

Overview of EPA's State Indoor Radon Grants Program: A Focus on Activities Conducted during 2019

Radon is the second-leading cause of lung cancer after smoking. Effective, affordable measures to reduce indoor radon are available and, when employed, can prevent radon-induced lung cancer and save lives. For more than 30 years, the U.S. Environmental Protection Agency (EPA or the Agency) has provided critical funding to support state, territory, and tribal efforts to reduce radon-related lung cancer through the State Indoor Radon Grants (SIRG) program. This collaborative partnership between the states, territories, tribes and EPA is critical in reducing radon risk and saving lives.

Despite notable progress, radon continues to be a serious public health concern in the United States. Millions of homes with elevated radon levels remain, and approximately 21,000 Americans die annually from radon-induced lung cancer, including people who have quit smoking or never smoked. In fact, lung cancer ranks among the top 10 causes of cancer death in the United States among adults who have never smoked.¹ This reinforces the need for outreach, awareness and continued risk reduction measures in the United States focused on radon.

State and tribal radon programs remain vital to national efforts aimed at reducing radon risk and complement the work of the National Radon Action Plan (NRAP) partners. (See the overview of the NRAP above.) About 7 million homes are estimated to have levels of radon above the EPA action level. Housing construction during the last 25 years has contributed a significant number of homes with elevated radon levels.

National Radon Action Plan

This Plan represents a collaborative effort among 11 organizations dedicated to eliminating avoidable radon-induced lung cancer in the United States, with the near-term goal of reducing radon risk in 5 million homes and saving 3,200 lives annually by 2020. Led by the American Lung Association, the Plan is aimed at sustainably incorporating radon testing, radon mitigation and radon-resistant construction into systems that govern purchasing, financing, constructing, and renovating homes and other buildings. The Plan builds on earlier federal action. View the plan at www.radonleaders.org/resources/nationalradonactionplan.

Reporting Cycle and Recent Appropriations

This report primarily covers activities conducted during the 2019 reporting cycle (October 1, 2018 – September 30, 2019.) The report is not tied to a particular appropriation; grantees plan and conduct activities during a specified reporting cycle using available funding.

Congress appropriated approximately \$8.051 million to EPA for the SIRG program in FY18 (\$7.867 million after recession) and FY19 (\$7.789 million after rescission). In recent years, the SIRG appropriation has been accompanied by Congressional House Report language^{2,3,4} which continues to reference recommendations for application of SIRG funds in four broad areas (as outlined in House Report 114–632):

¹ Samet, J. M., E. Avila-Tang, P. Boffetta, L. M. Hannan, S. Olivo-Marston, M. J. Thun, and C. M. Rudin. 2009. "Lung Cancer in Never Smokers: Clinical Epidemiology and Environmental Risk Factors." *Clinical Cancer Research* 15 (18): 5626–5645.

² House Report, 114-632. <https://www.congress.gov/114/crpt/hrpt632/CRPT-114hrpt632.pdf>.

³ House Report, 115-238. <https://www.congress.gov/115/crpt/hrpt238/CRPT-115hrpt238.pdf>.

⁴ House Report 115-765. <https://www.congress.gov/115/crpt/hrpt765/CRPT-115hrpt765.pdf>.

1. Awareness, education and outreach to the medical community and inclusion of radon within state cancer control plans.
2. Promote radon awareness through real estate transactions.
3. Inform local school systems about radon exposure risks, provide testing and mitigation of schools, and promote awareness through child care providers.
4. Education and technical support related to industry best practices and standards and the adoption of radon-related guidelines in building codes.

EPA's Implementation of the SIRG Program

The primary aim of EPA's radon program is to protect public health, including the health of families, by reducing the risk from radon exposure. EPA recommends that all homes be tested for radon; testing is the only way to know whether a home or building has high radon levels. The most impactful risk reduction strategies are those that directly result in expanded radon testing of existing homes, mitigation of high radon levels within those homes, and radon-resistant new construction. Some state radon programs have developed databases and systems for tracking residential radon testing, mitigation, and radon-resistant new construction home building data.

The House Report recommendations were considered in the context of the Indoor Radon Abatement Act's statutory priorities. For all grantees, additional consideration was given to work underway in current work plans, capabilities, state regulatory authority and capacity. Metrics outlined in the House Report align with EPA's implementation of the SIRG program and the goals of the NRAP, to eliminate avoidable radon-induced lung cancer in the United States.

