



Newburgh Heights Fire Department



Smoke Alarm Installation & Maintenance

Newburgh Heights Fire Department Recommends

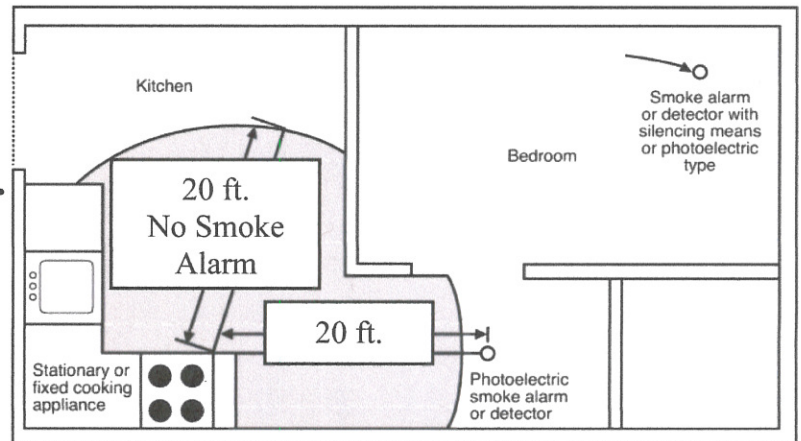
PHOTOELECTRIC SMOKE DETECTORS for Residential Homes.

1. Choose smoke alarms that have the label of a recognized testing laboratory.
2. Install smoke alarms inside each bedroom, outside each sleeping area and on every level of the home, including the basement.
3. On levels without bedrooms, install alarms in the living room (or den or family room) or near the stairway to the next level, or in both locations.

4. Smoke alarms installed in the basement should be installed on the ceiling at the bottom of the stairs leading to the next level.

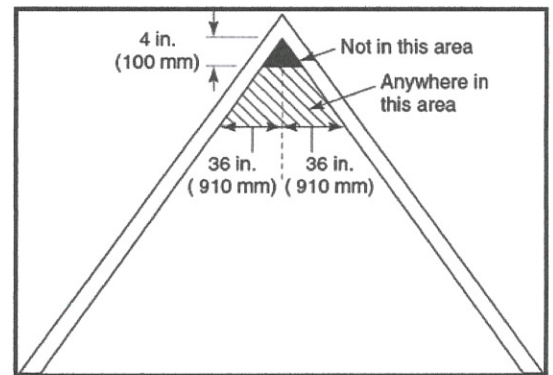
5. Smoke alarms should be installed at least 20 feet from a cooking appliance to minimize false alarms when cooking.

6. Mount smoke alarms high on walls or ceilings (remember, smoke rises). Wall-mounted alarms should be installed not more than 12 inches away from the ceiling (to the top of the alarm).



7. If you have ceilings that are pitched, install the alarm within 3 feet of the peak but not within the apex of the peak (four inches down from the peak).

Note: Picture here is figure 29.8.3.1 from [NFPA 72, National Fire Alarm and Signaling Code \(2013 edition\)](#).



8. Don't install smoke alarms near windows, doors, or ducts where drafts might interfere with their operation.
9. Never paint smoke alarms. Paint, stickers, or other decorations could keep the alarms from working.
10. For the best protection, [interconnect all smoke alarms](#). When one smoke alarm sounds they all sound. Interconnection can be done using hard-wiring or wireless technology.
11. When interconnected smoke alarms are installed, it is important that all of the alarms are from the same manufacturer. If the alarms are not compatible, they may not sound.
12. There are two types of smoke alarms – ionization and photoelectric. An ionization smoke alarm is generally more responsive to flaming fires, and a photoelectric smoke alarm is more responsive to smoldering fires. For the best protection, both types of alarms or combination ionization-photoelectric alarms, also known as dual sensor smoke alarms, are recommended by NFPA 72.
13. Keep manufacturer's instructions for reference.

