

**Siobhan Kelly:**

Hello, good afternoon and welcome to Freddie Mac and Fannie Mae Multifamily Standards Radon Listening Session, hosted by the Federal Housing Finance Agency. My name is Siobhan Kelly and I'm the Associate Director of the Office of Multifamily Analytics and Policy in the Division of Housing Mission and Goals. And I will be introducing today's discussion along with several great speakers.

Over the past year FHFA and the Enterprises have been diligently working together to assess the Enterprises current Radon standards. Today, we are extremely interested to hear and learn from stakeholders on how the adoption of the Environmental Protection Agency's Voluntary Consensus Standard for Radon Testing and Mitigation could impact the multifamily housing and radon industries.

Our primary goals today are to, one, bring together diverse viewpoints in order to identify opportunities and challenges to address radon exposure in multifamily properties, and two, identify opportunities to improve radon data collection at Fannie Mae and Freddie Mac backed multifamily properties.

FHFA is committed to ensuring that the Enterprises provide safe and affordable housing. The Enterprises often set the standards for the industry and have a responsibility to ensure that what they are financing provides safe reliable housing for tenants across the United States.

On behalf of all of us at FHFA, I want to take a minute to express my gratitude for the distinguished speakers today and for the diversity of views represented. I have been told that this is actually a record breaking listening session, for we have the highest number of speakers and the highest number of attendees registered, which no doubt speaks to the importance of this topic.

FHFA will take all of the remarks that we hear today, as well as any written remarks, into account as we continue to work with the Enterprises to refine their radon policies.

Before we get started, it is my absolute pleasure today to introduce Acting Director Sandra Thompson, who will be providing opening remarks for today's session. President Biden appointed Sandra Thompson to be Acting Director of FHFA three weeks ago, on June 23rd. Prior to serving as FHFA's Acting Director, Director Thompson oversaw FHFA's Division of Housing Mission and Goals.

Director Thompson has a distinguished career in public service and is a champion of affordable housing, as well as focusing on health

and safety issues impacting tenants in multifamily properties. Please join me in welcoming Director Thompson.

**Sandra Thompson:**

Thank you, Siobhan. And let me thank all of our participants for joining today's virtual listening session. FHFA is committed to openness and transparency, especially when considering decisions around critically important issues, such as housing affordability and safety.

The purpose of today's session is to help us better understand the issues involved in radon testing and mitigation in multifamily properties. Today is an opportunity for you to be heard, as well as an opportunity for you to hear the full range of concerns that are being raised for consideration around this very important topic.

FHFA takes a holistic view when considering policy changes. We want to identify the foreseeable effects of any change on how our regulated entities manage and reduce risk on housing affordability, on fair lending and unquestionably on health and safety concerns.

A growing body of research has raised questions about the vulnerability of multifamily housing units to naturally occurring hazardous radon gas. The Enterprises are reviewing their radon underwriting standards to ensure they are comprehensive, data informed, fully understood by lenders and properly implemented and enforced.

Today's session will help inform this review. It is critical for the Enterprises to meet their mission obligations, and help ensure that financing is available for safe and affordable housing to reach underserved borrowers and renters.

Fannie Mae and Freddie Mac have a responsibility to identify the obstacles these communities face in accessing mortgage credit and accessing financing for affordable housing. As well as a duty to develop strategies for overcoming them safely and soundly.

All across the United States, Americans are struggling with the housing crisis. Each market and community faces its own mix of challenges. But a common theme can be found, and that is there's a widespread shortage of affordable housing.

FHFA's mission, through our regulated entities, is to responsibly foster a sustainable housing finance system that supports equitable access to affordable, decent and safe homeownership and rental housing. The information and perspectives you share with us today will help us carry out the very important mission. Thank you again

for joining today's listening session. And I'll now turn the program back over to Shivani.

**Siobhan Kelly:**

Great, thank you Director Thompson. Now before we begin to hear from our guest speakers, Alex Chang from Freddie Mac will give a brief opening statement. And as we close, Charles Ostroff from Fannie Mae will give us the closing remarks. We have a lot to cover today, so again, we truly appreciate your participation. And I'll hand it over to Alex.

**Alex Chang:**

Thanks Siobhan, I'm seeing a little bit of delay. There we go. So good afternoon everyone. On behalf of both Freddie Mac and Fannie Mae, we are very pleased with the strong interest in turnout to discuss an important topic today. We are very much looking forward to this listening session.

So my name is Alex Chang, and I lead the Risk Distribution and Credit Team in the Multifamily Division here at Freddie Mac. As it relates to this session, I'm responsible for setting the credit policy for multifamily loans.

So what are multifamily loans? For Freddie Mac, these are loans on properties of five or more residential units, where we see tenants on average occupying units for approximately two years at a time. The multifamily divisions at Freddie Mac and Fannie Mae were asked to review our radon assessment approach, with an eye towards ensuring our policies are data informed, reasonably achievable for lenders and borrowers, and properly implemented and enforced.

These are important topics to both Fannie Mae and Freddie Mac. One we have taken very seriously and have spent considerable time researching, reviewing and discussing under the guidance of FHFA. I would like to stress that the health and safety of our tenants has always been a top priority for both Enterprises, which is why we continue to have among the strongest, most robust, due diligence requirements relating to health safety issues in the industry.

We feel strongly about this and are committed to using our positions as leading multifamily financers to drive the industry forward thoughtfully on these issues.

Through our review process, we found ourselves looking for more multifamily focused data to inform our policies. While much of the data available pertains to single family spaces that we found, we hoped to hear from folks today who may be able to shed more light

on available data and understanding of the impacts relative to the multifamily space.

We appreciate everyone's time today, and look forward to hearing the feedback on topics listed that will inform these policy change considerations going forward. Thank you very much.

**Siobhan Kelly:**

Great, thank you, Alex. And thank you Freddie Mac. And now some brief remarks from FHFA's Office of General Counsel, I'm going to go ahead and turn it over to FHFA's Assistant General Counsel, Sarah Todd.

**Sarah Todd:**

Thank you Shivani. Just a few housekeeping items to cover before we get started. We've invited you to meet with us today to obtain your input of information on the proposed adoption by Fannie Mae and Freddie Mac of the EPA Voluntary Consensus Standards for Radon Testing and Remediation of Multifamily Housing Properties.

All feedback offered in today's session should be directed to FHFA, without reference to the remarks of any other participants. At this time, we will not discuss the status or timing of any FHFA plans with respect to rulemaking on this issue. And this listening session is not an advisory group. However, we may summarize the feedback gathered at today's meeting in any rulemaking document that might be issued in the future, if we determine that summarization is necessary to provide a complete statement of the basis for a future rulemaking.

Nothing said in this meeting should be construed as binding on or a final decision by the FHFA Director or FHFA's staff. Any questions FHFA may ask, are focused on understanding your views and do not indicate a position of FHFA's staff for the agency. And now I'll hand it over to my colleague Mary Owens from FHFA's Office of Multifamily Analytics and Policy, who will be managing the flow of our listening session this afternoon.

**Mary Owens:**

Thank you, Sarah. And good afternoon everyone. My name is Mary Owens, and I'll be facilitating today's listening session. Today we plan to hear from over 40 speaking guests. Each speaker will have up to six minutes to speak, and we will try our best to stay on schedule, but we ask that everyone speaking today help us do so.

An FHFA facilitator, either myself or my colleague Mary Baehr, will call the name of each person when it is their time to speak in the order provided on the meeting agenda. If you do not respond promptly when your name is called the next speaker on the agenda will be asked to speak.

To ensure speakers are on time, please log in at least 15 minutes in advance of your speaking slot. As your assigned time will be approximate your actual start time may depend on the length of speakers before you.

Each speaker will have the ability to mute and unmute their microphones throughout the session, but we ask that you keep your microphones muted until it is your turn to speak. We also ask that all speakers be prepared to turn on their video cameras during their speaking segment.

I will chime in to give speakers a one minute warning as their time draws to finish. If someone does go over their time, unfortunately, I will have to interrupt you in order to keep us on schedule. If we have to skip a speaker who isn't ready for their designated time slot, we may attempt to offer a later opportunity to speak, but cannot promise that the crowded agenda will allow us to do so.

Before giving a statement, please remember to provide a brief introduction stating your name, your credentials, the organization you represent and any relevant affiliations.

Finally, we are recording today's session. FHFA will also prepare a transcript of today's session which will include the names of all speakers and the organizations you represent. We will post the recording and transcript on FHFA's website and YouTube channel, along with any materials being presented today.

Now without further ado, we will begin to hear from our guest speakers. Our first discussion topic is Health and Safety. The first speaker is Bill Field from the University of Iowa. Bill.

**Bill Field:**

Great. Thank you very much for having this session today to allow input. I'm a professor in the College of Public Health with the University of Iowa and been involved in radon research for over 30 years, including being involved with several of the studies to help form the basis for the risk assessments.

And just a note, I and colleagues at Columbia University also recently received NIH funding for five years to examine a possible causal association between radon exposure and stroke. Next slide, please.

Okay so as most of us know probably on this call is radon is a radioactive gas. You can't smell it, you can't see it. Enters buildings primarily through the soils. In some locations it can enter to water sources. It's naturally occurring outdoors but the way we build homes its enhanced indoors next. Next.

So radon's estimated to cost about 21,000 lung cancer deaths per year according to the EPA's assessment. This assessment, as you can see, it's getting rather dated. But this assessment was based primarily on projections from miner data. And since that time, we've had numerous studies performed in both Europe and in North America that actually measure radon in homes and look at risk assessments based on those. And those risk assessments are right in line with the EPA's estimates from 2003.

It's important to note that there's also a subset of people about 20,000 people each year that die from lung cancer who have never smoked. And radon's the leading cause of the lung cancer in this group. Next slide.

So it's what's important to know too is when you're looking at buildings and homes, while we measure radon gas, radon gas is really a surrogate measure for the radon decay products that we breathe in. Next slide.

And two of these radon decay products, polonium 218 and polonium 214, decay by alpha decay. So when they are inhaled in, deposited on the respiratory epithelium, they give a lot of dose in a very small area. And that dose can initiate cancer. Next.

What's really kind of unique among environmental carcinogens is the alpha particles can cause double strand DNA breaks. And since cancer is considered monoclonal, that means that it takes one cell to initiate cancer, there's really no threshold for radon induced lung cancer. Next slide.

One of the other things to note is that in addition to the direct, single and double stranded DNA breaks caused by the alpha particles, there's also double strand DNA breaks and single strands, because of free radical formation within the cells. And that can damage the DNA and initiate the lung cancer. And we're all at someone's different risk.

For example, people that are missing GSTM1, which is a gene that only half the people on the call have, if you don't have that gene, you're at much more at risk of developing radon induced lung cancer than people who have that gene. It gives off antioxidants, which helps deal with the free radical formation. Next slide.

As you can see on the top, prostate and breast cancer are the leading causes of cancer in the United States. But if you look at mortality, which is in the bottom part of the slide, lung cancer is the leading cause of cancer deaths for both men and women. Next.

If you look at the number of lung cancer deaths each year in the United States, 135,000, it's roughly equivalent to the next three leading causes of cancer mortality overall. So even though radon's not the leading cause of lung cancer, even secondary causes are really important. Next.

What we know about radon, there's global consensus about the risk from studies that were done, miner studies. The EPA assessment that I spoke about. The biological effects of ionizing radiation report from National Academy of Science. And then the WHO guidance that set reference level for radon of 100 becquerels per cubic meter, or 2.7 picocuries per liter. So a lot of this information has shown that radon's a significant lung cancer risk. Next.

If you look at the number of radon induced lung cancer deaths each year, it ranks in the top ten of causes of cancer mortality overall. If it was treated as its own disease category. So if you think about if we could get reduced radon these lung cancer, we'd be getting rid of one of the top ten leading causes of cancer deaths in the United States. Next Slide.

And if you look overall at the risk, this is the EPA's risk estimate for radon. What you really find is the risk is so substantial compared to other environmental carcinogens. If you look at for never smokers, the chance of being exposed at 45 picocuries per liter, its seven in 1,000 people. And for smokers because of the synergism between the two, it's 62 in 1,000 people.

And I think what's important to note is that the risk estimates are that many of the radon studies that were done in homes were based on exposures below the EPA's action level. So they were finding statistically significant increases, even below the action level. So if we treated radon -- if the EPA treated radon like it treats other environmental carcinogens, we'd have to reduce outdoor air, because that's usually based on one in 100,000 chance of lung cancer, or cancer.

So in conclusion, based on the substantial risk posed by radon, Fannie Mae and Freddie Mac Multifamily should require radon measurement mitigation and full compliance with NCR Standards that are performed by qualified professionals to ensure that radon exposure to all building occupants are minimized to the extent possible. Thank you.

**Mary Owens:**

Thank you, Bill. Our next speaker is Wallace Akerley from the Huntsman Cancer Institute.

**Wallace Akerley:**

So my name is Wallace Akerley. I am the Director of Lung Cancer Treatment at the Huntsman Cancer Institute. I'm a Professor of Medicine. And my specialty is non-small -- is lung cancer. I take care of only lung cancer patients. Next.