Key Reporting Metrics

In addition to standard programmatic reporting metrics, states and tribes reported this year on work planned or already in progress in six activity areas aligned with EPA's radon-related strategic goals and in response to Congressional direction. Key reporting metrics include:

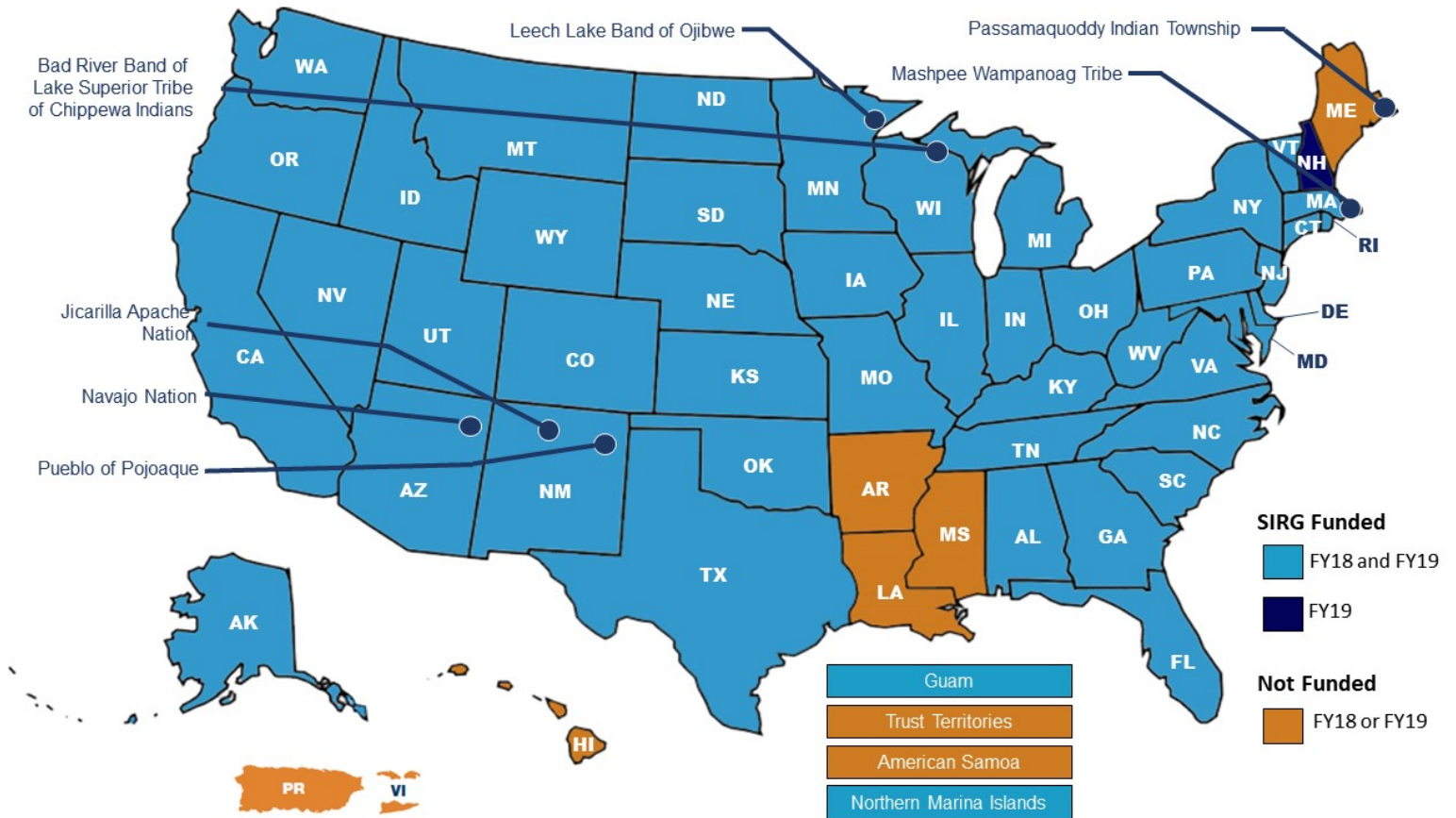
1. Promote awareness about radon exposure to the **medical community**.
2. Include radon in **state cancer control plans (CCPs)**.
3. Promote radon awareness through **real estate transactions**.
4. Test for and remediating radon in **schools** in high-risk radon areas.
5. Provide **continuing education (CE) and technical support**.
6. Include radon-reduction strategies in **state and local building codes (industry codes)**.

