

Overview of EPA's State Indoor Radon Grants Program: A Focus on Activities Conducted during 2020

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, radon-induced 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, protective policy adoption and other continued risk reduction measures in the United States focused on radon.

EPA's 50th Anniversary

The U.S. Environmental Protection Agency (EPA) was established in 1970 as Americans became increasingly concerned about protecting the environment. For 50 years EPA has worked towards its mission of protecting human health and the environment – providing a healthier environment for all Americans. Protecting the public from indoor radon has been part of EPA's mission for more than 35 years, and for over 30 years EPA has provided critical support to SIRG grantees. As part of the Agency's 50th Anniversary celebration, the Radon Program developed several impressive program achievements. Nearly 2 million families have tested and fixed their homes and an estimated 22,386 lives have been saved in the U.S. from radon-induced lung cancer.

Reflecting on the past year:

The last year presented unforeseen challenges for state and tribal partners. The COVID-19 pandemic and stay at home orders in place throughout the last year resulted in quickly shifting public health priorities, and an increased attention and concern about indoor air quality. Public recognition of the importance of indoor air quality has significantly increased; however, responding to the pandemic has stretched nearly every public health agency and organization at the federal, state, local and tribal level.

While opportunities for outreach and in-person training or events were limited this year, many grantees leveraged existing partnerships to continue to promote awareness and risk reduction activities. Some even reported increased radon testing and/or mitigation rates over previous years. However, this trend does not apply to the entire country. One possible explanation for increased radon action is that the profile of indoor air quality awareness has increased and as people are spending more time in their homes, they may be more likely to pursue radon and other indoor air quality interventions.

State and tribal radon programs remain vital to national efforts aimed at reducing radon risk. About 7 million homes are estimated to have levels of radon above the EPA action level. In addition to state and tribal radon programs, EPA and [National Radon Action Plan \(NRAP\)](#) partners play a critical role in expanding the reach of life-saving radon policies.

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.

Based on the most recent radon-resistant new construction data, 21% of all new single-family home were built with radon-resistant features. EPA estimates that over 130,000 homes with elevated radon levels were mitigated in 2020.²

Reporting Cycle, Recent Appropriations & Key Reporting Metrics

This report primarily covers activities conducted during the 2020 SIRG reporting cycle (October 1, 2019 – September 30, 2020) for state and tribal grant recipients. 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 FY19 (\$7.789 million after rescission) and level funding in FY20 (\$7.789). In recent years, the SIRG appropriation has been accompanied by Congressional House Report language which continues to reference recommendations for application of SIRG funds in several broad areas (as outlined in House Report 114–632).^{3,4,5}

In addition to standard programmatic reporting metrics, states and tribes that received SIRG funding 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 remediate 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)**.

HUD Multifamily Loan Program Update

In December 2020, HUD published an update to the Multifamily Processing Guide (MAP Guide). This document includes comprehensive instruction and requirements for implementing Federal Housing Administration (FHA) mortgage insurance for multifamily housing. The updated MAP Guide improves radon protection in HUD-backed multifamily housing by expanding testing requirements nationwide and is now aligned with current voluntary consensus standards, including a requirement to document radon service provider credentials.

EPA's Implementation of the SIRG Program

The House Report recommendations for the SIRG program were addressed by EPA in the context of the Indoor Radon Abatement Act's statutory priorities. 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. The primary aim of EPA's radon program is to protect public health by reducing the risk from radon exposure. The most impactful risk reduction strategies are those that directly result in expanded radon testing of existing homes and buildings, mitigation of high radon levels within those structures, and adoption of building codes that require radon resistant features for new construction. Some state and tribal radon programs have developed databases or systems for tracking radon testing, mitigation, and radon-resistant new construction building data for various building types including residential housing, multi-family housing, and schools.

² Home Innovation Research Labs, December 2020. *Annual Builders Practices Survey: Radon Resistant Construction Practices in New Homes, 2019*.

³ House Report, 114-632. <https://www.congress.gov/114/crpt/hrpt632/CRPT-114hrpt632.pdf>.

⁴ House Report, 115-238. <https://www.congress.gov/115/crpt/hrpt238/CRPT-115hrpt238.pdf>.