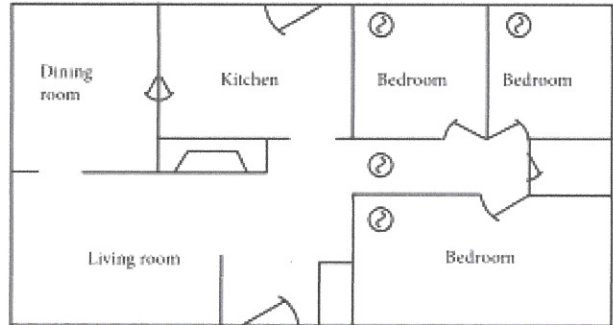
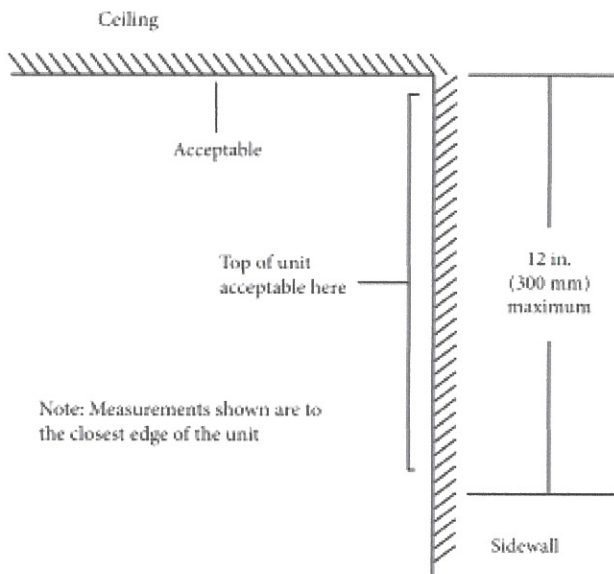


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Alarm Placement

Smoke alarms should be installed according to NFPA 72 and the manufacturer's instructions. Heat and smoke rise, so smoke alarms should be installed on the ceiling or high on a wall to detect the first traces of smoke.

If a room has a pitched (slanted) ceiling, mount the unit near the ceiling's highest point, 4 to 12 inches (10 to 30.5 centimeters) away from the wall. If the room has an A-frame ceiling, mount the unit at least 4 to 12 inches (10 to 30.5 centimeters) away from the peak.



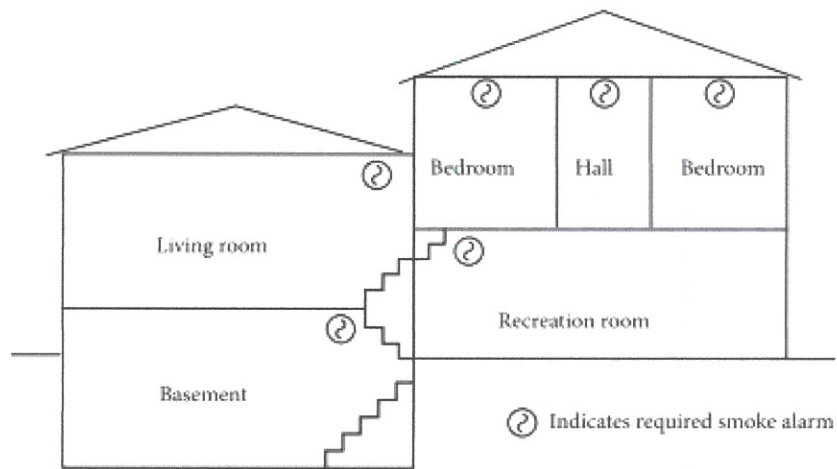
Wall-mounted smoke alarms should be installed so that the top of the alarm is not more than 12 inches (30.5 centimeters) from the ceiling.

Install basement smoke alarms close to the bottom of the stairs. Don't install an alarm at the top of basement stairs; dead air trapped near the closed door could prevent smoke from reaching the unit.

Some household environments can cause nuisance alarms or interfere with a smoke alarm's operation. Avoid placing alarms near a cooking appliance, a dusty area, a shower, or any area where the temperature drops below 40°F (4.5°C) or rises above 110°F (43°C).

Cooking fumes, steam, and automobile exhaust can result in nuisance alarms. Do not install alarms in bathrooms, kitchens, garages, attics, or unheated areas or near recessed ceiling areas, ceiling fans, furnaces, or furnace vents. Place alarms at least 3 feet (0.9 meter) horizontally from bathroom doors.