International Residential Code (IRC) Update

Every three years, the content of the IRC is updated through the consensus code development process. Current requirements for radon-resistant new construction appear in Appendix F: Radon Control Methods. Even though Appendix F is regarded as optional, many states, counties and municipalities across the country adopt the IRC, including Appendix F. In 2019, a radon testing requirement to verify radon systems are working properly was approved to be adopted into the IRC. Updating and advancing radon controls outlined in building codes, represents one of the most significant opportunities to strengthen public health protections for families across the United States.

Overall Findings

State and tribal radon programs are making significant progress in implementing Congressional direction to the Agency with regard to use of SIRG funds. The SIRG program received 49 responses describing state and tribal efforts, representing a response rate of nearly 93 percent. EPA examined the planned and in-progress activities and coded them into three categories. If a state or tribe had achieved actions with high potential for risk reduction, the response was coded as "primary." Actions that seek to keep the public aware and informed about the risks of radon, but may not directly lead to risk reduction were coded as "secondary." If no plans had been made within a certain area, the response was coded as "not applicable." Building on work initiated or accomplished in previous years, EPA found that nearly every grantee was addressing at least one component of Congressional direction, and in many cases several components, through activities that represent "primary actions" and opportunities for risk reduction. **The summary of the states' and tribes' responses tells a powerful story of risk reduction using SIRG funds in alignment with Congressional direction.**

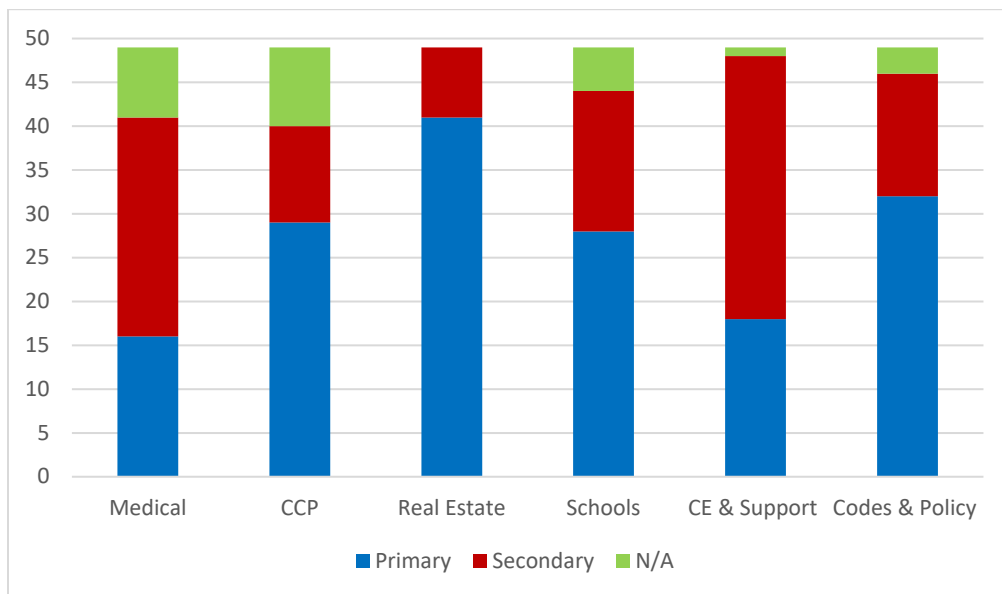


Map showing states, territories and tribes that received FY18 & FY19 SIRG funding.

Key Take-Aways

- 46 of the 47 states (including the District of Columbia) and three of the six tribes expected to report for the 2019 reporting cycle submitted information on planned and conducted activities.
- The majority of grantees (65%, 32 out of 49) performed or continue to implement primary actions aimed at reducing radon exposure through code adoption and/or policy.
- Demonstrating a strong increase over the previous year, nearly 84% of grantees (41 out of 49) engaged in primary actions related to real estate transactions, including training real estate professionals, reporting total number of homes tested and/or mitigated and various other real estate related activities.
- Nearly all grantees (89%, 44 out of 49) are undertaking activities to address radon in schools. For some grantees this included developing proposed rules or implementing final regulations focused on radon testing and mitigation in schools and daycares. Many grantees reported increased testing in schools and outreach or training events for education professionals during this reporting cycle.
- Grantees continue to leverage opportunities to update cancer control plans, resulting in 85% (40 out of 47) of state cancer control plans addressing radon. Similar to the previous reporting cycle, nearly 62% (29 out of 47) of state cancer control plans include specific objectives and/or strategies aimed at reducing radon risk.