So radiation definitely causes cancer. We can get radiation exposure from controlled sources and uncontrolled sources. Medical radiation, despite all of the safety mechanisms they put in, still causes some number of cancers. Dr. Field just mentioned a second ago how this happens, and went out of his way to state that radiation can cause damage to the genes.

The definition of cancer is broken genes that let them grow in an uncontrolled fashion. We collect genes over time, collect broken genes over time. And as you collect enough breaks to your DNA that haven't been fixed, you end up with a cancer.

And radon is kind of one of those long acting things. We're exposed to it for a long period of time. It's a gas. It can only be -- it can be breathed. And when we breathe it, it's the respiratory lining. It's the lining of the lungs that can turn into cancer. So radon causes lung cancer. Next.

This chart shows a little epidemiologic data and it's specifically looking at all cancers over time for both males and females. This red line here shows that the lung cancer death rate for both males and females. And what you see is lung cancer by far dwarfs all other causes of cancer mortality. And is equivalent to the next three cancers, and depending on what time you look at potentially four cancers combined, in terms of mortality. The number two cause of lung cancer is radon. Next.

So many cancers have a ribbon. Lung cancer has its ribbon also, but it's the invisible ribbon. Lung cancer is called the invisible killer. Because its death toll -- death toll tends to be relatively invisible to the media. As we mentioned, radon induced lung cancer is a subset of this, but it should be the one that's actually carrying the ribbon. It has devastating mortality and kills 20,000 people per year. It is truly invisible. And as mentioned, it can't be seen and can't be smell. And most importantly, radon induced lung cancer is preventable. Next.

So I come from the state of Utah, as mentioned. And this is a largely non -- this is a nonsmoking state, we have the lowest smoking rate in the country. And if you look at different cancers that are listed here, you'll see that the state doesn't smoke. We have 57% less lung cancer than any other state. Next.



Despite the benefit we gain from having an extremely low smoking state, which causes a decrease in lung cancer, you can see here the lung cancer deaths in the state of Utah still double the next leading cause of cancer death. Next.

So where do we stand? Well on January 13, 2005, this problem was recognized, and the Surgeon General put out a National Health Advisory on radon, stating this is the number two cause of lung cancer, and radon affects smokers and nonsmokers. Next.

So this is just my lung cancer clinic. I've made it a little blurry so that you can't see it. But those who have marks over them with little writing on the side, these are all never smokers in my clinic. And it's -- so what does my clinic look like relative to the rest of the world? The majority of my clinic with less smoke -- with less smoking are never smokers.

The majority of my patients are younger, the ages run from 20 to 90. But never smokers get lung cancer at an earlier age. The majority have not been tested for radon. They haven't tested their houses. The majority were diagnosed late, meaning they had metastatic disease. It's not uncommon for a patient who's a never smoker to claim they're having pain or shortness of breath, who then are kind of ignored. Stating just having muscle aches and not actually be diagnosed until they either cough up blood or have a bone fracture. My clinic includes both rich and poor. So this doesn't discriminate based on socioeconomic status. Next.

**Mary Owens:**

One minute remaining.

**Wallace Akerley:**

So in conclusion, I'm going to come back to one of -- to the original slide. And lung cancer is still an overwhelming cause of cancer death, despite the fact that the trend is improving. And so what happens if we remove the number two cause of cancer? Important to me is radon induced lung cancer is preventable, and we should do something about it. No one should be exposed to excessive radon, and all housing should be tested for radon and mitigated if necessary. Thank you very much.

**Mary Owens:**

Thank you. Our next speaker is Kevin Stewart from the American Lung Association.

**Kevin Stewart:**

My name is Kevin Stewart, and I serve the American Lung Association as Director of Environmental Health, Advocacy and Public Policy. I hold a bachelor's degree in chemical engineering from Princeton University. Over more than 30 years I have been active in public health work concerning radon and I have served at

the national level in various capacities on scientific and policy matters regarding radon.

Current examples include my roles on the Executive Stakeholder Committee, the R Consortium on National Radon Standards and on the R Standing Committee on Radon Measurement Standards.

And I want to thank the Federal Housing Finance agency for the opportunity to make a statement and today's listening session on Freddie Mac and Fannie Mae and Multifamily Radon Standards.

The American Lung Association is the oldest voluntary public health association in the United States, representing the millions of individuals with or at risk of lung disease. And the Lung Association is the leading organization working to save lives by improving lung health and preventing lung disease through research, education and advocacy.

On behalf of the American Lung Association, I express our strong support for the recent initiative by the Federal Housing Finance Agency to strengthen the multifamily radon policies applied by the government sponsored Enterprises Fannie Mae and Freddie Mac, by requiring full compliance with the appropriate American National Standards Institute, the American Association of Radon Scientists and Technologists Consensus Standards for Radon Measurement and Mitigation.

From a national public health perspective, the Lung Association recognizes radon among the few most serious indoor air pollutants in the United States, as the second leading cause of lung cancer and as the leading cause of lung cancer among those who have never smoked.

The great majority of lung cancer cases ultimately result in the death of the patient, 77% within five years of diagnosis. Moreover, in recent years evidence has been emerging, showing that the proportion of never smokers among lung cancer patients has been increasing. And some research suggests that even the absolute incidence of lung cancer in never smokers has been increasing.

Since we know that most cases of lung -- radon induced lung cancer are preventable. this is all the more reason addressing the problem, therefore demand prompt intervention.

With these realities more than sufficient motivation, the American Lung Association has worked for over 30 years at the national state and community level to protect people in their homes, schools and workplaces from radon gas and its decay products.

Since 2015, the Lung Association has served as convener of the Leadership Council for the National Radon Action Plan, a collaboration among national organizations representing government, nonprofit and industry working together to eliminate avoidable radon induced lung cancer.

Protecting residents of multifamily housing from the risk of developing radon induced lung cancer is one of our top priorities. An adoption of strong and effective radon policies by the Enterprises is a key initiative of this stakeholder group.

It is the nature of science not to have the final answer on any topic. Additional questions can always be asked. And there are always therefore unknowns. But our shared obligation to protect public health means we must not let the search for more knowledge become an excuse for a failure to talk.

A key principle of public health demands that we do the best we can to protect health and lives with the information we do have available. In the case of radon, the science on radon and lung cancer has been strong and clear for decades, as you've just heard. The remaining unknowns are simply matters of refining our knowledge.

In short, we know that there is a cost to further delay. Every year that passes without taking the necessary steps to find high radon exposures in multifamily housing, and to reduce them, is a year in which occupants and workers in such housing continue to be exposed and put at needless and avoidable risk. A year in which more people will be set on a course ultimately to get lung cancer and die from it, than would otherwise if we took preventive action sooner.

We appreciate FHFA's recent careful review of the NCRS Radon Standards and of the impacts requiring them in the Enterprises multifamily programs. We look forward to seeing effective implementation of these standards, and believe that adoption of and adherence to them, will establish the standard of care that sets the bar for everyone responsible for ensuring the health and safety of occupants and workers in all multifamily housing.

The Lung Association is confident that FHFA, the Enterprises and the radon services industry, have the tools and resources needed to successfully address these issues. And we urge the agency to move forward on implementation with the sense of urgency that this important public health initiative deserves. Thank you.

**Mary Owens:** Thank you. Our next speaker is Lindi Campbell from Breath of Hope Kentucky.

**Lindi Campbell:** Hi, my name is Lindi Campbell, and I started Breath of Hope Kentucky when I was diagnosed with lung cancer myself. Because Kentucky ranks number one in lung cancer cases and deaths. And it was important to me not just to advocate for myself, but for the hundreds of people that I have begun to meet throughout my advocacy.

I've always been healthy, active, have never smoked and at the time of my diagnosis, I considered myself way too young to be dealing with such a life altering disease like lung cancer. We moved into our childhood home when I was one. For 20 years, I grew up in this home and spent most of my time in our finished basement. For eight years, my bedroom was in the basement of that home.

When I was diagnosed, we tested the radon level in that bedroom, and it averaged 3.9 sometimes a little higher, sometimes a little lower. My entire childhood, my lungs were exposed to both radon gas and secondhand smoke. Of the nine family members who lived in that home, seven had a history of smoking, but have never developed lung cancer. I have never smoked, was the youngest, spent the most amount of time in that basement than anyone else in my family. And I'm the only one who develop lung cancer.

When my body was most vulnerable, I was living in what should have been considered a safe place. And yet little did any of us know my health was actually at risk every single day I was breathing air into my lungs. I am one of those individuals who now have broken DNA because of radon exposure, which is what led to my diagnosis.

Here in Kentucky alone I've met 18 other people who have never smoked. They've also been diagnosed with this disease. You can see most of them in this picture on my slide. Sadly, all of them have stage four lung cancer. Their ages range from 27 to 58 at the time of their diagnosis. Two of my closest friends who live within an hour of me have both been diagnosed a few years ago in their early 40's. Both women are still raising young children at home. Both now have verified the history of extended exposure to high levels of radon, they were unaware of until after they were diagnosed with lung cancer.

We already know the Surgeon General has warned that radon is the second leading cause of lung cancer. And yet while we heed this warning for cigarette smoke as the number one cause ,we fall short of heeding the warning for radon.

Is it because this is a second leading cause and not the number one cause? And yet radon is the number one cause in people like me who have lung cancer. Does that not mean something?

Just because you can't see it, smell it or taste radon does not mean it's not there. If radon could be seen, smelt and tasted in the same way secondhand smoke can, we would be seeing a whole different reaction to radioactive gas -- to this radioactive gas.

Can I ask you this? Let's just assume for a minute radon was visible, would you be willing to live in a home that day in and day out had a dangerous gas you know could kill you floating in the air? You know you're breathing it, you can see it, you can taste this, you know it affects your lungs. My guess is you would likely say absolutely not.

That's what radon is exactly. It's just invisible. Which makes it even scarier and makes us that much more vulnerable to its dangers. We can voluntarily escape secondhand smoke because we know it's there. But radon is a silent killer. It lurks in our air and yet we're blind to it. Just because we cannot see it, we know it's deadly.

Will we all just pass the responsibility around or will someone stop and say enough? Enough people are dying from this dangerous gas, and it's time we do something about it. Everyone deserves to be protected from exposure to unsafe levels of cancer causing radioactive radon.

This should not be limited to a building. Every individual, every resident young and old deserves to breathe safe air. I'm sure you feel you deserve it, they do too. When you talk statistics, risk, cost or percentages of death, all I ask you is that you also think about me, my face, my story, my daughters, my husband, my life.

My story could be one of anyone you love. To say it's a matter of expense or inconvenience is an insult to those of us who will spend thousands and thousands of on health insurance premiums and medical care for the rest of our lives.

In December 2017, a surgeon removed two lobes of my right lung. That year we maxed our \$10,000 out of pocket on top of the nearly \$20,000 we already pay annually for premiums. My cancer came back in May 2020, and once again we face these same expenses when doctors removed the nodule to just try to keep the cancer from growing outside my lungs.

I have bloodwork every two months. Chest CT scans every three months. And a brain MRI once a year. I now take a targeted therapy chemo pill every day that is the best and currently the only

option to help me with my chances of delaying my cancers return or progression. These pills cost \$14,000 per bottle per month. If I did not have health insurance to cover the majority of that expense, I would hate to think of the decisions my husband and I would be forced to make.

Thanks to research, many of us are now living longer with lung cancer. It is important to know we are not cured we will never be cured. Our best hope is scientific research and precision medicine to help us live longer. As our presence, our stories are becoming more and more visible, I promise you this will not be the first or only time you will have someone like me fight for the right to breathe safe air.

We don't get the opportunity for a cure. Preventing exposure to these cancer causing environmental elements is our best chance to help save lives and prevent a lung cancer diagnosis like mine. Thank you so much for your time today.

**Mary Owens:**

Thank you. Our next speaker is Darioush Ghahremani.

**Darioush Ghahremani:**

Good afternoon. My name is Darioush Ghahremani. I'm a PhD in Geology and Geochemistry with nearly four decades of research and exploration on the subject of radon and associated gases in the ground and indoor environments.

I'm the president of Radon Service Systems involved in testing diagnostics and mitigation of radon, and its exposure in [inaudible]. Currently, I'm serving on the Board of Directors of R and also on the several standards dealing with radon hazards and technologies, to test, mitigate and produce data for future use.

My research data in Ohio and in California suggests that indoor radon concentration is zone three, which is supposedly a safe zone, is higher than what is considered zone three. And unfortunately, it's been very, very much misleading on EPA zone map, although EPA is specifically mentioning that these maps should be used along with other data locally.

The localized high radon anomaly in zone three in many areas of Ohio, northern Ohio, as well as the southern and northern California, which is considered zone three suggests that radon hazards in zones two and three must be addressed more carefully to protect the public health from unnecessary cancer risk, by mitigating the problem through testing all ground floor, regardless of zoned designation by EPA.

Therefore, I'm supporting 100% adoption of GSA's policy that requires radon measurement and mediation in full compliance with the NCRS standard by qualified professionals to ensure all building occupants are protected from the radioactive radon gas.

And hopefully, by using more professionals in the field, we can tackle this problem and update our radon national map for various states so people can use it more accurately. Thank you.

**Mary Owens:**

Thank you. Our next speaker is Amanda Reddy from the National Center for Healthy Housing.

