for retroactive requirements in existing buildings).

When Smoke Alarms Are Required

The International Residential Code (IRC), Section R314, requires that smoke alarms be installed in all newly constructed single family residences, including townhouses, and duplex buildings, family child day care homes, and in many older buildings. The International Building Code (IBC), Section 907.2.10, covers smoke alarms in other residential buildings. Smoke alarms are required in all new single family homes, apartments, condos, hotels, motels, dormitories, and group homes—anywhere someone sleeps. Additionally, state law requires that all existing rental units must have smoke alarms. Every home must have them at the time it is sold.

All smoke alarms in new construction must be hard-wired and interconnected, so that they all will sound if one detects smoke. The alarms must also have battery back up in case of power failure.

Smoke alarms must be added throughout an existing building when a sleeping room is added, or when other work requiring a permit is undertaken. (There is an exception to this rule for buildings covered by the IRC. If construction in an existing building does not

remove interior finishes, and there is no available attic or basement access, these new alarms can be battery operated and function separately.)

Duties of Tenants and Landlords

In a rental, both the tenant and the building owner have responsibilities for smoke alarms. The tenant is responsible for maintaining the alarms in good working order. The owner must install the alarms; inspect, test, and repair or replace smoke alarms when a rental unit becomes vacant, and instruct tenants on the purpose, operation, and maintenance of the devices.

Owners and tenants must have an agreement about who will bear the responsibilities of maintenance and repair. The owner must provide a written "Fire Safety and Protection Information" document to the tenant, according to state law RCW 59.18.060.11(a). However, if the owner does not abide by the terms of the agreement, the tenant is still responsible for assuring that the smoke alarms are functional.

Where to Put Smoke Alarms

The general rule is that smoke alarms must be installed in every sleeping room or area, and in corridors or spaces outside sleeping areas. There must be at least one smoke alarm on each story of the residence. Although not required, it is good policy to place additional smoke alarms in any area where someone might fall asleep.

In many instances, additional smoke alarms are required. There must be at least one alarm on each story of a residence, including the basement. When a story is split into two or more levels, this additional smoke alarm must be installed on the upper level.

Figures A-D on the following pages illustrate several typical smoke alarm installations which meet these requirements.

Where to Locate Smoke Alarms Within Rooms

In general, smoke alarms are best mounted on the ceiling in a centrally located area. In a sleeping area, they

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can be anywhere in the room; in a hallway, they must be centrally located outside all sleeping rooms. When sleeping rooms are on upper floors, the hallway smoke alarm should be placed near the top of the stairs.

Sometimes, the smoke alarms should be placed on the wall instead of the ceiling. In rooms with steeply sloping ceilings, the smoke alarm should be located on the wall near the highest point of the ceiling within 3 feet of the peak. If the ceiling has a significantly different temperature than the air below, smoke may have difficulty reaching the alarm. For example, a ceiling directly under a roof with little or no insulation will be hot in summer and quite cold in winter. In this case, the smoke alarm should be placed on the wall. Also, alarms should be placed on the wall when a room has radiant heating in the ceiling.

A smoke alarm installed in a stairway must be located so that no door or other obstruction could prevent rising smoke from reaching the alarm. Smoke alarms should be placed where exposed beams and similar obstructions will not prevent smoke from reaching the alarm. Lastly, no smoke alarms may be mounted in front of an air supply duct, or between the bedroom and the furnace cold air return.

Smoke alarms on ceilings generally should not be placed within 4 inches of a wall. Smoke alarms placed on walls should not be placed within 4 inches of the ceiling; additionally, the top of the alarm must be within 12 inches of the ceiling. Figure D shows the acceptable area for a smoke detector's location. However, all smoke alarms should be installed in accordance with manufacturer's recommendations.

Smoke Alarms in Family Day Care Centers

In family child day care homes (home day care for 12 or fewer children), the basic requirements are the same as for residences. Additional smoke alarms must be mounted in any space children may sleep or nap.

Power Source and Operation of Smoke Alarms

Since 1981, smoke alarms in new or remodel construction have been required to receive their primary power from the building wiring. Smoke alarms may not have a disconnecting switch other than overcurrent protection. Since 1990, all new smoke alarms must have a battery back-up and emit a warning signal when the batteries are low.

Alarms are also required to be interconnected, so that all alarms will sound if one detects smoke. The IRC

does not require interconnection for alarms added to existing construction unless interior finishes are being removed or an attic, crawl space or basement provides access for wiring, but it is highly recommended.

In buildings constructed before 1981, smoke alarms may be battery operated. They also must emit a warning signal when the batteries are low.

Smoke alarms must operate so that an alarm is audible to all sleeping areas with the doors closed. (In family child day care homes, the alarm must be audible to all parts of the building.)

Enforcement Procedures

Smoke alarm regulations are enforced by the Seattle Fire Department (SFD) and the Department of Planning and Development (DPD). Failure of either a building owner or tenant to comply with the requirements may result in a fine.

Additional Information

You may call with either DPD or SFD with questions or for assistance in complying with these regulations.