⁵ House Report 115-765. <https://www.congress.gov/115/crpt/hrpt765/CRPT-115hrpt765.pdf>.

Expanding Coverage and Assisting Underserved Communities

EPA continues to look for opportunities to assist underserved communities through state and tribal radon grants. In 2020, EPA awarded new radon grants to several tribes, including: the St. Croix Chippewa Indians of Wisconsin, the Keewenaw Bay Indian Community, the Spokane Tribe of Indians and the Nez Perce Tribe. In addition, the Aroostook Band of Micmacs was awarded funding as part of one region's rotating tribal radon grant allocation. In some regions, states have partnered with tribes to provide funding/resources and collaborate on specific projects (e.g. radon testing and demonstration projects). The last section of this report focuses on success stories from state and tribal grantees. Several success stories outlined in the last section of this report highlight the work grantees are doing to expand access and coverage of radon programs to include tribal communities. These include a partnership between the Wisconsin Department of Health and the Oneida Nation to increase radon testing and New Mexico's Cancer Plan which focuses on promoting environmental equity and incorporates a specific section addressing cancer risks in tribal communities.

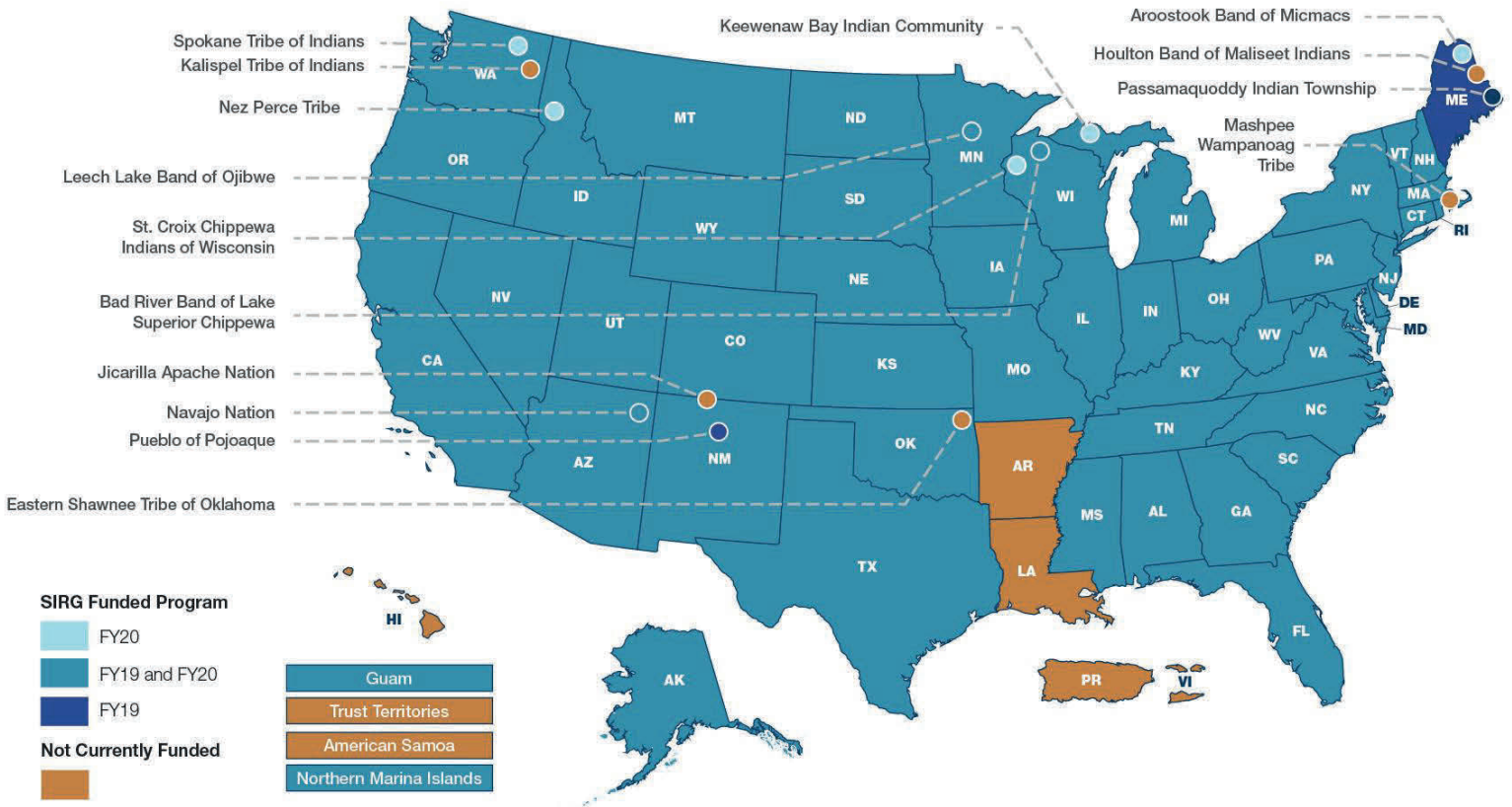
Several additional grantee success stories demonstrate a commitment to assisting underserved communities including, Colorado's Low-Income Mitigation Assistance Program, Minnesota's Radon Disparities Project, and Connecticut's Radon Awareness component of Community Block Grant Training. EPA Regional Radon Coordinators play a primary role in engaging their state and tribal governments to conduct outreach and risk reduction activities among underserved populations.