**Amanda Reddy:**

Thank you. And thank you for the opportunity to discuss radon as a serious public health concern and the important role of testing and mitigation in preventing exposure. I'm Amanda Reddy, and I'm the Executive Director of the National Center for Healthy Housing, or NCHH, a national nonprofit organization dedicated to developing and promoting scientifically validated measures to protect residents from environmental hazards in their home environments.

I have a master's in Environmental Health from the London School of Hygiene and Tropical Medicine. And I lead a team of housing health and environmental professionals with expertise in biostatistics, epidemiology, environmental health, housing policy, industrial hygiene, and more.

We have led over 100 multidisciplinary projects, worked with a broad array of federal, state and local agencies, universities, community groups, and private research institutions. And have published and contributed to over 150 peer-reviewed articles and reports on environmental health and housing issues.

NCHH develops valid and practical strategies to make homes safe from hazards including radon, to alert low-income families and occupants about housing-related health risks and to help residents protect their families from unhealthy housing conditions.

NCHH's radon research has resulted in advances in how to assess radon and how to cost-effectively control it in homes. The scientific evidence about the impact of radon on lung cancer is clear and overwhelming.

As we have already heard today, radon increases risk for nonsmokers and increases risk for those who do smoke. For every million people exposed to four picocuries per liter of radon over a lifetime, approximately 62,000 will develop lung cancer if they already smoke, and approximately 7,000 will develop lung cancer

even if they have never smoked. This is roughly equivalent to the risk for dying in a car crash.

And of course, as radon levels double, cancer risk also doubles. Treating these cancers will cost far more than testing and mitigating homes. NCHH participated in the EARTH study, about which you will hear more soon from here Peter Ashley and Mike Kitto.

The team examined how many ground floor units should be tested using one of the nation's largest radon testing databases ever assembled. The study of cost-benefit analysis, which builds on the work of others, notes that the cost of testing for radon is about \$50 per unit, per housing unit.

With medical treatment for lung cancer costs at least 68,000 to \$80,000 for each case, and lost earnings at an additional \$210,000, putting this all together we showed that any dwelling unit that is missed by less than 100% sampling, and is therefore not mitigated, has a cost of at least \$16,800. And this cost is not offset by the savings of sampling fewer units.

These estimates do not even include lost tax revenues or intangible costs and benefits such as property management, litigation, family burden and stress. This is just bad policy. We can pay for increased medical care or we can pay for the much smaller costs of testing and remediating homes. The choice is clear.

For the Americans who live in the 6% of U.S. homes that have a radon level at or above the EPA action level, this increased risk is both unnecessary and preventable. We know how to effectively test for radon and how to mitigate exposure.

I noted a moment ago that for nonsmokers a lifetime exposure to radon levels of four picocuries per liter was equivalent to the risk of dying in a car crash. We have effective measures for mitigating those risks too, among them speed limits, seatbelts, airbags and enforcement. And we don't hesitate to mandate their use and save lives.

Similarly, there is no reason to delay action to provide residents in multifamily housing the protections we already know how to provide from radon exposure. Single- and multifamily units experience the same dose of radon exposure. The health risks are the same, and appropriate access to protections should be too.

NCHH scientists have contributed recently to the published study, the EARTH study I mentioned a minute ago, that evaluated the



feasibility and the benefits of alternative sampling plans for multifamily housing.

The study found that less than 100% testing of all ground floor units misses radon in far too many of the untested units. For building sizes of five to 20 ground-contact units, the 2018 federal testing protocols that currently require our testing of 10% and 25% of ground-contact units and each building failed to identify between 47% and 69%, and 32% and 46% [inaudible], depending upon building size.

Even 90% sampling, this is an estimated 4% of units with elevated radon levels, saving very little money and at an enormous cost to our healthcare system and individual families.

We feel that 100% sampling of ground-contact units is necessary, feasible, cost-effective and wise. There is now clear evidence, the availability of practical, feasible, and effective solutions and the significant reduction in medical and other costs; both point to the obvious solution. FHFA should take swift action in proceeding with the Enterprises policy under the February 2021 Radon Directive.

Further delays only increase costs and put tenants, especially low-income and minority tenants, at unnecessary risk. Thank you.

**Mary Owens:**

Thank you. Our final speaker for the Health and Safety session is Rachael Drazan from Cancer Survivors Against Radon.

**Rachael Drazan:**

Good afternoon. My name is Rachael Drazan-Malmberg. I am a former Collegiate and Olympic level athlete, a mom, a business professional and most importantly a survivor.

I was diagnosed at the age of 31 with stage-four lung cancer, having never smoked or been exposed to smoke in my life. At the age of 31, the first thing that went through our mind was shock, then we instantly turned to environmental factors.

Having grown up in what I believe to be a strong home environment, we were shocked to learn that radon induced lung cancer was a part of my diagnosis. We had our childhood home tested, and I lived in that home for 19 years. We were shocked to discover that the average level was 69 picocuries, that's 17 times higher than the EPA approved four picocuries. If you can consider the long term effects that that has caused to myself and my family, it's definitely clear why I have lung cancer.

My journey is not unique, however, and I know you heard Lindi talk earlier. I'm very blessed to have an amazing support system and the

ability to overcome many barriers because of my support system. Many are not as fortunate as Lindi and I are. In our journey -- and that is why in our journey, they're here today.

I am still working full time, taking care of my daughter, advocating and working to change the world. When being asked to speak today, an interesting thought came to mind. How much does it cost me to survive and be a cancer survivor annually? In pulling together some numbers, the annual cost to me to survive is \$154,000. I know Lindi laid out some of these numbers for you. but every treatment is different. And at stage four for the last four years, I've increased my burden financially to my family beyond belief.

That's the financial impact that doesn't include the intangibles, like the mental and emotional burden that this has taken on, not only my family, but those who are in my support system. My eight year old daughter lives in fear daily. If I don't get up and go for a walk every morning, she instantly goes to, mommy's cancer is spreading. Or if I'm tired one day, she instantly says, your cancer meds aren't working. She's constantly frantic.

We will be walking through a public area and she will blurt out to strangers that we've never met, mommy has cancer because of radon. This is the impact that radon has had on our lives.

Although I've told you about my impact, today is not about me, or those of us that have had the opportunity to talk in front of you today. It's about those that are not here and that we have a duty to serve and protect.

The underserved populations and the Americans who live in multifamily housing units, those are who are supposed to radon, a deadly radioactive gas on a daily basis, and they don't even know it. We have a duty and a responsibility to protect those individuals, along with educating them about the environmental risk factors that they're currently unaware of.

There are 45 million rental units in the United States. Of those, 20 million are located in properties with five or more units. It is estimated that 1.5 million units are located on properties financed by the GSEs. These families deserve to be protected. And it is our responsibility to ensure we put policies in place to do so.

By putting stronger policies in place, we have an opportunity to impact 15 million Americans over the next ten years. This is 15 million lives that we can potentially save that don't have to go through what I do on a daily basis. Everyone deserves to be

protected from exposure to unsafe levels of cancer causing radioactive gas, regardless of their geographic or economic status.

In ending, I'm just one person, but collectively, we are powerful, and we have the ability to make a difference. As I leave you today, I challenge you to be bold, to think more critically, and to assure that we put policies in place that protect those that we have a duty to serve. Thank you so much for your time.

**Mary Baehr:**

Thank you. Our next section is Assessing Available Data on Radon Exposure Risk to Multifamily Tenants. And our next speaker is Michelle Monte from the U.S. Center for Disease Control.

**Michelle Monti:**

Okay, can I see the presentation. Okay. Good afternoon. My name is Michelle Monti, and I am with the National Center for Environmental Health at CDC. I'm in the Environmental Health Tracking Section. I have 23 years of experience in public health, 11 on infectious diseases and environmental epidemiology, 12 in environmental public health and health informatics, and ten years working on radon. I also have 19 years of experience in environmental protections and environmental resource management.

And so today I will be talking to you about what we have in terms of radon data on CDC's National Environmental Public Health Tracking Network. We serve as the national repository for radon data. Okay, next slide, please.

So what's important here is the link at the bottom, <https://www.cdc.gov>. And I'm putting that there because there's no way in the amount of time that I have that I can go through everything that we have in terms of radon on our site. And so please, at your leisure, if this is made available to you, which I think it is, you know, go to that link, and please look on our Data Explorer. And you'll find radon data along with a lot of other data. And as I remind people, we are not a radon program, we are an environmental health surveillance system. Okay, next slide, please.

So we work with -- we've been working with our grant recipient states since about 2011. And currently we have radon data from these states at these various numbers of years. We recently had a data call, and we'll have additional radon data display on the network by August or September.

So we have 14 states listed here, and various numbers of years. So when we -- I'm getting some interference here. Can somebody quiet their mic? Thank you.

So when you look at the radon data from states on the Tracking Network, you'll see that it is displayed by year, as opposed to, next slide please. Radon data from the labs. And we've been working with the National Radon Testing Labs in cooperation with AARST and CRCPD. These seven labs or -- have either sent us radon data or are in the process of sending us radon data. Because of their participation in this, we have radon data for 46 states for 14 years. And we are in the process right now of updating that data set. Next slide, please.

Okay, so this is just one of the maps that we can generate from the tracking network. And there was a lot of interest in having us show the mean radon level in tested buildings. This is using lab data, and it's small, but if you have this on your computer, you would be able to blow this up a little bit and see that this is the mean pre-mitigation radon level. We've tested buildings from the radon tests from labs data set.

And as you can see here, there's a lot of red on this map. And the red is at or above four, which is the EPA's action level for mitigation. And then the orange is two to less than four. The pale yellow is less than two. And you'll notice on this map the hash marks. And the hash marks mean that we have less than ten tests in those counties. These data are displayed at a county level.

And what we want people to know from the hash marks is that we have less confidence in the data from a county that has less than ten tests. The gray says that we have no data. And we believe that we can reduce the hash marks and the gray by getting additional labs to submit data. Next slide, please.

This is just another screenshot. This is the median pre-mitigation radon level. It shows a little bit better than the mean in that if there's less red here, that it's just another measurement, another statistical analysis of the pre-mitigation radon tests that we have.

The data that I'm showing on these maps is at the county level. And what we're working towards is if we can get enough data, we want to show this data at the census tract level. And we believe that having more detailed data at a smaller geography will help us identify those areas that we need to target for further testing and also to encourage mitigation. Next slide, please.

So the maximum pre-mitigation radon level in tested buildings and when you look at this, we're like wow where did all the data go. This is from the state's dataset, okay. And so even though we had

data from 14 or 18 states, it looks rather sparse when you look at it on the map compared to the lab data. And so...

**Mary Baehr:**

Also Michelle, you're at time, if you could just conclude your thoughts?

**Michelle Monti:**

Okay. All right. Next slide, please. A comparison of the lab and the state radon data, it tells you why we still collect both. This state data set has 577 records, while the lab data for the state has 334. I think that might be my last slide. Okay. Thank you very much.

**Mary Baehr:**

Our next speaker is Michael Fratantoni from the Mortgage Bankers Association. Michael, if you could unmute.

**Michael Fratantoni:**

Yep, thank you. Good afternoon everybody. I'm Mike Fratantoni, I'm Chief Economist at the MBA and lead our research efforts. I'm speaking today to represent MBA's multifamily lenders. I appreciate that FHFA is holding this listening session on such an important topic.

I'm going to focus on the data and statistical analysis from the Earth Study, which has been mentioned a couple of times already. It was commissioned by HUD and as we understand what's used as the basis for HUD's decision to move to 100% ground floor testing. FHFA is now considering having the GSEs match this standard.

Given my serious concerns regarding the validity of the Earth Study, I would caution against reliance on its findings. To summarize my conclusions from reviewing the Earth Study. First, I don't have confidence that the data regarding radon levels are representative. Second, I don't believe the study is really asking the right question with respect to the proper use of a screening test. And third, I don't think it accounts for current industry processes and practices with respect to what happens after a positive finding.

Relying upon this study without sound data, without properly accounting for current industry practices, I don't see how HUD or FHFA could justify a 100% sampling requirement. Particularly when lower cost, risk based approaches could be used to achieve a similar result with respect to the goal of a policy that we all agree with, to protect residents from radon exposure.

So let me go through some of my specific concerns regarding the Earth Study. First, their sample of 8,000 buildings is not random and they're not representative. On page four of the study, the authors note that participation and contributions were entirely voluntary. On page five of the study, under the heading of Study Limitations and Areas of Potential Bias, the authors are completely honest,

saying the sample is not representative. Preference was given to buildings with elevated radon. And they deliberately under sampled lower risk regions of the country.

However, they conclude that the study enables a sound examination of testing protocols. I disagree. Without a valid statistical sample, these results simply cannot be relied upon.

My second concern, I don't think the study really asked the right questions. The Earth Study's central question is how many units need to be tested to ensure, with 95% confidence, that they find the unit with radon above four. assuming that every building has one unit with radon above four. This is on page 12 of the study.

But it's not the case that every building has one unit with radon above four. The previous speaker highlighted that. They are working with a non representative sample that ensures a higher percentage of buildings with at least one positive unit.