The below graph highlights the number of states and tribes undertaking actions to reduce radon exposure risk in each of the activity areas.



State and Tribal Actions Within Activity Areas (n = 49)

Spotlight: Successful Approaches for Reducing Radon Risk

This section showcases examples of activities funded at least in part by EPA's SIRG program that states and tribes are undertaking in alignment with Congressional direction.

Education and outreach to the medical community:

- The **Illinois** Emergency Management Agency (IEMA) has focused on expanding work with the medical community. Recent initiatives include partnering with Southern Illinois University School of Medicine (SIU-SOM) to create several online Continuing Medical Education (CME) courses for medical professionals. The course currently has five modules, and SIU-SOM is developing additional modules presented by medical professionals. SIU-SOM also updated initial patient questionnaires used by the school's family practice clinics to include radon screening and education.
- The **Minnesota** Department of Health (MDH) partnered with the American Cancer Society and St. Luke's Regional Cancer Center and Hospital to implement a project to increase radon testing rates in Northeast Minnesota where testing is currently low. The project included coordinating three clinic events at St. Luke's where free radon test kits and a publication based on the Health Belief Model were distributed in the lobby of the hospital. MDH also used marketing through various social media channels and created a public service announcement which aired on local television channels in Northeast Minnesota to promote radon testing.
- The **Missouri** Radon program launched a campaign to distribute materials to oncologists and general practitioners across the state to help increase their knowledge of radon dangers in the home. By printing and sharing materials for physician's offices and waiting rooms, the state radon program hopes more citizens will become educated about radon risks and physicians will encourage patients to test their homes for radon.
- The **Idaho** Indoor Radon Project (IIRP) organized and facilitated the first meeting of a statewide Radon Collaboration Workgroup during this reporting cycle. The workgroup includes representatives from the American Cancer Society, the American Lung Association, the Idaho Division of Building Safety, Project Filter, the Idaho Comprehensive Cancer Control Program, real estate and home inspection professionals, and radon measurement and mitigation professionals. The IIRP discussed the health risks of radon exposure, prevalence in Idaho, and resources currently offered by the Program. Together this workgroup aims to increase radon testing and awareness across the state.

Inclusion of radon in state cancer control plans:

- The **Utah** Cancer Control Program workgroup meets quarterly, and smaller teams work together to accomplish the activities and goals set in the state Cancer Control Plan. Utah identified radon as one of its top collaboration priorities in the state's Cancer Control Plan. There are several strategies specifically related to radon including, establishing a statewide surveillance program, educating residents about radon and increasing testing and subsequent mitigation of high radon levels.
- The **Alabama** Cancer Control Plan for 2016 – 2021 lists smoking, secondhand smoke, radon and asbestos as major risk factors for lung cancer. The plan specifically includes objectives and strategies aimed at increasing knowledge of radon cancer risk through public awareness campaigns and promoting radon testing in high-risk counties.
- The **Minnesota** Cancer Alliance Radon Workgroup completed a project to demonstrate the feasibility of identifying and mitigating homes of low-income residents, including cancer survivors. The pilot project

used promotional materials to advertise free mitigation services to eligible applicants. A total of twenty-two applications were submitted, and eight mitigation systems were installed for low-income residents.

Testing and remediation of schools in high-risk radon areas:

- Public schools in **Connecticut** are required to test for radon (according to Connecticut General Section 10-220) and testing must be conducted by qualified professionals. The Connecticut Department of Public Health Radon Program requires schools and measurement professionals to submit summary radon testing data, which is recorded in the state's surveillance system. The data was used to create a map of prevalence rates of elevated radon levels (at or above 4.0 pCi/L) in public school buildings by county.
- During the 2019 reporting cycle, **North Dakota** tested 30 schools for radon. According to state records, this is the biggest spike in annual schools testing since the 1990s. The North Dakota Department of Environmental Quality (NDDEQ) has already identified 45 additional schools to be tested in 2020, and NDDEQ is currently developing a training class for school maintenance personnel focused on radon risk reduction and mitigation techniques.
- In collaboration with the **Delaware** Office of Child Care Licensing (OCCL) radon testing requirements were included in the regulations governing child care licensure. According to the regulation: "A licensee shall ensure radon testing is performed once every five years between the months of October and March and within six months after any remodeling, renovations, or construction. If testing indicates a radon level over 4.0 pCi/l, a licensee shall ensure acceptable radon mitigation occurs or a long-term radon test indicates a level less than 4.0 pCi/l." The Delaware Division of Public Health Radon Program developed sampling guidance for child care facilities and testing professionals and serves as a technical resource for daycare testing.
- **Indiana** enacted Senate Bill 632, which took effect in July 2019, and requires the Indiana State Department of Health (ISDH) to provide education to schools on how to test for radon. In addition, the bill requires the state to update its Indoor Air Quality in Schools Best Practices Manual with a section dedicated to radon testing in schools. The Indiana State Department of Health held three workshops in October 2019 to discuss policies and requirements for radon testing in schools, and has additional workshops planned for 2020.
- The **Illinois** School Code recommends that all schools in the state be tested for radon at least once every five years. Schools are also required to report the status of their testing to the State Board of Education and the Board reports the status of testing once every two years to the legislature. In addition, the Illinois Child Care Act mandates that all Department of Children and Family Services licensed daycare and pre-school facilities perform radon measurements in their facilities at least once every three years. During this reporting cycle, 96 schools and 10,507 daycares were tested for radon.
- One **Navajo Nation** Head Start Center was tested during this reporting cycle and testing indicated that radon levels were safe. In October 2019, the Radon Program trained Head Start personnel in preparation for Head Start Centers to test for radon across Navajo Nation in 2020.
- The **New Jersey** Department of Environmental Protection Radon Program (NJDEP) collaborated with the state's Department of Community Affairs and representatives from EPA to discuss proposed amendments to the Radon Hazard Subcode. The existing subcode incorporates minimum radon hazard protections into construction requirements for buildings intended for use as residential or educational buildings, but do not include adequate guidance for schools. The proposed amendments provide updated specifications for schools. In April 2019, the draft proposal was submitted to the Division of Codes and Standards and is currently awaiting review by the Code Advisory Board.

- The **Vermont** Legislature introduced a school radon testing bill (H.138) during the 2019 – 2020 session. This bill proposes requirements for the Vermont Department of Health to perform radon measurements in schools, specifically, testing at least 40 schools each year until all schools have been tested. It also proposes to establish a School Radon Mitigation Study Committee designed to explore funding opportunities for radon mitigation in schools and develop a contingency plan for loss of federal funding.

Addressing radon in homes and real estate transactions:

- Under **Oregon** statute (ORS 455.365), radon-resistant new construction (RRNC) is required in all public buildings (including schools) and residences built after April 1, 2013, in seven Oregon counties. Throughout 2019, the Oregon Radon Awareness Program focused on building partnerships and hosting training events with the Oregon Home Builders Association (OHBA). Building a partnership with OHBA allows the program to reach builders across the state with information about RRNC techniques that can reduce the lung cancer risk in homes.
- During this reporting cycle, the **Leech Lake Band of Ojibwe** tested 70 homes for radon and mitigated 11 Leech Lake Housing Authority units. The Tribe is working with builders to incorporate RRNC features into the new Tribal Homeless Shelter being built. Looking forward, the Leech Lake Tribal Nation plans to have 30 new tribal homes build with RRNC features.
- The **Nevada** Radon Education Program (NREP) educated more than 110 Realtors and developed two real estate continuing education classes entitled, “Radon: What Real Estate Professionals Need to Know” and “Radon and the Real Estate Professional” through the State of Nevada Real Estate Division. Nevada noted a nearly 25% increase in reported real estate testing over the previous year since offering these continuing education classes.
- The **Ohio** Radon Program continues to offer a free 2-hour continuing education course to real estate professionals. In collaboration with the state Department of Commerce the training course is updated on an annual basis.

Continuing education and technical support:

- In 2018, The **Iowa** Department of Public Health Radon Program launched a new online licensing and data reporting portal and continues to build the database and its capabilities. Individuals and labs can apply for certification and renew certification(s) online. The portal allows measurement specialists to upload radon test results and mitigation specialists can report mitigation system installation information. Establishing a statewide tracking and data management system allows Iowa to develop critical radon datasets related to certified professionals, annual radon tests performed, and number of homes mitigated.
- The **New Mexico** Radon Program has partnered with the Pueblo tribes to assist them in establishing and/or maintaining tribal radon programs. The state has worked to support workshops, consultations and presentations for Pueblo tribal decision makers and providing radon testing assistance for tribal programs.