Finally, EPA and NRAP partners, as part of their shared goal to eliminate radon-induced lung cancer in the United States, continue to identify strategies and targeted interventions at a national level that have the potential to reduce risk and health disparities related to radon. This work is grounded in broadening awareness of risk, expanding access to radon services, and advancing radon risk reduction through housing finance and building codes.

Overall Findings

State and tribal radon programs are making progress in implementing Congressional direction to the Agency with regard to use of SIRG funds. In the 2020 SIRG reporting cycle, EPA received SIRG reports from 48 states and tribes. 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.**

Figure 1: Map of states, territories, and tribes with SIRG-funding in FY19 and FY20⁶



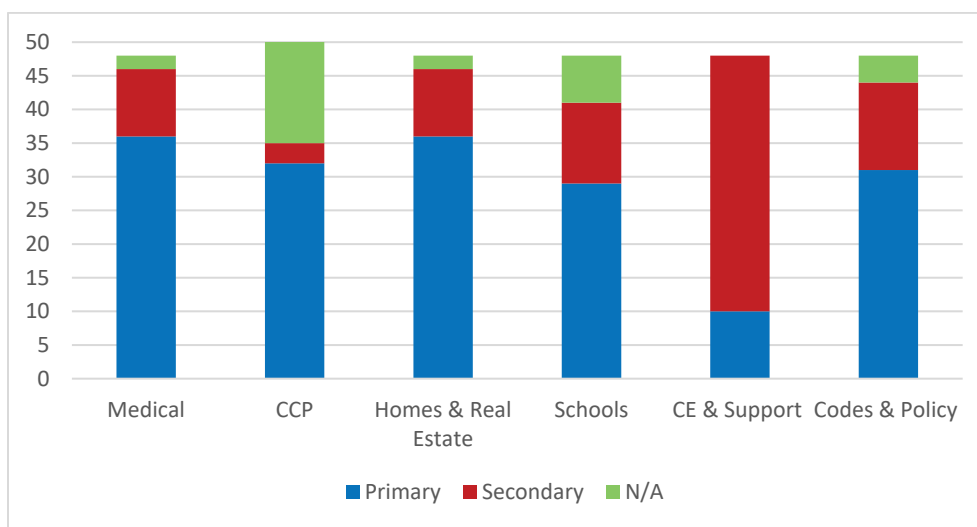
Key Take-Aways

- 45 of the 47 states (including the District of Columbia) and three of the five tribes expected to report for the 2020 reporting cycle submitted information on planned and conducted activities.
- 65% of grantees (31 out of 48) implemented primary actions aimed at reducing radon exposure through code adoption and/or policy.
- 75% of grantees (36 out of 48) implemented 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.

⁶ To ensure broad representation, this map also shows non-funded states, territories, and tribes. Several tribal grantees (funded between FY16 – FY20) that may not have received funding during the most recent reporting cycle are included on the map. Depending on regional allocations tribal funding may rotate among tribes from year to year, and sometimes risk reduction work in states, territories, and tribes continues even in the absence of funding or through carry-over funds.