In my opinion, the right question to ask is how to focus scarce testing resources on those properties that are higher risk. Tables five through seven and nine in the Earth Study actually provide the variables to build a risk based testing regime. Look at whether a property has inside or outside entry on the ground floor. Look at the location of measurement, look at the EPA zone, look at the climate zone.

And I would particularly point to data from this study that shows that properties in hot and humid climates had 44% prevalence of readings above four, while those in cold and dry climates had 0%. Findings like these if they were based on a representative sample could clearly be used to guide a risk based approach.

My final point is that the Earth Study doesn't reflect industry practices in place today regarding what happens after a positive screening test. Even after the change for HUD multifamily properties, the 25% sampling approach is still in place for senior housing loans. For HUD senior housing loans, applicants test 25% of ground level units. If any of the sampled units test above four they have two options, either mitigation for all ground mobile units, or testing 100% of ground level units.

Freddie Mac's guide is similar, sample at 10%, if the screening test is positive, confirm it. And then if that's positive abatement measures must be put in place.

At the end of the day, the goal is not about maximizing the number of tests or developing a database. It's protect -- it's about protecting

the residence of these properties. In my opinion, current industry practices in the event of a positive screening test do that effectively.

So where do we go from here? Well we disagree with the findings of the Earth Study. HUD's decision to move forward with 100% testing does present an opportunity. We recommend leveraging the data that's being collected today under the HUD 100% sampling approach to further inform whether and how the sampling rate for GSE loans might need to be adjusted going forward.

The HUD data should be made public to the fullest extent possible, to allow radon testing professionals, public health agencies and advocates and industry participants to clearly understand the baseline levels of radon risk.

There is some risks. If a sample of properties that receive HUD loans may be fundamentally different from those that receive GSE loans. However, I would expect the data from HUD's approach to be much more robust than from the Earth Study.

This is an important issue. We appreciate FHFA holding this listening session. We believe that such a critical issue should follow an open and transparent process so we can design an enhanced testing process that is both risk based and built on sound science. Thank you.

**Mary Baehr:**

Thank you. Our next speaker is Jessica Lynch from the National Association of Homebuilders. Unmute and you may begin.

**Jessica Lynch:**

Thank you. Thank you for the opportunity to speak today and for your interest in hearing from stakeholders on this important issue. I'm Jessica Lynch, Vice President of Housing Finance for the National Association of Homebuilders.

NHB multifamily members build and manage market rate affordable and federally assisted rental housing. Fannie Mae and Freddie Mac financing is essential to increase the supply of apartment -- affordable apartments for very low to moderate income families. The Enterprises multifamily programs provide attractive options for our members to mortgage their new apartments and to recapitalize, rehabilitate and preserve affordability in existing developments.

NHB multifamily builders, land developers and apartment owner members face substantial challenges to produce and preserve apartments that are affordable to low and moderate income families, so access to affordable mortgage products is critical.

NHB is very engaged in development and implementation of building codes, standards and regulations for single family and multifamily housing. NHB represents the housing industry on a number of consensus committees developing key industry standards. These policies affect the day to day operations of our members, housing affordability and the safety of residents.

NHB does not believe that all regulation is bad. Regulation should be based on sound science, developed with input from stakeholders in the regulated industries and provide state and local jurisdictions with authority to adapt the standard or code to account for local conditions or provide for more cost effective and affordable provisions for local homebuyers.

However, we have found that even the most well intentioned policies to set national environmental energy building or safety standards can result in new unintended negative consequences if those policies take a one size fits all approach.

We are particularly concerned about the new radon standards FHFA is considering adding as requirements for borrowers applying for the Enterprises multifamily mortgage products. To be clear NHB opposes a mandatory use of the EPA's voluntary consensus standards for radon testing and mitigation as a requirement for securing a Fannie Mae or Freddie Mac multifamily mortgage.

These standards were not developed in consultation with key multifamily industry stakeholders, and were not proposed as former regulations by FHFA. Also, the International Code Council Code Development Committees, which are made up of code enforcement, and building experts, overwhelmingly rejected and radon standard during their recent code development cycle. Several members of the ICC committees expressed concern about the blanket application to all geographic areas, not just moderate and high potential radon zones. And others raised concerns about unenforceable language included in the standard.

Therefore, NHB believes it is premature for FHFA to require this EPA voluntary radon standard for Enterprise mortgages at this time. Much more due diligence is needed to ensure the health and safety of residents is done effectively. More research is necessary to determine the percentage of units that should be tested and how often testing should occur, differences based on property location or asset class and appropriate documentation requirements.

This research must be peer reviewed, thoroughly vetted and unbiased. Key industries affected by this regulation, multifamily



builders, property owners, lenders and property managers, must be at the table when these radon policies are developed. It is also essential that FHFA undergo a formal notice and comment period before adopting any such policies.

NHB supports a response to radon exposure that is tailored to priority areas as designated by the EPA, as having a high potential for radon levels exceeding the federal action levels. NHB also supports radon mitigation techniques, if they are well researched and justified in terms of health risks in the home environment.

In the Single Family 2021 International Residential Code, radon testing can be performed by the builder, a registered design professional or an approved third party. If FHFA proposes new rate on requirements, similar options should be available for multifamily borrowers and lenders. NHB appreciates FHFA's efforts to ensure that properties that benefit from Fannie and Freddie financing should be safe and healthy environments for residents. We look forward to further follow up on this important issue. Thank you.

**Mary Baehr:**

Thank you. Our next speaker is David Grammer from RAdata. David, can you please unmute? You may begin.

**David Grammer:**

Great. Hi, its David Grammer. I am the president of RAdata, indoor air and water quality services in Flanders, New Jersey. We have been operating in the radon industry since 1984, and have the largest operation in the nation. I am the Mitigation Chair for the Executive Standards Committee and I'm the Mitigation Chair for all of the multifamily and single family mitigation standard committees for AARST. I have served for ASTM for E21 Radon Mitigation Standards Product on the EEO-6 Committee.

I'd like to share with the group some of our real world experiences of testing and treating radon, in multifamily structures. We've put a lot of work and effort into the document, we've asked all interested parties to take a seat at the table and to contribute to this work. We've had the Homebuilders Association, we've had scientists, we've had business owners, we've had health officials, we've had the American Lung Association. And we've been working on these guidelines for the past 35 years.

I was in business and operating in 1988 when Ronald Reagan signed the Radon Abatement Act of 1988 brought forward by Senator Lautenberg of New Jersey. And in that guidance, it does dictate that the banks guaranteed -- the loans guaranteed by organizations like HUD and FHFA, were to exercise due diligence in assuring that the

communities that they're funding and supplying mortgages for are protected.

In the case of my first study, which is not really a study it was a real life project. There was a complex, on apartment complex in Albany, in the upstate New York area. The development was tested by an environmental testing firm. And as Mr. Fratantoni would infer, the ability to test completely was dictated by the bank's request for inexpensive activity, just to check off a box.

They tested six units in this 150 unit apartment complex and found that they all were under four picocuries. So therefore the mortgage moved forward and everybody was content and it seemed all good. Unfortunately, they didn't realize that there was a geological formation that separated the northern half of the development and the southern half the development into two geological types. And they tested in the lower area where it was less radiation in the soil.

The northern half of the buildings had a resident that had been living there for over 20 years, and he died of lung cancer the year after the mortgage went through. And his family decided that since he was a nonsmoker, and nobody in the unit was a smoker, that they should test for radon.

They found that the radon levels with his home were 96 picocuries. So it's not a matter of finding a 3.9 and a 4.1 to facilitate a mortgage and the ease the ability to check off boxes on a mortgage application, we're talking about true health risks associated to occupants of these buildings that are being financed.

The builder was very, or the apartment owner was very generous in fixing the one unit that had the problem, but he refused to go further and test the rest of the building, leaving unsuspecting people on their own to either test or to just ignore the fact that they couldn't see it, smell it or taste it.

That's a matter of economics. They were trying to control cost. There seems to be a current course of action, however, the property owner of this development refused to do any more than he had absolutely had to.

We've measured and mitigated housing for over three decades. I was the Program Manager for the Western Regional Radon Training Center at the University of Colorado, and an adjunct instructor there and at Rutgers, teaching radon science and radon testing and radon mitigation.

This AARST Standard is an outstanding work. It's had years of development. The Radon Abatement Act of 1988 was set aside, the bank's requirements was set aside by statements and a position that our industry didn't have the ability to support the type of activity that would be required to support that type of a law.

Well 35 years later, we have built an industry that's cohesive and capable of applying its services at a needed basis. We have the schools and the education facilities prepared to teach these engineering firms that do bank inspections, on how to do their own radon testing.

It's then states like New Jersey that have made it impossible for builders to test their own properties, because their financial motivation to liquidate the property and to move the mortgage to a private person's ownership is their primary goal. Not that all builders are bad and not that the national Home Builders Association isn't an association that should be recognized and admired for their work.

As we develop techniques to make houses and buildings more airtight, what we're doing is we're reducing the risk of infiltration of fresh air, but we're not stopping to consider the fact that there's a direct infiltration through the slab into the buildings from the soil. So whether it be vapors like benzene or PCP or TCE or whether it be radon. these extraction systems for new construction, which I'm sorry I'm getting off track because that's not the purpose of this meeting. Is important.

I have another development that...

**Mary Baehr:**

David, you're at time, so if you could please wrap up your thoughts.

**David Grammer:**

I share can. There's a class action suit that occurred from another development that was new construction townhouses. Radon systems were installed. Ten years later there was a death of lung cancer. And the attorney decided that it was a class action case. It cost the builder, the association and RAdata, \$1 million each to settle the case.

There are cases that we have that can demonstrate that testing as the AARST Standards dictate, is affordable. And more importantly, it's a health savings risk. And I appreciate all of our group that has worked on these standards. And I applaud them and take my hat off for the efforts that we've offered to the Fannie Mae and Freddie Mac. Thank you.

**Mary Baehr:** Thank you. Our next speaker is Owen Reese from Alpha Energy Lab. Please unmute, and you may begin.

**Owen Reese:** Hello, my name is Owen Reese, and I'm the Vice President at Alpha Energy Laboratories, a radon testing device manufacturer and analytical laboratories located in the Dallas, Texas area.

I've worked in the radon industry for nine years and serve on the National Radon Proficiency Programs Certification Council, which provides guidance on the certification standards of radon testing, mitigation and measurement devices nationwide.

As a national laboratory we have analyzed millions of test kits, excuse me, test kits across the country. We have consistently observed the occurrence of radon in modern structures to be underestimated by the EPA's [inaudible] radon zones.

The EPAs map were developed in 1993, using primarily geological change indicators of the potential for radon. Laboratory data gathered since 1993 has indicated that while the EPAs map has correctly identified broad patterns, it underestimates the prevalence of high levels of radon gas.

While the EPA states this map should not be used to determine the need for testing, it has been used for such purposes in the past. Our laboratory data shows the importance of testing all dwellings for radon. Next slide.

Here you can see the EPAs map for EPA Region Six, which is where our laboratory is located. This region is often perceived as having a low occurrence for radon. However, our laboratory data clearly shows otherwise. Next slide.

Here you can see a comparable map generated using Alpha Energy Laboratory's data with over 50,000 data points included. The gray counties indicate counties with insufficient data that could not be met. As you see, the general trends shown in the EPA map hold true. However, there are substantially more zone one and zone two areas of high risk than shown in the EPAs map. Next slide.

Finally, here you can view the differences between these two maps. Red indicates areas where laboratory data shows higher levels of radon than the EPAs map predicted. Blue indicates areas where radon levels were lower. And gray are equivalent areas or areas lacking sufficient data.

Outside of region six, California and Florida are often considered states where radon is not commonly found. However, our data

shows that 45,000 tests conducted in California, 13.8% of those were above the EPA's action level. California contains only two zone one counties, Ventura and Santa Barbara, 93% of elevated radon levels found in California were found outside of these two counties. Only 7% of hazardous radon levels were found inside the counties that the EPA identified as high risk.

With 14.4 million dwelling units and California this indicates the potential for dangerous radon levels in nearly two million homes. Florida shows an even higher occurrence of radon, of the 26,000 tests 15.7% were elevated. With 9.6 million dwelling units in Florida, this indicates the potential for dangerous levels of radon in 1.5 million dwellings.

In summation, this data shows the need for widespread radon testing and demonstrates the potential hazards in using the EPA's radon map to determine if any individual dwellings should be tested for radon. The EPA itself states this is an improper use of this map. I quote, "The map of radon zones should not be used to determine if individual homes need to be tested. No matter where you live, test for radon, it's easy and inexpensive."

Simply put, it's not possible to predict that any individual dwelling will have high levels of radon gas. The only way to know is to test. Testing is inexpensive and quick industry capacity is large. Our laboratory is equipped to manufacture and analyze nearly a million additional test annually. And we are only one lab out of many quality, certified and reliable radon testing laboratories in this country.

The only way to save lives is to mitigate and the only way to know if radon is present is to test. I strongly support the adoption of the NBR standards for radon testing and mitigation and encourage the FHFA to act with haste in these active life saving measures. Thank you for allowing me to speak.

**Mary Baehr:**

Thank you. Our next speaker is David Borsos from National Multifamily Housing Council. David, if you can unmute, you may begin.

