

# Radon Risk Reduction Strategies in Rental Housing: Opportunities to Strengthen State and Local Policies

## Introduction

Exposure to radon leads to an estimated **21,000 lung cancer deaths annually** in the United States and increases health disparities because the benefits of radon mitigation are not equally shared. Most radon policies apply to owner-occupied units; fewer policies apply to rental units, which are disproportionately occupied by people with lower incomes and people of color.<sup>1</sup> These disparities are further compounded by the fact that **people of color are less likely than White individuals to have lung cancer diagnosed early**. Although new federal requirements will expand the number of rental homes tested and mitigated when federal assistance is involved, additional action is needed. State and local requirements can help fill gaps in federal policy and protect people from radon risks, especially those who rent homes. The benefits of fixing indoor radon to prevent lung cancers are enormous. It is estimated that **every dollar spent on radon testing and repairs in multifamily housing returns \$11 to \$20 in avoided healthcare costs**.<sup>2</sup>

## Radon Basics

### Why Radon Is a Concern

Radon is a colorless, odorless gas that forms from the natural breakdown of uranium in rocks and soils. It becomes a health risk when it seeps from the ground into our homes. Radon and its decay products are

radioactive. When breathed in, they emit particles that can affect the cells lining the airways in the lungs and cause them to become cancerous. According to the U.S. Environmental Protection Agency (EPA), **radon is the second leading cause of lung cancer for all people and the leading cause of lung cancer for nonsmokers**. Lung cancer from radon can happen with short- or long-term exposures. Both the concentration of radon gas in the air and the length of exposure are important factors in whether lung cancer will occur.

### Where Radon Is Found

Radon can be found in single-family and multifamily homes throughout the United States. Radon can be **present on any floor in an apartment building**. CDC's National Environmental Public Health Tracking Network is one source of information about radon levels in the United States. It provides the results of radon tests submitted by private laboratories and state agencies across the country. Additionally, EPA maintains a list of **state agencies that provide local radon maps** and help consumers address radon issues. High radon levels have been **found in every state** and in nearly all counties. In the early 1990s, EPA created radon risk maps by using regional geologic data and some radon measurements to model the expected average levels of radon in buildings and homes. EPA has indicated that this zone map should not be used to determine if individual homes or buildings need to be tested.

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## How Radon Is Addressed in Homes

Testing radon levels in homes is simple and there are proven solutions for preventing radon from entering homes. EPA’s website provides information about [low- and no-cost test kits](#), hiring testing and mitigation professionals, and some [different radon reduction options](#):

- The most reliable option for any building with concrete between the ground and building is called “sub-slab depressurization”—also referred to as “active radon mitigation.” It involves inserting a suction pipe through the floor to the ground underneath and using a fan to draw the radon up and out of the home.
- For homes with crawl spaces, mitigation typically involves covering the dirt floor with thick plastic sheeting and using a pipe and fan to draw the radon from under the sheet to the outdoors.
- In apartment buildings, pipes and fans can be installed either during construction or as part of a retrofit. In such buildings, it can be more efficient and effective to address radon through a building-wide solution, rather than in isolated units.

National [standards of practice](#) for radon testing and mitigation have been developed by the American Association of Radon Scientists and Technologists (AARST) under standards-development protocols of the American National Standards Institute (ANSI). According to industry estimates,<sup>3</sup> [professional testing costs range from \\$100 to \\$275 per unit for single-family housing and \\$50 to \\$80 per unit for multifamily housing](#). Mitigation costs range from \$1,500 to \$3,000 and \$2,500 to \$4,000 for single- and multifamily housing, respectively. Costs may vary within (and possibly even outside) these ranges, by region and urbanicity and by local availability of radon professionals and contractors, among other factors.

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## Federal Radon Policy and Regulations

Federal action to address radon has increased in recent years, including changes that will affect rental units. For example, HUD’s Federal Housing Administration (FHA) expanded its testing requirements for multifamily properties receiving FHA mortgage insurance, and multifamily properties regulated under the Federal Housing Finance Administration (FHFA) will also have new testing requirements. However, these changes only reach a fraction of estimated [48 million rental units nationwide](#). FHA finances approximately 160,000 units per year, the entities that FHFA regulates finance about 10 times that number,<sup>4</sup> and HUD’s [Rental Assistance Demonstration](#) (RAD) program to convert public housing to privately owned properties reaches about 100,000 units each year. However, because these federal requirements are relatively new, data are lacking on the number of units that have been tested and mitigated as a result. Still, these recent efforts are a positive step toward implementing the current National Radon Action Plan (NRAP), which was developed by the American Lung Association, industry members, advocates, and state and federal agency officials with funding support from EPA. The first goal of that plan explicitly recommends radon requirements for rental units during real estate transactions. Additional details about the federal requirements follow.