- 85% of grantees (41 out of 48) implemented activities to address radon in schools. For some grantees this included developing proposed rules or implementing state regulations focused on radon testing and mitigation in schools and daycares.
- States continue to leverage opportunities to collaborate with cancer control coalitions and update cancer control plans, resulting in 69% (35 out of 51) of all state cancer control plans addressing radon. Across the country, nearly 63% (32 out of 51) of all state cancer control plans include specific objectives and/or strategies aimed at reducing radon risk.
- Several tribal communities (not current grantees) also address radon in their cancer control plans including: the Alaskan Tribal Health System, the Cherokee Nation, and the American Indian Cancer Foundation.

Figure 2: Graph Highlighting States and Tribes Undertaking Actions to Reduce Radon Exposure Risk



Spotlight: Successful Approaches for Reducing Radon Risk

This section showcases examples of activities funded in part by EPA's SIRG program, that states and tribes are undertaking in alignment with the key reporting metrics.

Education and outreach to the medical community:

- Prior to this reporting cycle, **Minnesota** administered a survey of health professionals to gauge their understanding and perspectives on radon. The survey results are helping guide the development of a plan to increase radon outreach and partnerships with medical care providers. Minnesota is currently implementing aspects of this work plan and used survey data to inform best methods for radon education outreach to medical care providers.

- The **Oregon** Radon Awareness Program (ORAP) participated in a radon focused podcast for “Air Health Our Health.” The podcast aims to educate lung and ICU doctors on the correlations between healthy air, healthy people, and a healthy economy. The podcast covered health risks associated with exposure to radon above the EPA action level, interaction between tobacco smoke and radon, ways to test your home for radon, how to mitigate high radon results and what schools districts are doing to identify and address radon in schools.
- In advance of National Radon Action Month (January) in 2020, the **Wisconsin** Medical Journal featured two articles, including the cover story, focused on radon. The first article, written by a physician, encouraged health professionals to educate patients about radon and advocate for risk reduction strategies that may prevent radon-induced lung cancer, such as increased testing and mitigations in public buildings, especially schools.⁷ The second article, developed in partnership with several members of the Wisconsin Department of Health Services, the University of Wisconsin School of Medicine and Public Health and other stakeholders, was a research study designed to assess radon testing and mitigation practices among homeowners, landlords, and school districts in Wisconsin.⁸
- The University of **Georgia** (UGA) Radon Program developed a relationship with a primary care physician who is engaged in distributing radon test kits to patients. During this reporting period, the UGA Radon Program taught a radon education class to the physician’s patients and medical staff to expand outreach and boost testing in the community. Many of the patients and medical professionals who attended the class committed to testing their homes after learning more about radon.
- The **Vermont** Radon Program and the Vermont Environmental Public Health Tracking Program submitted radon testing and mitigation data to the CDC Environmental Health Tracking Network for the first time in Spring 2020.

Inclusion of radon in state cancer control plans:

- The **New Mexico** Cancer Control Plan 2020 – 2024, includes specific radon risk reduction strategies and objectives for the first time. Specific strategies include educating a variety of stakeholders about the risk of radon-induced lung cancer and the benefits of radon testing and radon-resistant new construction. Other strategies focus on promoting environmental equity through radon testing and mitigation programs, and outreach to under-served communities. In addition, a separate section focuses on cancer prevention in tribal communities, the **New Mexico Cancer Plan in Native American Communities**. This companion document also incorporates radon strategies and represents a unique and comprehensive approach to ensuring the diverse needs of residents have been thoughtfully considered.
- The **Florida** Radon Program proposed new language for the state’s cancer control plan, which now includes a section devoted to radon risk reduction. The Florida Cancer Plan 2020 – 2025 outlines specific radon related objectives to work towards over the next five years, including increasing the number of local jurisdictions that have adopted radon resistant construction standards, increasing the number of annual radon tests completed as part of real estate transactions to 7,500, and achieve approximately 1,400 annual radon mitigations. The state radon program indicates that tracking these measures will help the state radon program assess and determine the impact radon outreach and education has on the citizens of Florida and medical communities.