**David Borsos:**

Thank you. Good afternoon. I'm Dave Borsos, from the National Multifamily Housing Council. And for over 25 years, the National Multifamily Housing Council and the National Apartment Association have partnered to provide a single voice for America's apartment industry.

We'd like to thank FHFA for holding this listening session as part of their decision process for determining the radon testing protocol for the Enterprises. This important step was suggested in an industry letter to FHFA prior to implementation of a new testing protocol for the industry.

First and foremost, the safety of our residents in our apartments is of paramount importance, one in which industry takes the utmost care and consideration to achieve. In this particular section, FHFA is asked for assessing available data on radon exposure risk to multifamily tenants. And in two of those, the two questions they pose are what data should they collect, understanding the efficacy costs and industry capacity. And then also what resources or maps are available to be identified -- to help identify radon risk in geographic areas.

I'd like to focus on two aspects of radon testing and how they influence the decision on how FHFA should proceed. Both of these apply to the questions asked, process and science. First I'll address process that they asked, efficacy and cost to industry capacity.

Shifting to 100% testing protocol across the entire United States must come with an understanding of the impact of the processes of financing multifamily properties that include affordable, rural and small mom and pop buildings.

FHFA has received an analysis and a report that details the number of certified multifamily radon testers. And it would be hard to dispute that the current number could not support the level of testing proposed. Asking where to find this information on capacity starts there, but the Enterprises can engage in discussions directly with those firms that actually do the testing and are used today by the lenders to further analyze capacity.

Those same lenders can provide further detail on the additional costs of the proposal. It is simply not the addition of another canister. No matter the decision, we strongly urge FHFA to develop a detailed timeline and ramp up of capacity to minimize disruption in financing of multifamily properties.

The adoption of a protocol by HUD earlier this year, also provides a good testbed to further understand the impact of the protocol. We urge FHFA to look no further than the experience than HUD to understand impact of a program that is only 1/10 the size of the Enterprises. So its impact to the overall industry comes at a cost of time and process.

Last, efficacy of the process should be informed by both the process and the science behind it. There's no disputing the cancer causes -- the cancer causing action of radon. You've heard it in a number of the presentations this afternoon already. It's well documented and well researched. We're not disputing any of that.

Advocacy should address how best to balance the reduction of that risk with a process that identifies and mitigates the risks. The protocols we have for testing and mitigation of other health concerns such as lead, have gone through a collaborative industry approach weighing all the costs and benefits. The decision on radon testing and its mitigation should be no different, and the recommendation of how to approach it should not rest with a single entity.

The last question to be answered in this section is what data or maps exist to assess the risk of radon. You heard from the prior presenter that there's been no updates to the radon map that the EPA issued in 1993. In fact, they state that there's limitations on the use of that map, and they've not attempted to update the map since it was first issued.

So due to limitation, we're left with the EPA map as a reference point to start with. But to bolster that information, we suggest two approaches for the Enterprise to further analyze the data. I think in reference to a lot of the scientific presenters, there has been a strong reference towards testing in single family homes. They may not have stated that, but I think the testing in multifamily is not as broad.

The Enterprises should evaluate, however, their own data for single family homes across the United States in those three EPA regions to get a gauge on the prevalence of radon and the results they have achieved -- gotten from those tests.

They should also monitor the results from HUDs protocol to determine the prevalence of radon. Both could you use the supplemental EPA map to determine the need for testing in certain regions, as well as working with other industry participants who may have this type of data.

As the Enterprises look towards data on the valuation of specific multifamily radon issues, they'll find it has been somewhat limited in the literature. One study, referenced earlier in the presentation, was sponsored by HUD called the Earth Study, which attempted to examine multifamily radon issue. The study drew conclusions supporting testing protocols suggested by ARS enhancing.

However, this study has not undergone a scientific peer review. So we asked Exponent, a leading international environmental and engineering firm, to review the paper. Briefly their concerns about how the study was performed and if the recommendations made to employ testing across the entire United States were supported by the study. We will present our written findings to FHFA as a follow up to this listening session.

And finally, if FHFA chooses to implement the testing protocols in a national scale, they should ask the Enterprises to evaluate the results after a two year period is determine the efficacy of a broad reaching testing protocol, and whether there should be any adjustments or modifications to the testing protocol. And with that, I conclude my remarks and again thank FHFA for holding this listening session.

**Mary Baehr:**

Thank you. Our next speaker is Jane Malone from the American Association of Radon Scientists and Technologists. You can unmute, and you may begin.

**Jane Malone:**

Good afternoon. I'm Jane Malone, National Policy Director for the American Association of Radon Scientists and Technologists. Sorry. Thank you again to FHFA, join others and thank you for your continued consideration of this serious subject. Next slide.

I'm going to offer a few more points on data sources focusing on the evolving nature of what we know about radon risk potential in the U.S. When you look at individual states and counties, we see discrepancies in local places, which underscores the importance of not relying on maps for testing decisions. Next slide.

So can you go back one, sorry. Okay. I guess the slide disappeared. I'll talk about Illinois next. Go ahead. Sorry. Okay, I was going to put up a Colorado map, because in Colorado we found that, while it was there are a few counties are not considered high risk there by the EPA survey, all the remaining counties 12 counties that were considered moderate risk, became considered high risk as a result of local Colorado data collection.

And then in this slide that you see on screen for Illinois, the Illinois Emergency Management Agency 2012 test data, basically reclassified 17 moderate risk counties. The left hand map is the EPA map and the right hand is the IEMA data. And that IEMA data reclassified 17 moderate risk counties as high risk, two reclassified from high down to moderate, two down from moderate to low, with insufficient data for eight counties. So this just shows you the kind of variability we have out there generally speaking, when more test



results are in, higher radon is found. But that's not always the case. So we want to be clear about that. Next slide.

This slide relates to one of the studies that Mike Kitto will soon describe comparing the 1993 results with lab data. Most Michigan counties previously considered zone three are moderate risk. Most Missouri counties previously considered zone two are high risk. So there's major transition in two different states.

The next slide is simply the California map. You've already heard mention of California. This is the EPA zone map for California. The lower left side of that you can see only Santa Barbara and Ventura counties have been considered zone one from the EPA survey. The arrow on this map points to El Dorado County, which is a zone two County. Next slide.

And that's where Lake Tahoe is. See that blue water there, that's Lake Tahoe. The darkest red areas are at very high risk potential and the medium red areas are high potential. Credit to Ron Churchill, the state geologist for California for the information on this county map and the next one.

Here's the Cal --and next slide, great. Here's the California map again, and here I'm pointing to Orange County, which is a zone one county, and that's all the way down the lower left also. And the next slide.

In Orange County, the survey real results found radon ranging from one half picocuries to 25.6. They estimate -- the state estimates that, you know, fully 106,000 residents are at risk of radon exposure because of high radon levels just in Orange County. And next slide.

Here's the map view of Orange County showing test results above four depicted by the yellow dots, which may be hard to see on your screen.

Next slide is the EPA map which is under much discussion. And you can see that there's this bright pinkish red shading, which I think in the original was actually a red. And those are the highest risks. Next slide.

And here's an overview of the EPA survey where that data came from to contribute to that map. Because I'm not sure if people have seen this information. Basically, there were test results, radon test results from just under 5,700 homes. And that information combined with four other factors was considered predictive to predict radon levels for 3,000 plus counties. I mean they went

through extensive reviews and the view at the time was that that was sufficient.

And so next slide, what I've talked about and what you can see here in the comparison between the EPA map and the CDC map is again, you know, you're just seeing variability. It's not static, and it's not a matter of just ground changing. It's a matter of the test information where test information informs us all the more. Next slide.

No, I'm sorry, can you go back to the previous slide. I'm sorry, I missed one of my points. Note other differences between these two datasets there are on these differences. The EPA survey here check ground levels. The CDC map is point in time were short term tests. So numerous counties are in the different colored groups across the maps. The areas that are gray, white or have hash marks, as Michelle said, that means that the data are not completely available this time. Next slide now, thank you.

So here's the breakout that I got when I downloaded the CDC data. You can download it in ten year bands, if you go to the website that Michelle showed you in her slides. So between 2008 and 2017, there were two million tests that are entered into this CDC data set. And 36% of those two million tests equal or exceed the EPA action level for picocuries. The prior ten year periods, when I looked at those, they showed similar results.

So you're looking at a different makeup from where we were with the EPA. And the EPA survey found, you know, much lower percentage of the before, and also a lower percentage between two and four. It's just what's happening. We're getting in more data. It's not -- there's not, you know, convenient truths here. It's just the fact that when more data come in, you learn more.

**Mary Baehr:**

And Jane, sorry, you're at time, if you could wrap up your thoughts, please.

**Jane Malone:**

Okay, just two points. First of all, looking forward to partnership on improving data collection to the benefit of all. But retrospectively, the test data for the thousands of units that were tested under the Enterprises current policies couldn't be mined from the past loan records.

And finally, the current standards would be a prudent step forward. And it's not that the Enterprises don't have policies or extension of credit. You do. They already reflect the will to apply with -- to comply with applicable protocols, methods or laws and utilize

competent qualified personnel. Transition to the current consensus standard is the next step. Thank you.

**Mary Baehr:**

Thank you. Our next speaker. Speaker is Michael Berman, M&T Realty Capital Corporation.

**Michael Berman:**

Good afternoon and thank you for allowing me to speak today about this important topic, radon testing and mitigation standards and protocols. My name is Michael Berman, I'm the president and CEO of M&T Realty capital Corp, a wholly owned subsidiary of M&T Bank. We're an active lender to the multifamily industry to Fannie Mae, Freddie Mac, as well as HUD. And I currently serve on the Fannie Mae U.S. Advisory Council.

As some of you may be aware, in addition to my work in the multifamily lending arena for decades, I've been active in the housing policy arena for many years as former chairman of the Mortgage Bankers Association, 2010-2011, as a senior adviser on Housing Finance to HUD Secretary Shaun Donovan, 2012 to 2014. And as a senior fellow at the Harvard Joint Center for Housing Studies from 2014 until I joined M&T in 2019.

I speak today in my individual capacity as one who has been a participant in the affordable housing and workforce housing industry for over 30 years. I'm grateful for the efforts and careful process of FHFA Acting Director Sandra Thompson who I'm honored to have worked with when I was at HUD. And this listening session today on radon testing and mitigation reflects the thoughtful process which characterizes all of my experiences working with Acting Director Thompson, as well as Associate Director Siobhan Kelly, dating back to my work with them and their FHA team in 2013, 2014 on many issues facing affordable housing finance. Including the GSEs multifamily housing programs.

I have just three brief points that I'd like to make this afternoon. First, I support radon testing and mitigation protocols for the GSEs, which protect tenants who live in our housing that we helped create and finance. Health and safety are critically important priorities for us.

I have personal experience, as do many of us who have been on this planet for over a half century. I have close friends and relatives who suffered and died from cancer as a result of environmental preventable causes. I will not forget the suffering I've seen and the grief of the lives lost people, close to me who have suffered and died too young.

At the same time, as policymakers and practitioners who make affordable and workforce housing possible through our financing programs, we're obligated to take a risk based science based approach to the protocols of radon testing and mitigation. No one here would suggest that we need to change the speed limit on all highways to 20 miles per hour just because we know that that would save thousands of lives every year. In the case of radon testing and mitigation, we must also be careful not to overreach beyond the science based and risk based analysis.

Second, we should learn from the HUD approach on this issue. I regret that I was not involved with my brothers and sisters at HUD, hardworking, dedicated public servants with whom I have great respect. I regret that I was not still working at HUD to help advise them when they adopted the current radon testing and mitigation protocols for map lending programs last December.

In my humble opinion, this protocol, the same as the one being considered today, was adopted in error. It's neither based on sound scientific analysis, nor sound risk based approach.

The good news for us and for FHFA is that we have the opportunity to capture the data from the HUD experience, and to see in real time how their protocol is an inefficient overreach and in need of amendment.

The HUD process and approach to this serious issue was flawed, and importantly, the research published in the so called Earth Study, which we -- many speakers have discussed, was flawed.

I'm encouraged that FHFA has a process that is more disciplined, science based and risk based, and is clearly reflected in this informed listening session, and the approach which we're witnessing here today.

The application of science and risk analysis, along with a simple dose of common sense, dictates that the standard of 100% ground floor testing of all multifamily dwellings in any risk zone, no matter how designated by the EPA, along with 10% testing of upper floors, is an overreach. It's like the 10% -- it's like the 20 mile per hour speed limit on highways.

Testing 10% of units on upper floors of apartment buildings, without radon being detected on any first floor units, even with 100% units tested, in my humble opinion, it's a clear sign that the HUD protocols are flawed. Maybe there are unique structures of apartment buildings, which can somehow allow the radon from the

ground to skip the first floor entirely and appear on the upper floors. But there does not appear to be any widespread evidence of that. I'm not sure where HUD got that protocol.

Furthermore, a protocol of 25% testing of first floor apartments in appropriate risk zones, compared to the new HUD test of 100% of ground floor units, has yielded no meaningful or increased findings of radon in any of the EPA risks zones.