For information about installation and maintenance of smoke alarms, or to obtain smoke alarms if you are low income, contact the Seattle Fire Department Public Education Section at (206) 386-1337, or visit its website at www.seattle.gov/fire

For information about the location of smoke alarms and other requirements in new or remodel construction, come to the ASC for technical backup at 700 5th Ave., 20th Floor.

For information about tenant and owner responsibilities, contact DPD Code Compliance Program/Housing and Zoning Enforcement, at (206) 684-7899.

Access to Information

Links to electronic versions of **DPD Tips**, **Director's Rules**, and the **Seattle Municipal Code** are available on the "Tools & Resources" page of our website at www.seattle.gov/dpd. Paper copies of these documents, as well as additional regulations mentioned in this Tip, are available from our Public Resource Center, located on the 20th floor of Seattle Municipal Tower at 700 Fifth Ave. in downtown Seattle, (206) 684-8467.

Figure A

Smoke alarms (indicated by stars) must be located in each sleeping room, as well as the hallway adjacent to each sleeping area. The hallway smoke alarm must be in a position central to all the sleeping rooms. Homes with more than one sleeping area must have alarms to protect each area.

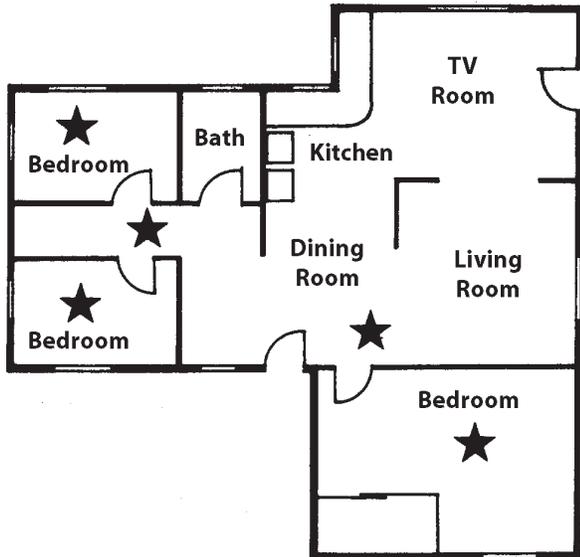


Figure C

In an efficiency apartment, the smoke alarm should be placed in the sleeping room on the wall or ceiling farthest from the kitchen and away from the bathroom. This reduces nuisance alarms from cooking and bath steam.

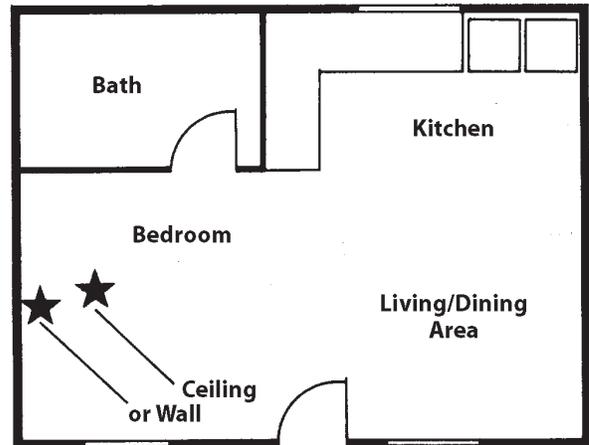


Figure B

A smoke alarm must be located on each story (including basements). Every sleeping room, including those in basements, must have their own smoke alarms. All smoke detectors must be interconnected to sound an alarm audible in all sleeping areas of the dwelling unit.

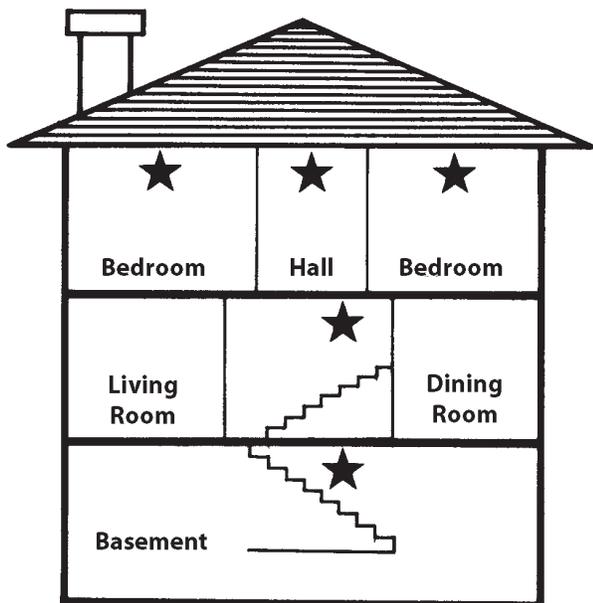


Figure D

Smoke alarms should be installed at least 4 inches away from corners in order to avoid dead air space that smoke won't reach. On ceilings, the alarm should be mounted at least 4 inches from any side wall. On walls, the alarm should be mounted no closer than 4 inches from the ceiling and no farther than 12 inches, or according to manufacturer's instructions.