The Federal Housing Finance Administration (FHFA) adopted, on January 19, 2023, [more robust radon testing requirements](#) for multifamily properties with loan applications received after June 30, 2023, for two entities that it regulates—[Fannie Mae](#) and [Freddie Mac](#) (the “enterprises”).<sup>5</sup> These enterprises buy loans made by banks and other lending institutions to provide them with capital to make additional loans. Before buying the mortgage of a multifamily property, the enterprises require testing of 25% of ground-floor units (increased from the prior requirement of 10%) and mitigation for any apartments equaling or exceeding EPA’s action level of 4 pCi/L (picocuries per liter). Under the new requirements, an environmental professional is responsible for overseeing the placement and retrieval of the tests—a task that may be performed by a property representative. The environmental professional is also responsible for notifying tenants of the results. The enterprises must also adhere to any state radon requirements.

The Department of Housing and Urban Development (HUD) committed in its [2021 Climate Action Plan](#) to clarify and update radon policies for HUD-owned and financed housing as well as its department-wide environmental review policies, following a [report](#) by its Office of Inspector General that found the lack of a department-wide radon policy. [HUD recently sought public comment on its proposed guidance](#) clarifying that radon must be considered in the contamination analysis performed as part of the department's environmental review policies at [24 CFR parts 50 or 58](#); recommending best practices for considering radon; and identifying the HUD programs that have established specific radon guidance. Currently, the following HUD programs must address radon either due to a specific policy or as part of their environmental review requirements:

- Mortgage insurance: The Federal Housing Administration (FHA) requires lenders who are submitting applications for multifamily mortgage insurance to test 100% of ground floor units and 10% of upper floor units in every building on the property in accordance with [section 9.6.3 of its Multifamily Accelerated Processing \(MAP\) Guide](#). The FHA policy applies to the entire United States—an update to its 2013 policy.
- Project-based housing: Apartments converted from HUD-owned public housing to private housing under the department's [Rental Assistance Demonstration program](#) must also meet [radon requirements](#) (additional information [here](#)). This program also follows the [MAP Guide](#) referenced above. Loan applications submitted to HUD for multifamily assistance, must include a report signed and certified by a radon professional that includes the results of any testing performed, the details of any mitigation deemed necessary, and the timing of any such mitigation. The [MAP Guide](#) requires occupants to be notified before testing and informed before and after mitigation activities.

Additionally, in 1988, Congress [mandated](#) HUD to develop a departmental policy to protect the 1.2 million residents of public housing from radon risks (commonly referred to as the “Indoor Radon Abatement Act of 1988”). In 1991, the U.S. General Accounting Office found that [HUD's implementation needed strengthening](#); and in 2013, HUD [issued guidance](#) that “strongly encouraged public housing authorities to proactively plan and complete radon testing and follow-up with mitigation strategies, if

possible, especially when excessive radon levels are present.” Subsequent media [reporting](#) found that the agency had failed to implement the 1988 law and that the lack of a clear HUD mandate for housing authorities had resulted in inaction. In 2022, HUD [awarded \\$4 million](#) for testing and mitigation in public housing, and, based on [HUD's request](#), Congress allocated an additional \$5 million in the 2023 budget. HUD has [requested](#) an additional \$5 million in the 2024 budget.

The Department of Defense requires Army ([Appendix E](#)), Navy ([Section 25-3.2](#)), Air Force ([Chapter 7](#)), and Marine Corps ([Volume 6, Chapter 3](#)) installations worldwide to establish radon assessment and mitigation programs to protect the [approximately 40,000 units](#) regulated by these agencies. The Army allows a five-year time frame to conduct mitigation for homes found to have radon levels between 4 and 8 pCi/L, while the Navy and Marine Corps require mitigation for levels between 4 and 20 pCi/L within two years, between 20 and 200 within six months, and levels greater than or equal to 200 pCi/L within three weeks. The Air Force requires mitigation with six months for levels above 4 pCi/L. The agency updated requirements following a [2020 Inspector General report](#) that found deficiencies in implementation.