And in addition, to ignore the distinctions between EPA radon zones one and three, for example, simply ignores some of the scientific data and health risks implications of that data.

Further, there should be distinctions for larger multifamily properties, versus those with under five or five to ten or even 20 units, as was mentioned by prior speakers. In addition, data analysis that's been mentioned today should carefully sort out single family properties from the data for multifamily properties and that would include single family rental properties. I believe that much of the analysis we've seen today does not make those important distinctions.

**Mary Baehr:**

Okay, sir, you're at time, if you could please conclude.

**Michael Berman:**

Sure. My last point is that FHA has the opportunity to give a practical timeline for us, and we should be able to do testing and mitigation post-closing as we do with green and other programs. And we should adopt a protocol, FHA should, where whatever we adopt, whatever FHA adopts is reviewed in six or 12 months increments following adoption to see the efficacy of those standards. Thank you very much, I appreciate the opportunity to participate today.

**Mary Baehr:**

Thank you. Our next section on the agenda is Radon Testing and Mitigation. And our next speaker is Peter Ashley, U.S. Department of Housing and Urban Development.

**Peter Ashley:**

Good afternoon. And thanks to FHFA for organizing this important session. I'm with HUD's Office of Lead Hazard Control and Healthy Homes. I have an academic background in environmental health. And my work experience includes private sector and state work in regulatory toxicology and chemical risk assessment.

I've been at HUD for about 25 years, serving as an environmental scientist, about 12 years of those 25 I've directed the policy and standards division within my office. The focus of the division is to support research and develop policy and guidance that addresses residential health and safety hazards, such as lead, mold tests,

indoor air quality issues -- and indoor air quality issues such as radon.

I've also represented HUD on the Federal Radon Action Plan Workgroup that was spearheaded by the EPA. And I currently represent the department on the National Radon Action Plan Leadership Committee. Next please.

I want to talk a little bit today about -- give you some background on how the Earth Study, I know there's a lot of interest in this today, but how that got funded by HUD. First, I wanted to mention that we have staff from my office, as well as other HUD offices, that have participated in and are currently participating in the Radon Standards Development committees that are headed up by -- and organized by AARST, the anti-AARST Standards Committees.

So the Earth Study was funded through one of our Healthy Homes Technical Studies grants. It was funded in fiscal year 2017. These are competitively awarded grants. They award them every year to address multiple health based issues, residential health issues.

Radon is an area that we highlighted. We were aware that there was a need for research on multifamily radon testing protocols, because of the variability of requirements that existed at the time. You know, differences between the Consensus Standard -- Multifamily Consensus Standard for Radon Testing that recommended 100% ground floor testing. The HUD program at the time was 25%, ground floor testing. And of course, the GSEs were at 10% ground floor testing.

So our application criteria, I want to point out, includes factors for data quality, ensuring data quality, and conducting rigorous data analysis. We have rating factors that we publish in the Notice of Funding Availability, and these are two. So we look for quality research plans that include plans for development of a quality assurance plan which was done for this study.

And we expect that our grantees publish their findings in peer reviewed journals. And that's what was done for the Earth Study. Recently -- the paper from this study was recently published in the Journal of Public Health Management and Practice. I believe that was published online earlier this month. And that is a peer reviewed journal.

The study findings contributed to HUD's Office of Multifamily Housing, changing their radon test requirements from 25% to 100% of ground contact units.

But I also want to point out that their decision was not solely based on this study. It was also based on the NCR Consensus Standards you've heard about, you know, that process from other speakers today. But a lot of effort goes into developing the standards. And that standard also requires testing of 100% of ground contact units.

And then I just wanted to mention there's another publication authored by Dr. Antonio Neary from CDC on testing of units in multifamily buildings. It was a theoretical analysis, and his findings, you know, are based on the prevalence of eye level radon in a building. But it was -- findings are consistent with some of the findings of the Earth Study. I guess that's the best way to put it. So there is another study that would not support 25% testing of ground contact units in the vast majority of cases. Next slide please.

I also wanted to talk a little bit today about, you know, based on my many years of experience in environmental health, I wanted to explicitly discuss why people tend to underestimate the risk of radon exposure.

**Mary Baehr:** Apologies. You're at time, if you could conclude your thoughts?

**Peter Ashley:** Okay, so that's based on these items here. It's familiar. Radon's ubiquitous, it can't be sensed, odorless and colorless. There's a delayed health effect, and you cannot definitively link a specific lung cancer case to radon exposure. But the evidence for risk is strong. And I think this reinforces the reason why effective radon testing mitigation requirements need to be incorporated into housing financing and into systems that ensure quality housing, such as housing and building codes. That concludes my remarks for today. Thank you.

**Mary Baehr:** Thank you. Our next speaker is Carey Asper, Nova Group.

**Carey Asper:** Thank you. And hello, everyone, I'm Carey Asper, I'm the Director of Nova Group's national due diligence platform, which includes providing assessment services to many of the enterprise lending partners. I'd like to thank FHFA for hosting this call.

I'm going to talk about sampling and making estimates about population parameters. And this contrasts a little bit, well a lot a bit, with the NCR's multifamily measurement protocol that requires measuring the entire population. That population being all the ground contact units at a multifamily property.

And in science and research entire populations are typically not measured. Rather, a sample for that population is collected. The

examiner subjects this data set to various statistical tests to render conclusions.

The question is, what are the sample characteristics required in order to have a reasonable level of confidence that the data set is representative of the population? And our application -- if our conclusion is that the property in question does not have a unit with radon exceeding the EPA action level, how confident are we set our sampling confirmed the absence of a radon problem? And can we get there without measuring the entire population? If we're wrong, we committed a type two error, a false negative, if we concluded the absence of elevated radon when in fact it's present.

So the aforementioned recent Earth Study, as well as Neary in 2019, spent some time discussing the sampling frequency required to avoid a false negative. Their conclusions differ in that Neary provided basis for selecting the sample size, while the Earth Study concluded that measuring the entire population is required to avoid failing to identify radon above the action level.

Now what stood out to me about the study was that in order to consider the sampling successful, a property that has one or more units with elevated radon must capture an elevated result. So therefore, these studies describe the probability of missing an elevated unit under various sampling frequencies.

I didn't see any analysis provided of the data set itself. And this is a very different and important question. There is value in running some descriptive statistics on the sample set and presenting an upper level confidence boundary. With this information, conclusions derived from a given data set may not lead to the rejection of the presence of an elevated unit, even though one was not represented in the sample set.

Now the mass can be complex. And one reason is that the distribution of the sample results vary depending on the data set in question. And I think Neary discussed this. For instance, samples collected in areas of low radon prevalence will have many low and non-detect results. You can't fly it and if you do, you get kind of an L shaped distribution that's difficult to model.

On the other hand, datasets that are collected in areas of increased rate on prevalence will transform nicely to the normal distribution. And because data collected from areas of low prevalence are difficult to statistically analyze, due to the absence of radon, this may be basis to exclude some geographic ethical areas altogether. We've seen in this presentation that there are some very good data



that's been collected since the EPA map of radon zones was published that will allow policymakers to determine whether or not there are some areas that can be excluded from screening.

However, since HUD has adopted the NCR protocol, we've had the opportunity to look at some of our own data that we've collected in connection with completing HUD due diligence. In a few properties that I've come across, and this would be -- we've collected up to a minimum of 90, up to 120 samples on ground contact units. Several of them were observed or hits were included in the population, hits defined as four picocuries or greater. And several just with one or two exceedances slightly over the action level.

I took a random sample of 10%, log transformed the results and showed that the upper confidence boundary was in the range of four to 4.2. While none of the random samples selected included an elevated result.

So I recommend we look further at the statistics around the data set collected, the sample collected, to allow for smaller sample sizes. Keep it in mind, the design of these models should avoid type two errors.

I'd expect a consensus based organization to be tasked with deriving these models. And importantly, I recommend including this analysis and the radon laboratory reports whereby the upper confidence boundary is reported along with the results of the samples collected.

And I recommend all this reporting, or excuse me, I recommend this reporting for all radon samplings, not just GSE execution, because there are many other commercial lending executions that lend on multifamily, and we need to have a level playing field. Everybody should have the same data.

In practice, the participants of a lender transaction would have the flexibility to complete limited sampling, or the full protocol. In the event limited sampling is selected, if the upper bound exceeds the action level then either the property requires mitigation or full measurement protocol would be necessary.

And I expect to be reasonable to complete the additional measurement as a post-closing item to avoid any unnecessary delays with a transaction. Perhaps an escrow proportionate to the initial sampling result can be posted. But in any event, the owner would be required to mitigate elevated units. And I believe implementing these recommendations or something close to it,

would result in more multifamily properties being tested and therefore more housing with radon issues corrected. Thank you.

**Mary Baehr:** Thank you. Our next speaker is Pattie Farrell from Wells Fargo.

**Pattie Farrell:** Hello, good afternoon. Can you hear me?

**Mary Baehr:** Yes, we can.

**Pattie Farrell:** Hi, I'm Patti Farrell, Managing Director and Head of Multifamily at Wells Fargo. I am also on the Fannie Mae DUS Advisory Council and Vice Chair of the Executive Council. Thank you for inviting the lending community to speak today, specifically thank you for allowing Wells Fargo to participate and to be heard.

For background, Wells Fargo is a HUD, Freddie Mac and Fannie Mae lender. We offer a balance sheet and a CMBS execution, and we support life company and debt fund executions as well. Wells has participated in the FHA and the GSE space for more than 25 years through our various legacy companies.

We're very pleased to have helped to provide financing for billions of dollars of multifamily housing, much of which has been dedicated and directed, I'm sorry, to the affordable and the workforce housing market. While Wells Fargo has a strong reputation in affordable housing, we are focused on healthy housing for all, regardless of the demographic in any specific location. This includes a wide variety of housing alternatives across the U.S. in large markets, middle markets and small tertiary markets, so that residents can thrive.

Radon is one key element of this healthy housing assessment. Understanding and determining whether elevated radon levels exist is a very important piece of the overall financing risk assessment that takes place. So it's important to note that Wells Fargo does not dispute that radon testing is very important and required.

Further, we're not disputing that a consistent approach across all GSE lenders could be helpful to the industry and to the tenants across the country.

Wells Fargo is not here to suggest that testing should be minimal, or to necessarily take exception to what the radon industry is suggesting, or FHFA is considering. Wells does believe that testing should be sound, based on accepted and proven science, completed by qualified professionals, and should reflect a risk based approach to testing that would give the lenders, owners and tenants confidence that the existence of radon gas has been accurately determined and assessed.

Testing protocols should allow and factor in the availability of qualified vendors to address the demand, the availability of testing and labs to process the results and an industry of experts to address the final results and what's needed to mitigate when appropriate.

Wells is only asking and strongly suggesting that FHFA approach the question of what the appropriate level of testing is based on strong proven data and science. A significantly larger sample size will not necessarily produce more reliable outcomes. More testing does not necessarily mean better results.

It's our fear that implementing a large sampling size will only cause disruption by creating a stressed system due to longer timelines and excessive testing protocol. This could have negative impacts on the industry's ability to address housing needs and demands. Applying a testing protocol that is consistent done on a risk based approach, based on geographic areas, construction type, and property size is appropriate without being excessive.

In conclusion, Wells Fargo supports the GSE lenders recommendations on radon testing submitted to FHFA, to ensure a process that is not disruptive to the lending industry, a disruption that could have negative consequences to ensuring the housing industry continues to allow for safe and healthy housing units.

Finally, Wells Fargo is also supportive of a solution that could allow for post-closing testing and monitoring of units to address any additional follow up that could be necessary. Thank you for -- thank you and looking forward to any follow up that is needed as a result of this discussion and the information provided.

**Mary Baehr:**

Thank you. Our next speaker is Richard Meyer, Lumen.

**Richard Meyer:**

Thanks to the FHFA for hosting this session today. My name is Richard Meyer. I'm a registered architect. And I've worked for the last 30 years managing Fiscal risk issues for multifamily lending at Freddie Mac and now at Lumen.

While at Freddie Mac, I witnessed the initiation of environmental due diligence required -- requirements in the early 1990's. These requirements were developed in response to the Superfund Law of 1980. By employing environmental professionals we worked to develop reasonable standards to evaluate the risks as well as the liabilities addressed by Superfund.

ASTM standards followed and they closely resembled the requirements put in place by Freddie Mac. I provide this context to

suggest the reasonableness of the requirements that Freddie Mac put in place as they were tested by the industry via ASTM.

Several environmental risks beyond Superfund were also part of the protocol, and they included lead paint and asbestos, as these issues were viewed as potentially impacting safe and decent housing. Later mold and radon risk evaluation were added for the same reasons.

As with other environmental risk, an attempt was made to develop a reasonable standard, not an exhaustive study, to evaluate radon as it may impact credit risk, as well as safe and decent housing. Beyond lending due diligence standards, I believe it's important to rely on building authorities, code enforcement and strong property managers to promote safe and decent housing.

I personally question if the lending platform is the most effective venue to fully evaluate radon risk. Thank you for the time and allowing me to speak.

**Mary Baehr:**

Thank you. Our next speaker is Bill Long, U.S. Environmental Protection Agency. Bill, if you can unmute.

**Bill Long:**

Okay, sorry about that.