⁷ Wisconsin Medical Journal. 2019;118(4):155. Available at: <https://wmjonline.org/118no4/schrager/>

⁸ Wisconsin Medical Journal. 2019; 118(4):169-176. Available at: <https://wmjonline.org/118no4/denu/>

- The **Michigan** Radon Program, operated by the state's Department of Environment, Great Lakes, and Energy (EGLE) has created a partnership with the Michigan Department of Health and Human Services to collaborate on ways to reduce the lung cancer burden in Michigan. Through this partnership, the state radon program has been included in drafting and developing the next version of the state's cancer control plan and a new objective to increase the use of radon-resistant new construction techniques was approved by the Michigan Cancer Consortium for the 2021-2030 Michigan Cancer Plan. One of the specific strategies identified to reach this goal is to expand the adoption of Michigan Residential Building Code Appendix F: Radon Control Methods.

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

- The **Utah** Radon Program engaged with several school districts throughout the state encouraging them to require radon testing in schools. The state radon program worked with the Granite School District to train maintenance personnel on testing schools for radon. In collaboration with the Salt Lake City School District, two schools were tested, and a testing plan was developed targeting six to eight schools for testing annually with testing occurring every five years. The radon program continues to work with the Canyons School District on testing and incorporating radon-resistant new construction techniques, and partnering with three additional school districts (Nebo, Alpine, and Provo) where the state has assisted with school testing.
- During the reporting period, the **Washington** Radon Program sent out approximately 176 free radon test kits to home-based childcare centers throughout the state and supported two facilities with mitigation technical assistance. By testing and mitigating home-based childcare centers, the state is working towards lowering potential radon exposure for children and families currently attending day care or living in those homes. This project is ongoing, and the state is working to establish a similar project for schools throughout the state in the future.
- As part of **Connecticut's** Department of Education indoor air quality requirements, public schools hire qualified professionals to test and mitigate radon. Summary data is reported to the Connecticut Department of Public Health (CT DPH) Radon Program and housed in a surveillance system. The data was used to develop the Connecticut Public School Radon Awareness Project, which identified 78 schools across the state with radon mitigation systems. Courtesy school site visits were conducted to determine if the mitigation systems complied with the 2014 American National Standards Institute (ANSI)/ American Association of Radon Scientists and Technologists (AARST) standards for radon mitigation in schools. Many of the systems were installed prior to the publication of the standard, and over half (60%) of the radon mitigation systems evaluated in 2019 did not meet the criteria outlined in the standard. Many school facility managers were not aware of the updated ANSI/AARST standards for radon mitigation in schools, demonstrating an important need for continued training and technical assistance.
- **Delaware** adopted its first state regulation requiring radon testing. Radon testing requirements are included in the regulations governing childcare licensure. The state's Office of Child Care Licensing requires testing every 5 years, and mitigation for facilities with elevated radon levels.
- State regulations in **West Virginia** require the Division of Health to perform radon testing in new schools (built in or after 1998) within one year of occupancy and at least once every five years thereafter. In 2020, 81 schools in 26 counties were tested for radon. To date, 339 schools in 54 of 55 counties have been tested. (One county has not had a new school built since 1988.) Several counties which are sub-grantees to the state are working to perform radon testing in day care centers.

Addressing radon in homes and real estate transactions:

- The **Kentucky** radon program has developed a strong partnership with the state AARST Chapter, and through this collaboration the state was successful in getting approval from the Kentucky Real Estate Commission to add a radon warning statement to the state's residential real estate disclosure form. The warning statement is intended to alert potential homeowners that radon is prevalent throughout the state in varying levels and that all homes and buildings should be tested as part of the real estate process. The Kentucky realtor stakeholder group is supportive of the warning statement.
- After an absence of seven years, the **New Hampshire** Radon Program was reinstated and is working to reestablish relationships with real estate and construction professionals to work more effectively to increase radon testing, radon resistant new construction, and radon mitigations in existing homes. The Radon Program is working to establish a radon test kit program, with the goal of increasing radon testing and awareness and an increased ability to collect radon testing data.
- Two realtor groups in **Nevada**, the Reno/Sparks Association of Realtors, and the Sierra Nevada Realtors, revised their Residential Offer and Acceptance Agreement form to include radon inspection as an option for homebuyers. This is the first time radon inspection has been included, and it is intended to prompt buyers to include radon testing as part of real estate transactions. Although there are no radon-specific laws that require radon testing or the disclosure of radon within the home, the Nevada Radon Education Program (NREP) believes this will prompt homebuyers to ask about radon or seek more information about it.
- The **Pennsylvania** Radon Program is undertaking two important research studies. The first study, in partnership with the University of Kentucky, is designed to determine the willingness of households to pay to avoid radon exposure by analyzing evidence from the housing market. The second study, in partnership with Johns Hopkins University, is aimed at evaluating the effectiveness of radon-resistant new construction and the potential number of lung cancer cases avoided by radon-resistant building codes.