Adoption of radon-reduction strategies in building codes or state/tribal policy:

- In **Kansas**, eight cities and two counties have adopted Appendix F of the International Residential Code and require new homes to be built using radon-resistant techniques. The Kansas Radon continues to promote the adoption of Appendix F and RRNC in local building codes through outreach and education opportunities offered to local jurisdictions. In September 2019, the Kansas Radon Program invited local

building code officials, located in a city that has not pursued adoption of RRNC, to inspections of radon mitigation systems in order to educate code officials about radon resistant new construction and radon mitigation and gain support for adoption of RRNC building codes in that city.

- In **Colorado**, the state radon program is involved in ongoing education and outreach to city and county code officials to adopt RRNC requirements. Currently, 33 cities and 18 counties have adopted RRNC requirements.
- The **Pennsylvania** Radon Program is advocating for modifying the Department of Labor and Industry on the state's Uniform Construction Code. During the upcoming revision cycle, the Radon Program intends to submit comments requesting that the radon requirements included in Appendix F are moved to the body of the code.
- In **Florida**, RRNC standards are included as appendixes of the state building code. Currently, four counties and four cities have adopted codes for radon-resistant buildings.
- The **District of Columbia's** Department of Consumer & Regulatory Affairs (DCRA) published a second notice of proposed rulemaking in July 2019, to adopt Appendix F radon-resistant system requirements into the District's Construction Code Supplement.
- **Guam** introduced two bills related to radon in 2019. Bill 168 aims to protect children by requiring radon testing and mitigation in school and child care facilities and Bill 169 requires that information about radon, including testing results, be provided upon the sale of residential real property.

Additional State and Tribal Success Stories

This section showcases other exceptional radon risk reduction activities that may not have been explicitly described in Congressional direction and/or in some cases draw on a different funding source.

- The **Utah** Department of Environmental Quality is working with the **Confederated Goshute Reservation** to test all 350 homes on their reservation. Two homes on the reservation with elevated radon levels were mitigated. The reservation has also requested HUD funding to train tribal members to mitigate and pay for supplies to install mitigation systems.
- The **North Carolina** Radon Program collaborated with Wake County Environmental Services and Rutgers University to provide training on testing and mitigating private wells for radon and other radionuclides.
- Following an earthquake in December 2018, the **Alaska** Radon Program, operated by the University of Alaska Fairbanks (UAF) Cooperative Extension Services, adopted an increased focus on providing practical public information on radon in response to natural disasters. After collaborating with the UAF to complete post-earthquake radon testing, the Alaska Division of Homeland Security and Emergency Management is working to codify recommendations for automatic radon re-testing as a part of an emergency disaster protocol in Alaska.
- The **Virginia** Department of Health – Office of Radiological Health (VDH-ORH) partnered with two vendors to set up and maintain a website that allows Virginia residents to order up to two radon test kits for free, plus a small shipping fee. Test kits are shipped directly to homeowners. During this reporting cycle, over 5,600 test kits were shipped with a usage rate of over 40% within the first two months of receipt. The ordering process also includes a short survey which allows VDH-ORH to collect valuable information regarding general radon awareness and the effectiveness of different advertising campaigns.

- **Colorado** continues to expand access to radon mitigation services to low-income households through its state-funded Low-Income Radon Mitigation Assistance (LIRMA) program. During this reporting cycle, the state mitigated 80 homes under the LIRMA program.
- The **Michigan** Radon Program, operated by the state's Department of Environment, Great Lakes, and Energy (EGLE), has established a radon testing pilot project in two cities, Niles and Benton Harbor. In collaboration with the Michigan Department of Health and Human Services, EGLE is testing homes in the Healthy Homes program. Any home with an elevated radon level will receive a mitigation system, supported by HUD funding.
- The **Vermont** Radon Program put together a compelling local story to increase public awareness about radon in the form of a video entitled: [Kathy's Radon Story](#). Kathy's Radon Story was the main focus of the Vermont Radon Program's National Radon Action Month campaign in 2019 and it was shared with more than half of Vermont households on multiple social media outlets and in a press release that was picked up by local news organizations.

Moving Forward

The responses indicate that states and tribes are making significant progress on radon risk reduction. Grantees will report again in October 2020.