**Mary Baehr:**

You may begin whenever you are ready.

**Bill Long:**

Yep, my name is Bill long, and I serve as EPA's Director of the Center for Radon and Air Toxics and the Office of Air and Radiation. I appreciate the invitation by FHFA inviting me to speak on this important topic and for your agency's consideration of increasing action on radon exposure in multifamily housing.

My remarks are going to cover radon standards, radon contractor proficiency and EPA's radon map. First, on the standards, radon is a EPA Class A carcinogen and a leading environmental cause of cancer mortality. It is one of the largest risks within EPA's portfolio.

Unlike many other environmental problems, however, the methods to test for and fix high radon levels is straightforward and uncomplicated. We have a high level of confidence that radon mitigation systems work. Use simple technology, reliably reduce radon are durable, and reduce lung cancer deaths.

The EPA believes that the standards of the practice for mitigating radon are essential to defining quality and protecting public health. And over the last decade, the EPA has transitioned from developing and maintaining our own standards to supporting and participating

in the development of voluntary consensus standards, organized by a standards development organization that has been accredited by the American National Standards Institute.

These voluntary standards cover a range of radon measurement, mitigation and other technical practices that address radon exposure assessment and reduction.

The National Technology Transfer and Advancement Act states that federal agencies and departments shall use voluntary consensus standards as a mean to carry out policy objectives, except where inconsistent with applicable law or otherwise impractical.

Executive Order OMBA-119 outlines a number of factors for agencies to consider when deciding to use a standard, including the level of protection the standard provides, or is expected to provide for public health, welfare, safety and the environment.

When the EPA elects to use a government unique standard in lieu of an available VCS, the EPA is required under the NTTAA to report its decision to the Office of Management and Budget, and Congress, along with an explanation of the reasons for not using an available VCS.

The EPA views that our participation in the development of these voluntary consensus standards is in the public interest and is compatible with EPA's mission or authorities, priorities and budgetary resources.

The EPA supports the development of these standards in several ways, including serving on standard development committees. Our view is that such consensus standards are better, have broader support, and stay more current with technological development than those that would be developed by EPA alone.

Second, on contractor proficiency, professionals who provide radon testing and mitigation services also play a key role in public health protection efforts. And every reasonable effort must be made to ensure that such professionals employ effective approaches, methods and technology to measure and reduce exposure to this carcinogen.

Our statute, the Indoor Radon Abatement Act, recognizes the importance of establishing a quality, professional workforce for radon testing and mitigation. At the onset of our radon program in the 1980's and '90s, we stood up a program that established the standards of quality for assessing and identifying qualified service providers. And in the early 2000's, we transitioned from direct

administration of a service provider proficiency program to oversight of two independent organizations responsible for certifying radon service providers.

As part of this process, we conducted a one time evaluation and acknowledgement of the two certification bodies, the National Radon Proficiency Program and the National Radon Safety Board. Since then we have been operating under that construct. At a request through congressional direction for the past four years and in response to growing demand for radon services in the United States, we are developing an updated framework for oversight of radon certification in the United States.

Third, and finally, EPA's radon map. The EPA's zone map was developed in response to congressional direction in the early 1990's. The map was intended to help states as they were starting up their programs. The map was intended to be used to identify potential, not risk.

The EPA's national policy is that every home should be tested and fixed if radon levels are at or above four picocuries per liter. And that individuals consider fixing if between two and four. It was never intended to be a way to predict radon that would be in a home.

In conclusion, EPA supports adoption of any policy that requires radon measurement and mitigation in full compliance with the EPA recommended voluntary consensus standards by qualified radon professionals, certified by an EPA recognized proficiency program. Thank you.

**Mary Baehr**

Thank you. Our next speaker is Shawn Price, First Environmental Technology. Shawn, can you please unmute?

**Shawn Price:**

Yep, that's okay. And there we go. All right. Very good. Thank you for the opportunity to share some of my experiences and perspectives. Been in radon on for 32 years. The first almost decade was on one of the programs that Bill Long just mentioned, the Radon Proficiency Program where I was a contractor.

A lot of the early protocol developments were also being done. The state radon maps, the data that was used to generate those maps were done by some of the -- my peers at RTI international and SC&A. Once that program was privatized, I came over to the real world, if you will, and I've been managing laboratories for the last 23 years. I'm also a volunteer on the -- several ARRTTs committees. I'm the Chair of the current Standards Management Council that

oversees the consortium. And I'm also the Chair of the Standards Workgroup on all measurement, building types, including the multifamily. Next slide.

ARRST is one of many ANSI accredited developers. ANSI is part of the ISO network. It is the caretaker of the standards developed in North America. So they put out a document called the Essential Requirements and all of the ANSI accredited standards, developers have to adhere to those requirements. Next slide.

Part of those essential requirements are, you know, ensuring lack of dominance, openness, balance, the true consensus process. Everybody gets a vote. These documents are public reviewed. They're put out. There are a lot of arguments, pros and cons within the committee. And once that we put these out for public comment, we always are met with really good ideas of, hey did you mean this? And what if you said it this way? And so these are always being fine-tuned, refined, as again part of the requirements is they have to be updated at least every five years.

So since we've been developing standards over the last 16 years, we've taken some of the standards. They all started with the EPA, you know, basic guidance back in 2005. We've got a lot of real world experience with them now and we're putting out what I think is much more clear, concise, harmonized documents. Next slide.

So within the committee itself, we have an oversight committee called the Executive Stakeholders Committee and working committees, and they all, again within the spirit of that essential requirement are there to ensure balance and lack of dominance.

So I've listed some of the very common, you know, stakeholder perspectives that are on every single committee. We may have additional perspectives on, say a new construction committee, we may bring in architects. And a water standard, we may bring in, you know, water quality experts as well. But you'll see that this is not just radon people writing, you know, self-serving standards, this is a very open and fair and defensible process. Next slide.

Since the topic of the day is multifamily, you know, we have really refined this, probably in the last two updates because of the widespread use with the HUD program, we've tried to take a lot of the editorial language out and get, you know, right to the point. So 100% of the ground floor testing, 10% of upper floor testing. Why? Well the foundations are like Swiss cheese, there's a lot of openings, there's a lot of pathways, you can't see them, they're not -- they're invisible. These gases move around, there are building pressures, air

pressures that we can't see, you can't just pick a spot and hope that you found it. All right.

Unlike lead and asbestos, radon moves around. It's found in every zone so there's no zone exemption in there. And testing frequencies, even when it's low, things can change, the building can change, the geology can change, drought, wet years, sinkholes, you know, things like that.

So consistent with EPA guidance, even when low, there's a recommendation to test every five years. Now that a building has been mitigated, well mitigations may last for 20 years, the ground, the system may change. So every two years you need to do some checks, you need to do some testing, OM&M programs are required. And you know, in this situation, it would really be required for the duration of the loan. And all of these standards are accessible and as read only format in Standards.RS.org. So next slide.

So when you go to the Standards.RS.org, you can just scroll down on the main page, or you can click the view purchase standards link. And it just takes you down further in the page. You can read all 11 of our consensus based standards that have been published. You can find on the public access, new standards or old standards that are out for public review. You can participate in committees by submitting your resumes and volunteering. You can submit questions to committees and things like that. So I encourage everybody to go to the site and, you know, browse through the standards and see what they say. Next slide.

With my day job, you know, I've been doing this for like I said, for 23 years. We've gotten a lot of calls since kind of the rumor hit the street that, you know, FHFA was going to make a policy change, and that the Freddie and Fannie policies may change -- may, you know, be different than the current seller servicer guide. What does that mean to us? Can we?

**Mary Baehr:**

Shawn you're at time, if you could just conclude your thoughts?

**Shawn Price:**

Okay, sure thing. And so fortunately, we have upgraded our capacity. Even within the last year, just in the last year, we've upgraded, you know, almost 70% of our capacity, we feel that we have redundancy. We've got capacity upgrades. We're load balancing to ensure that one facility doesn't get overloaded. We are continuing to, you know, provide data to CDC, because we also want data aggregation. We want to go by what the data tells us to go by.



And we want to have this better isolated for multifamily, not all single family.

And more importantly, what I really like with his policy, and I'll be brief, for many years, I've gotten the calls. I got one test at an apartment complex and its high. I need one long term follow up. And my question is, what are you going to do about the rest of the building? We don't have to do anything about the rest of the building, I just have to look at this one unit because that's all Freddie recommends.

So I'm very happy that this policy is being reviewed. And I hope that the outcome will be we will be adhering to the standards and, you know, testing these buildings properly if we're going to test them at all. Thank you for your time.

**Mary Baehr:**

Thank you. Our next speaker is Michael Kitto, formerly New York State Department of Health.

**Michael Kitto:**

Hello. First slide, please. Thank you. Hello everybody. I'm a recently retired research scientist with some 50 year or 50 publications, over the 31 years I worked at the New York State Department of Health. Most of these publications were regarding radon, including the mapping of radon occurrence in New York State at the township level. So we've gone sub-county down to the township level. Next slide.

We recently completed the HUD funded study of radon occurrence in multifamily buildings. I'll show you a summary of the radon results that were voluntarily submitted by these radon professionals. Next slide, please.

Only results submitted by accredited professionals were accepted. We only -- this study only included ground contact units. While most buildings had -- we strove for 100% of the units to be tested in the buildings, we did end up accepting that one unit would be missed, often because it couldn't be picked up or deployed, just you know, measurement issues. And so we had to go down to allow at least one miss for these buildings so that we could maintain statistical significance.

Lastly, we went with buildings from five to 20 ground contact units, some were actually larger buildings up to 77 ground contact units. One important part was that all the data that was submitted have to have the correct and proper quality controls, which included 5% blanks and 10% duplicate, plus annual calibrations of their radon detectors. Thank you.

The four measurement devices were used, most of them were activated charcoal detectors. They were equally measured across the seasons, somewhat more a little bit in the spring. Ninety three percent of the buildings were three storeys or fewer, so they're not high rises, so to speak. We had nearly 8000 units, we had the arithmetic mean of 2.36 picocuries per liter. The National Residential Radon Survey found levels to be much less and that was again done in the early '90s with 5,700 homes approximately.

There was -- we had 1,63 units that were greater than four, about one in seven. Again, the National -- the EPA early study found this to be less. And we found that in our study that 84% of the measurements were done above grade, or what we call slab on grade. Nothing between except concrete between the ground and the floor that people were living in. Next slide.

This is an example of the variability in radon levels at a seven building complex. When testing only one unit per building, one could easily allow these buildings to remain a health hazard, if they sampled the ones that I, you know, that are below four, if they just happen to pick those. Even 25% sampling, don't -- go back please. Even 25% sampling could conceivably miss the high levels in five of these, five of the seven buildings, the ones I have circled there.

So it's conceivable that they would just pick these two out of each building. And these would pass as being okay, and 25% sampling when indeed they are not. So this exemplifies the need for greater testing protocols. Next, please.

For a building -- so now we're getting into the data. So for buildings which contained at least one unit with elevated radon, these are the probabilities of missing the unit with partial testing. If one falls down, let's say the 25% column, you can see that variability due to the building size, which is in column one. And the average on the bottom is 38%. So you got a 38% chance of missing this unit in these buildings.

So if you go across the bottom row, you can show -- and see that it's 75% sampling it still poses a significant risk at six and a half percent. And even at 90% this leaves some risk. And I should put out -- should note that 90% testing of buildings with less than ten units is essentially a 100% sampling because you're going to sample all it at 90%. Next one, please.

This is a graph of the same data to visualize the tight grouping or agreement at the higher sampling rates. So this is just a graphic of the earlier numbers. And you can see that it doesn't matter what

the building size is here the -- it's pretty tight as far as the probability of missing these units. Next one, please.

Since 50%, I think you missed one. Can you go up one? Okay, well I'll just -- So since 50% of the -- can you go down one, maybe that's where the slide went. Nope. Okay, go up. Since about 50% of the buildings contain no units with elevated radon, I had a table which somehow got lost, that provides the probability of missing a unit with a -- with radon in it in a random building using partial testing.

Because those -- the previous table was only for those in which there was at least one unit in the building that contained radon. And you would see that at -- and if you just pick a random building, and as I said half of the buildings contained no units with elevated radon, at 75% testing, the chances of missing a unit ranged anywhere from around 2% to 4%. That was at 75% testing. So --

**Mary Baehr:**

You are at one minute, if you could conclude your time. Thank you.

**Michael Kitto:**

Okay. So one has to ask themselves if, you know, if they're willing to take the 2% to 4% chance of dealing -- living with this class A carcinogen. Okay, next slide.

The last, I have two slides I'm going to talk about and this is regarding a talk I gave in 2016. Go down one. Thank you. Next slide.

Okay, so this shows, oh next one up. This one goes -- shows you the EPA zone on the left and the radon zone designation that I found. And I found that if you take just zone three, that 75% of the time it agreed, but 25% of the time the zone threes should have been zone two or zone one. And you can see those are down through the different ones.

And what you come up with is something like on the bottom that I have listed there where the agreement was about 70% of the time. And when we found that we had something like 18 states also have data available online. And we found that, you know, the predictions are not that -- they're good, but they're not perfect. And I think the data that Michelle Monti and CDC is working on will help alleviate this. Next -- last slide.