Continuing education and technical support:

- In partnership with the **Kansas** Radon Program, Kansas State University developed and hosted a series of webinars to keep the radon community engaged and offer a source of virtual continuing education credit to radon technicians. In total, five webinars were developed, covering a broad range of topics including health effects of radon exposure, radon resistant new construction, testing and mitigation options, and radon data available to homeowners.
- The **Tennessee** Radon Program worked with Kansas State University to develop a series of classes designed to educate a variety of professionals. These classes included Radon for Real Estate Professionals, Mitigation for Radon Professionals, and Mitigation for Schools and Large Buildings. Each class was tailored for a specific group of professionals and met the requirements to be counted as continuing education credits.

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

- In **Colorado**, seven additional cities and counties adopted radon-resistant new construction code language. Additionally, 78 homes were mitigated under the Colorado Low Income Mitigation Assistance Program and 2,800 homebuyers were educated about radon through the Colorado Housing and Financial Assistance class for low income home buyers.

- In Spring 2020, Kansas State University, through a cooperative agreement with EPA, hosted a webinar series focused on helping radon programs evaluate and potentially engage in radon-resistant building code adoption and implementation efforts. Case studies and examples from several SIRG recipients were featured, including **Minnesota, Nebraska, Kansas, Missouri, and Georgia**. This technical assistance opportunity provided program administrators key information to understand the code adoption process in their states and local jurisdictions, identify necessary resources and partners, and build on lessons learned from other states and the radon community.
- Building on an existing relationship, the **Missouri** Radon Program began working with the Missouri Association of Councils of Government (MACOG). The state radon program aims to leverage this partnership to communicate more effectively with local governments and code officials to raise radon awareness and obtain better data concerning radon-related code adoption in the state.

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 **New York** State Department of Health (NYS) has instituted a Radon Task Force to conduct a comprehensive study on the prevention of human exposure to radon and make recommendations to reduce and minimize exposure to New York State residents. The scope of the study includes evaluating interagency coordination of public education, outreach and prevention programs, and the need for training, education and possible licensing of radon services providers. The state anticipates a final report in late 2021.
- Several programs within the **Minnesota** Health Department (MDH), including the Environmental Public Health Tracking, Radon, and Comprehensive Cancer Control teams, collaborated to conduct a Radon Disparities Project. MDH programs determined the variables associated with radon mitigation and testing and analyzed radon testing and mitigation data in relation to socioeconomic variables. In the Twin Cities metro region, radon mitigation rates were lower in census tracts with lower home values, greater poverty, and more rental units. Across Minnesota, testing rates were generally lowest in areas with more households living in poverty. The results of the project tell a powerful story and indicate that radon testing and mitigation may be a health equity issue in the state. The results are being used to support targeted intervention programs and policies.
- The **Wisconsin** Department of Health partnered with the United States Department of Agriculture (USDA), EPA, the Brown County Health Department, and the Oneida Nation to offer radon testing in low income areas. The Oneida Nation was supplied with 150 test kits, all of which were placed in homes and analyzed. Mitigation systems were installed in homes with elevated radon. By partnering with USDA, residents were educated about resources available to low income rural homeowners to install mitigation systems and conduct other indoor air quality repairs.
- The **Bad River Band** Air Outreach Coordinator worked with Bad River Housing Authority to test homes in the Birch Hill Acres Community. At an outreach event in Fall 2020, indoor air and radon brochures were distributed to the tribal community. Due to the pandemic, homeowners were provided test kits and encouraged to test their own homes. The Bad River Band has also identified a need for additional radon technical experts to assist with testing, mitigation and continued outreach.
- In **Connecticut**, a Radon Awareness section was included in this year's Community Development Block Grant Training for the Department of Housing to encourage radon testing and mitigation in public housing units.