The U.S. Department of Agriculture [requires radon testing and mitigation](#) in its Forest Service properties. Though radon testing and mitigation are eligible expenses for most rural housing programs, there are no additional USDA radon requirements for rental units.

## State and Local Radon Policies

Most state policies have focused on owner-occupied units. According to [LawAtlas](#), using data through 2016, 37 states require [disclosure](#) of actual radon hazards in owner-occupied homes, while only three states ([Florida](#), [Illinois](#), and [Maine](#)) have such a disclosure requirement for rental units. AARST's [2022 Radon Report Card](#) provides a breakdown of radon policies by state, reporting that only nine states require sellers to warn buyers of radon risks and encourage testing before purchasing. In 2023, two bills including such policies were under consideration in [Colorado](#) and [Illinois](#). Only one state (Maine) [requires testing of rental units](#) (except short-term rental units). In 2022, Maine launched the “[Gold Standard for Radon Testing and Mitigation Initiative](#)” to recognize landlords who test every two years and provide up to \$600 toward

mitigation expenses. In 2023, Rhode Island's general assembly proposed a testing requirement and use of a certified radon professional to confirm a tenant's test.

For additional information on state radon laws, see the Environmental Law Institute (ELI) [summary of state radon laws](#), which is updated annually. According to ELI, [housing codes and landlord-tenant laws are two ways to address environmental health issues](#), such as radon, in housing. Housing codes set minimum standards for conditions in rental housing and are sometimes referred to as *property maintenance codes* or *sanitation codes*. Typically adopted by localities, housing codes can also be adopted at the state level. Landlord-tenant laws lay out the rights and responsibilities of landlords and tenants and provide a tenant with legal recourse if a landlord fails to remedy substandard housing conditions. Several localities have passed radon ordinances in the last several years, a few of which are described here:

- A 2022 Montgomery County, Maryland [law requires landlords to test all ground floor units before occupancy](#) in single- and multifamily housing; provide education at the signing of the lease; and reduce radon concentrations to below EPA's action level. Tenants have the right at any time during their tenancy and at their expense to conduct a radon test or hire a professional to test a dwelling.
- A 2021 Iowa City, Iowa [law requires testing and mitigation for units exceeding EPA's action level](#) in single-family detached and duplex rental properties. The city requires retesting every eight years.
- A 2022 South Brunswick Township, New Jersey [law requires a radon test documenting levels less than the EPA's action level](#) within the most recent five years before issuing a certificate of

compliance for rental units.

- A 2020 Boulder County, Colorado [ordinance requires "licensed premises" \(short-term rentals\) to be tested by a certified provider every five years](#).

## Recommendations for State and Local Policy Action

Because most of these state and local radon laws are newly enacted, it is too soon to evaluate their impact; however, advocates seeking to pass state and local laws can draw lessons from these pioneering efforts about barriers to policy adoption and ways to address them. Real estate professionals, landlords, and banking professionals may cite concerns about real estate transaction delays, the reliability of test results, whether there are sufficient professionals to carry out testing and mitigation, and the appropriate testing protocols for apartments. They may question whether action is warranted in rental units because of potentially short-term exposures.

Those involved with successful local efforts offer the following recommendations:

- [Use local data to make the case for stronger radon protections](#). Boulder County, Colorado, [noted that half of area homes exceeded EPA's action level](#). This provided a powerful rationale for action. Montgomery County, Maryland, conducted a public information campaign to help build support for its radon action.
- [Proactively build relationships with real estate agents, landlords, homeowners, and other stakeholders](#). Legislators in Montgomery County, Maryland, collaborated with the radon testing industry, real estate professionals, and cancer

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- Proactively build relationships with real estate agents, landlords, homeowners, and other stakeholders.
- Adopt established testing and mitigation protocols.
- Explicitly consider health equity and environmental justice implications.
- Leverage zoning and housing code updates.

prevention advocates to design a legislative approach that worked for all parties. After initially passing a law for owner-occupied units, the collaboration paved the way for subsequently extending the requirements to rental units.