It's a good idea to have an experienced installer available, if possible, while your volunteers are in the field. Give volunteers a phone number to call your expert for advice on installation problems.





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Smoke Detector Alarms NFPA 72

1. What Is the National Fire Alarm and Signaling Code?

- a. NFPA 72, the National Fire Alarm and Signaling Code, is a model standard used by electricians, architects, engineers, builders and inspectors to determine what features and equipment must be included in a fire alarm system.
- b. NFPA 72 applies to both residential and commercial buildings. Chapter 29 has specific requirements that apply to residential occupancies, including apartments, hotels and houses.

2. Why is it Important?

- a. NFPA 72 is adopted by virtually every community in the United States in one form or another through their residential, fire and building codes.

3. What Are the Current Location Requirements for Smoke Alarms, and How Did They Get That Way?

- a. Prior to 1993, single station smoke alarms were required outside of sleeping rooms and on every level of a home. In 1993, the Code was updated to require smoke alarms in new construction to be provided with smoke alarms inside every sleeping room, in addition to the existing requirements.
- b. Because the code also required new smoke alarm installations to be interconnected, this improved the ability of residents who sleep with their doors closed to hear an alarm. At that time, existing homes were exempted from this requirement.
- c. In the late 1980's through the 1990's, several studies were released that showed a correlation between the age of housing stock and fire death rate (see NFPA 72 Report on Proposals, 2002). In 2004, the National Institutes of Standards and Technology (NIST) released a comprehensive study on the performance of residential smoke alarms.

4. Performance of Home Smoke Alarms:

- a. Analysis of the Response of Several Available Technologies in Residential Fire Settings. The report has been updated several times, most recently in 2007. The NIST report showed that escape times from typical residential fires have been significantly reduced since the 1970's.
- b. In other words, fires grow faster now and people have less time to get out. The report listed higher incidence of plastic vs. cellulosic materials in modern residential furnishings as a contributing factor.
- c. In response to these studies, the NFPA 72 household fire alarm committee re-examined the exception for existing residences that allowed them to omit smoke alarms from individual sleeping rooms. In the 2007 edition of the Code, the exception was removed. At the same time, the Code also removed the exemption for interconnection of smoke alarms.
- d. Thus, starting with the 2007 edition of NFPA 72, the National Fire Alarm and Signaling Code requires all homes, new and existing, to have interconnected smoke alarms inside every sleeping room, outside all sleeping rooms, and on every level. However, most communities do not adopt NFPA 72 requirements retroactively, so these requirements are not always enforceable to existing homes.



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5. What Does NFPA 72 Say About Nuisances?

- a. NFPA 72 addresses nuisance alarms in several ways. First, all smoke alarms are required to be “listed” by a nationally recognized testing lab.
- b. The applicable standard for testing of smoke alarms is UL217, which has some limited requirements for resistance to nuisances.
- c. Second, NFPA 72 has requirements for technology and spacing aimed to limit nuisance alarms. Recognizing the problem of disconnected alarms due to nuisance activations, the NFPA 72 Household committee modified spacing requirements for smoke alarms in 2010.
- d. The Code was changed (in 29.8.3.4(4)) so that alarms are not installed within 10 feet of cooking appliances. It further required that smoke alarms installed within 20 feet of a cooking appliance be either photoelectric, or include an alarm silencing means.
- e. The allowance for photoelectric detection recognizes that ionization alarms are normally more sensitive to cooking nuisances, and so would be more likely to be disabled by the resident. In addition, the 2013 edition of NFPA 72 required for the first time that, by 2016, smoke alarms installed within 20 feet of a cooking appliance be specifically listed for resistance to cooking nuisance sources.
- f. The National Fire Protection Research Foundation is currently studying smoke phenomena associated with cooking, with the goal to update the UL217 test standard to meet this requirement.

6. Is This Enough?

- a. Standards are constantly changing to adapt to new building technologies and development patterns. It also takes time for NFPA 72 to be adopted and incorporated into local building codes.
- b. Because of the time period between when the model Code is updated and when it is adopted as law in a community, it takes years for the effects of changes to manifest. You can see this today in many homes that we would not consider “older.” For example, a home constructed in 1997 was likely to have been built under a local code that referenced pre-1993 NFPA 72 requirements.