- **Adopt established testing and mitigation protocols.** Decades of radon research provide a sound basis for testing and mitigation methods. Rather than developing their own unique approaches, states and localities should consider incorporating existing protocols that are based on this science (see below).
- **Explicitly consider health equity and environmental justice implications.** States and localities can use their testing data to effectively target radon policies to the communities at greatest risk. For example, the Minnesota Department of Health created [a mapping tool to show radon testing rates](#) in communities across the state alongside sociodemographic information. Additionally, policymakers can ensure that those that have a stake in radon policies, such as tenants with lower incomes, have a role in shaping the requirements. Addressing radon in rental housing also will help redress historical inequities that have left such housing without the same protections as owner-occupied units.
- **Leverage zoning and housing code updates.** Boulder County, Colorado, initially used a grant from the state department of health to develop radon-resistant new construction requirements for the unincorporated areas of Boulder County. When the City of Boulder's land use department was writing licensing requirements for the growing vacation rental market, they invited the county government to help craft radon requirements. The hope is to expand these requirements to all rental housing. Similarly, Iowa City incorporated radon testing and mitigation into the housing and zoning code while it was enacting requirements to stabilize the rental market in what is predominantly a university town. The City of Denver building and licensing department invited its public health department to comment on revisions to the city's housing code, but they were unable to add radon testing requirements because the changes were limited to issues covered in the existing code.

### Strengths and Limitations of Existing Policies

Many radon laws and policies reflect compromises that emphasize feasibility and cost over public health.

Those involved with formulating radon policies identified several issues that often require deliberation. The following is a summary of many of those issues, along with recommendations for how to address them:

- **Building type:** Policymakers will likely need to consider what types of buildings to cover in their radon rental policies. Data on building types and property ownership may help inform this decision. For example, in Montgomery County, Maryland, small landlords own most of the rental properties, with one corporation owning 7% of rental units. Most of the county's rental units are single-family, townhomes, or garden apartments. While Montgomery County's law applies to all rentals, Iowa City's policies apply to single-family and duplex rental units. The evidence does not support exempting units from radon requirements based on building type.
- **Testing protocols:** Freddie Mac and Fannie Mae require testing of 25% of ground floor units (with additional testing required if those tests come back equal to or higher than EPA's action level). In contrast, FHA follows the ANSI/AARST standards of practice (i.e., *Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings [MAMF-2017 with 1/21 Revisions]*), which requires testing of 100% of ground floor units and 10% of upper floor units. The state of Illinois allows tenants below the third floor to test their units and requires the landlord to disclose high test results in future lease transactions. [Data indicate that all ground floor—as well as upper floor units—must be tested to ensure at-risk units are identified.](#)
- **Retesting frequency:** Most of the states and localities that have radon testing rules include a re-testing requirement, though the interval varies (e.g., Iowa City, Iowa, requires re-testing every eight years, Maine every 10, and Boulder County, Colorado, every five years). [EPA's A Citizen's Guide to Radon](#) and most states recommend retesting every two years to verify continued effectiveness of radon mitigation systems and, otherwise, every five years.
- **Testing professionals:** The HUD FHA policy requires testing by radon professionals certified by an EPA-recognized certification program and, where applicable, state-licensed. Montgomery County, Maryland, allows either the tenant or the landlord to test while establishing that tests performed by radon professionals supersede

those performed by others and that longer-term radon tests supersede shorter-term tests. As mentioned, the state of Illinois also empowers tenants to test their units. Iowa City, Iowa, also allows landlords to conduct the tests—which was a compromise—instead of the city’s preference for testing by a certified third party.

- **End of lease without penalty:** When the landlord fails to mitigate the unit with a high radon level, Montgomery County, Maryland, allows that the tenant can terminate the lease without loss of security deposit or any other financial penalty.

## Recommended Components of Radon Requirements

The following list of policies may help agencies and advocates developing state and local radon policies for rental housing:

- Require disclosure to tenants of known radon levels and a warning statement of potential radon risks through a state or local form drawn up by, for example, the real estate commission/board or the state association of Realtors.® Note that warning statement rules are more protective when coupled with testing requirements.
- Require radon testing according to [American National Standard’s methods](#) in 100% of ground-contact units and at least 1% and not less than 10% of all upper floor units (occupied or intended to be occupied) above ground-contact units and retesting every two years. All radon testing should be conducted according to the current ANSI/AARST for the particular building type (i.e., for multifamily buildings or single-family homes).
- Require radon tests be performed by or (where permitted by federal, state, or local law, code, or policy) under the supervision of a professional who is currently credentialed by the [National Radon Proficiency Program \(NRPP\)](#) or the [National Radon Safety Board \(NRSB\)](#). The individual should also be licensed/certified in the state in which the work is being conducted if the state has this requirement.
- Include a penalty provision (including civil penalties) for landlords or sellers that misrepresent radon readings to tenants or buyers, respectively.
- Require mitigation in rental housing when levels equal or exceed EPA’s action level by a professional who is credentialed by the NRPP or NRSB and licensed/certified in the state (or as required by the locality, if applicable) in which the work is being conducted, if required by the state. Mitigation should be carried out according to the current ANSI/AARST standards of practice for the specific housing type—specifically, as of the spring of 2023, *Radon Mitigation Standards for Multifamily Buildings (RMF 2018)* and the *Soil Gas Mitigation Standards for Existing Homes (SGM-SF 2017 with 12/2020 Revisions)*.
- Require radon-resistant new construction in accordance with the protocols specified in the current ANSI/AARST standards of practice for the particular building type (i.e., for one- and two-family dwellings and townhouses or for buildings).
- Ensure enforcement mechanisms are in place including funded staff and clearly communicated procedures. Enforcement responsibilities typically vary by state. For example, real estate commissions and related industry groups (such as real estate agent associations) typically regulate radon disclosure, whereas environmental, health, or building agencies may enforce testing and mitigation requirements.
- Include a mechanism for monitoring and evaluation of the policies to ensure that they are achieving their goals and that any unintended consequences are identified and managed.

## Conclusion

Many people are unaware that radon is a leading cause of lung cancer and, consequently, not enough is being done to prevent exposure, especially among people living in rental properties. Tenants typically lack authority to make changes to their units without their landlord’s approval and may fear that raising radon concerns could jeopardize their tenancy. Property owners have a duty to protect tenants from health and safety hazards under most state habitability requirements and may face liability risks if they fail to act. With increased federal support for radon action and several state and local policy examples, it is an opportune time to pursue policy change. Doing so is critical for closing health disparities since people with low incomes and people of color are more likely to live in rented homes,<sup>1</sup> and radon protections are lacking for these units in most jurisdictions. Importantly, policymakers should ensure that radon requirements do not result in unintended consequences, such as increased costs for tenants. State radon agencies, lung cancer survivors, and radon professionals can

join forces to raise awareness about radon risks and advocate for health protective radon policies so that no one must experience the devastating effects of preventable lung cancer.

## Additional Information

**National Radon Helpline** at 1-800-557-2366.

(Individuals who are deaf or hard of hearing, or who have speech and other communication disabilities, may use a relay service to reach this number, such as by teletyping to 711.)

**American Association of Radon Scientists and Technologists, Inc. (AARST)**: A nonprofit that sets standards for radon measurement, radon mitigation and radon education.

**American Lung Association**: The oldest voluntary health organization in the United States. The Lung Association partners with U.S. EPA to oversee the implementation of the National Radon Action Plan and offers various public education and outreach programs and materials to promote radon testing and remediation.

**Environmental Law Institute (ELI)**: A nonprofit focused on advancing environmental protection by improving law, policy, and management.

**National Radon Proficiency Program (NRPP)**: Provides certification credentials for professional radon testers and mitigators as an independent administrative program of AARST; accredited under ISO 17024.

**National Radon Safety Board (NRSB)**: Provides a searchable website of radon measurement and mitigation professionals and radon laboratories.

## References

<sup>1</sup>More than half of Black and Hispanic people rent their homes, compared with about a third of White adults, and about 60% of people with the lowest incomes rent their homes compared to 10% of people with the highest incomes.

<sup>2</sup>From the **National Radon Action Plan**, January 2022. The cost-benefit analysis is based on a currently unpublished draft 2020 EPA memorandum developed to estimate the impact to date of expanded radon requirements in FHA programs.

<sup>3</sup>Hoylman, Kyle. (2019, June 3). "Radon testing and mitigation costing guidance." Memorandum to Sara Jensen, U.S. Department of Housing and Urban Development, Seattle, Washington.

<sup>4</sup>See FHFA—*Freddie Mac and Fannie Mae multifamily radon standards listening session—7-20-2021*. Federal Housing Finance Administration. <https://www.fhfa.gov/Videos/Documents/Multifamily-Radon-Standards-Transcript.pdf>.

<sup>5</sup>FHFA conducted a **public listening session** to identify opportunities and challenges to addressing radon exposure in multifamily properties.



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