And this is just the final which I want to compare to the 1992 study, and which this study, again, with over two million data points. We found that 61% of these compared to the 84% for the EPA, and that we found that based on the data that's out there from these measurement companies, that roughly 18% of the numbers -- of the results are greater than the four. And so it's significantly greater

than 6% that was predicted in 1992. They said there was around six million homes with four picocuries. I contend that when CDC gets through the data, they will find this to certainly be double or triple that. Thank you.

**Mary Baehr:**

Thank you. Our next speaker is Joshua Kerber from Minnesota Department of Health.

**Joshua Kerber:**

All right, good afternoon everybody. Thank you for the opportunity to speak before this listening session. My name is Joshua Kerber and you can go to the next slide, please.

I'm an environmental research scientist from the Minnesota Department of Health Radon Program. I've been involved in the public sector part of the radon field for over 20 years, working in two different state programs and a university. My main interest here is aiding radon programs and contractors to build upon their technical capacity to reduce radon and use lung cancer. Today, I'm here representing the state and tribal radon programs for across the country. Next slide.

A few things about the AARST Radon Standards. They are the current consensus standards and they're currently the only consensus space right now on standards available. There's a lot of public sector support for these standards. Many states have adopted these standards. And just in the last ten years more than 50 states and federal government stakeholders have served on the various AARZST Radon Standard committees, and many continue to serve and maintenance -- maintain these even today.

These standards set the minimum requirements for measurement and mitigation in multifamily buildings. They are the only standards to do so. There are no other standards regarding radon measurement and mitigation of multifamily buildings at this time.

There are benefits to following these standards. First, you can have confidence in radon test results. These standards stipulate where and how devices are to be deployed and retrieved and by who. With better confidence and device accuracy and the testing of all ground floor contact units, there's much better public health protection. After all, some people living in these units do not have control over their radon situation.

In addition, when 15 radon issues in multifamily buildings, there's a common occurrence called collateral mitigation. This occurs when a radon mitigation system is installed in one unit, but ends up lowering the radon in the surrounding units as well. This can lead to

multiple units being fixed with a single radon system, and not needing a system in each and every unit. Next slide.

There's issues with the current policies. There's a lack of guidance and specificity in the GSEs policies. This leads to the nullification of state laws and regulations. We have numerous examples of regulations being bypassed or ignored. So many projects do not have the requisite 100% ground contact units being tested. This leaves many people vulnerable to elevated radon.

In addition, we have untrained, unlicensed or uncertified people conducting tests in situations where there are laws and rules regulation of who can place and retrieve devices. This leads to regulatory action from the state being taken against the individual placing the kits at the simple direction of a project manager.

In some instances, the project manager is withholding information from radon labs as a means to not identify where the project is located, thereby not allowing the labs or the regulators to know where the work is being conducted and by who. This can also lead to non-reported radon work to the regulated states and again, nullifying state laws and rules. Next slide, please.

There's also a lack of adherence by some lenders to the GSEs environmental policies, which require all work to be conducted in accordance with applicable state laws and regulations. In a regulated radon state, and there's about 20 of us, radon testing being conducted in multifamily buildings shall be done by a currently licensed or certified radon professional.

Unfortunately, nationwide we have numerous examples of regulations being ignored or sidestepped. Sometimes the lenders are new, uneducated or unaware of the regulations. That's understandable. But in other instances, the lenders are aware, but proceed with insufficient radon results and/or data gathered and generator from unlicensed individuals. This is nullifying state laws and putting occupants at risk.

Whether the issue is not testing 100% of all ground contact units, or not having a licensed person conducting or overseeing the testing, no lender should be ignoring state laws and regulations simply to close the deal. But unfortunately, this is an occurrence we see far too often.

And finally, by not following these standards, you are exposing a large health equity gap. By only testing a fraction of the necessary units in any given building, you're missing the total radon risk

reduction, sorry, you're missing the total radon risk of the structure. What's more is that many of the occupants in these buildings are living either rural or affordable housing, which will make it more difficult for them to afford a radon reduction system.

This is especially true of any building that has tenants. Not only are many tenants from lower income, but as non-owners they have very little to no control over the radon issues. Sure they can test their own unit to see what the radon level is. But they do not retain the right to mitigate their own unit without approval of a building owner. Following the MDR standards would help alleviate these issues. That's right.

So my final slide is our recommendations FHFA is to adopt the use of the AARST Consensus based standards for radon measurement and mitigation. This is the best approach to protecting public health and promoting health equity, while also lowering liability concerns of building owners and lenders. In addition, there are many in the radon world that have extensive expertise and the wherewithal to help in the training and dissemination of this information. I appreciate your time today. Thank you for the opportunity to speak.

**Mary Baehr:**

Thank you. Our next speaker is Carlton Aihara from Ecosense.

**Carlton Aihara:**

Hello, this is Carlton. And first of all, I would like to extend my appreciation to the FHFA for providing the opportunity to share our thoughts on how our company can contribute to protect the health and wellbeing of their citizens.

My name is Carlton Aihara, Vice President of Ecosense and we're based in San Jose, California. We are a technology driven company focused on developing radon detection and monitoring solutions that offer one of the better detectors in the market for real time and continuous monitoring purposes. We think our Wi Fi enabled product EcoCube is going to be applicable to the real time and continuous monitoring of radon levels in multifamily dwelling units. And I would like to take this opportunity to talk about how the EcoCube can be applied to the situation. Next slide, please.

So you know, as we've been talking throughout this session, you know, radon gas, I don't need to repeat some of these messages. But, you know, it's odorless, faceless, colorless, radioactive, and it causes over 20,000 deaths in North America, and the leading cause of lung cancer among nonsmokers.

And where are we focused our solution is to make sure that we provide a way to, you know, monitor and measure the radon levels in both fast, accurate and reliable method. Okay, next slide.

Now there's something very important that I wanted to point out, which is the fact that the radon levels in a typical environment will fluctuate over time. We did this measurement, you know, over 90 days, for example and, you know, a lot of things could impact this, including weather. And you know, in the cold months if you close all the windows, the radon vents accumulate in your -- inside the house. So that will lead to, you know, higher readings.

In the summer, when people open up the window, well that naturally gives that flow through the house to, you know, sort of take the radon out of the problem area so you tend to read low.

So one of the things that we were focusing on is the fact that, you know, for a way to assess the radon levels accurately is to, you know, do it over a long term. You know, we're saying 90 days, you know, sometimes it could be over a year, depending on the season. But here I think it's very critical that you have the ability to do the long term monitoring, and of course, it has to be, you know, real time and accurate at the same time. Okay, next slide.

Now I'm not going to get into a lot of this discussion, but we have a line of products that assess and defects. And they're all spec the same. In other words, our professional model, which is NRPB and NSP certified, it's also -- has the same, you know, detection technology as our consumer products. Radon I and also the EcoCube.

But I wanted to feature the EcoCube, next slide. Because the biggest feature here is that it's Wi Fi enabled. So in a typical situation of multi dwelling units, where you may want to monitor, you know, multiple units or multiple dwellings, then on a single lab, you can actually monitor, you know, 20, 30, you know, up to 100 devices all at the same time on a single app.

And the other thing is that it's a Wi Fi base. In other words, you can monitor this remotely without, you know, being there, you know, physically, you know, in the premise of the dwelling. So I think this is one of the solutions that I think it will make sense in the mall by dwelling situation. Okay, next slide.

So just, you know, a quick picture on some of the applications and multifamily homes, of course schools, daycares, you know, anywhere where a long term and continuous monitoring is required.

I think the solution will work best for that. And to the last slide, please.

Yeah, so just in summary, as you know the radon has infected, you know, every Americans and in North America, and as I mentioned, it's very important to assess the radon levels over long periods of time, as I showed in the graph. And of course, the real time continuous monitoring is critical in determining the exact radon level and the variances that may cause in the house. And the remote monitoring offers, the convenience in nonobtrusive means to check radon levels. Thank you very much.

**Mary Owens:**

All right. Thank you very much. We are now going to move on to the next session of our listening session. This is the Effects on Multifamily and Radon Industries. Our first speaker is Kyle Hoylman from the American Association of Radon Scientists and Technologists.

**Kyle Hoylman:**

Good afternoon. Thank you to FHFA for hosting this session. My comments are related to the impact adoption of the EPA recommended consensus standards by the GSEs will have on the multifamily market.

A lot of information has been circulating about the perceived impact on transactional delays and costs related to this policy. I'm here to tell you that perception is not always reflective of reality.

In regard to transactional delays, the reality is adoption of the standards will have little to no impact. In fact, when compared to the existing policies, timing will actually be reduced.

For example, Freddie's current policy of conducting a short term test prior to closing, followed by a long term test of at least 91 days when the potential for radon is confirmed, creates a greater impact on timing than simply following the standard. The standard provides options that add as little as two days to the follow up testing process, not three months.

As we've heard from other speakers, properly characterizing buildings requires testing 100% of ground contact units. The practice of characterizing only 10% of ground contact units takes the same amount of time as testing 100%. Indeed, testing ten units in ten buildings takes the same amount of transactional time as testing 100 units in those same ten buildings.

We've analyzed more than 1,000 multifamily projects. The average turnaround time for testing is 35.4 days from client engagement.



Other due diligence items that may present a lesser health risk or concern often take as long or longer to complete prior to closing.

Other items we've heard should be considered, consideration for permitting radon testing after closing. Current policy requires pre-closing testing, yet we've heard nothing about the laser capacity concerns. This consideration is problematic, as the assumption that all units have the potential for a radon problem would need to be made in order to determine an adequate repair escrow.

This approach would likely have unintended negative impacts on the transaction. Simply working with the options included in the standard to complete pre-closing testing would seem to make the most sense.

Consideration for exempting certain property types, such as affordable and rural housing. These property types are not currently exempted, yet we've heard nothing about delays or capacity concerns. Exempting roughly 15% of properties in the absence of supporting data is bad policy. Why should residents living in these housing types not be afforded the same protection as those who don't?

Consideration for exempting properties located in low risk areas. Testing in low risk areas is not currently exempted, yet we've heard nothing about delays or capacity concerns. In fact, Freddie's guidelines specifically states, Freddie Mac will not accept use of the radon -- EPA radon zone map designation as a valid reason for not testing. The EPA advises that the map should not be used in lieu of testing during real estate transactions. Actual testing data suggests that radon potential in low risk areas is much higher than previously thought. Why should residents living in these geographical locations not be afforded the same protection as those who don't?

Finally, we've heard this policy will create a significant economic burden. Our analysis of this item suggests an economic impact when amortized over the loan term of less than a penny per day per unit. When coupled with the cost benefit numbers we've seen, common sense would dictate supporting the adoption of this policy.

Bottom line, if transactional timing and cost were significant issues, they would be significant issues today. They don't appear to be though. Deviating from the EPA recommended consensus standards to address concerns that may not be valid, will continue to have the same impact on the residents living in these communities. Here's an example of that impact. Next slide, please.

This property was located in Lexington, Kentucky. In accordance with the existing Friday policy 10% screening was conducted in 18 buildings. Fourteen of those buildings contained a residential unit that had concentrations above the EPA action level. At that point, the policy would stop, fix those 14 units, clear those 14 units, disregard any other unit in any other building on the property or the exposure of radon to those persons living in those units and move on.

Instead, the client chose to do the right thing. They assessed 100% of the ground contact units. And what we found was 108, not 14, of the 144 residential units contained radon concentrations above the EPA action level. In fact, 16 of those units were greater than 30 picocuries per liter of air, which is the nuclear regulatory number for personal protection.

None of these were on the initial screening list. And the client chose to mitigate 100 residential units where the policy would have stopped short. We see this as a protection issue for the occupants of the building, as well as a liability management issue for building and property owners.

While the impact of this policy on the multifamily market is minimal, the impact of the residents living in these communities is tremendous. If the intention of the GSEs radon policy is to protect residents from exposure to unsafe concentrations of cancer causing radioactive radon gas, while providing for important risk and liability protections for its multifamily stakeholders, full adoption of the EPA recommended consensus standards is the right policy decision. Thank you for providing me with the time today to address this group.

**Mary Owens:** Thank you. Our next speaker is Mike Flood from the Mortgage Bankers Association.

**Mike Flood:** Good afternoon. My name is Mike Flood, I'm a Senior Vice President at MBA. Our members represent 100% of GSE lenders, FHA lenders --

**Mary Owens:** Mike, you are muted.

**Mike Flood:** Of course I am. Somebody had to do it. My name is Mike Flood with MBA. And our lenders represent 100% of GSE lenders, 100% of FHA lenders, and this is a substantial majority of commercial multifamily lenders.

Mr. Hoylman, and if I'm not saying your name, right. I respect your comments. I'm going to take exception to some, I will agree with

others. And I look forward to working with you and everybody else on this call to find common ground that allows us to safely protect tenants and produce sorely needed affordable housing.

So the question is, how do we get there? And let's start with a key objective of risk. What do we believe in? Let's start with the end. As an industry, we believe in a risk based approach to testing standards that is periodically reviewed to ensure it remains relevant, leverages on data on HUDs experience with its current implementation of the standard, and is based upon sound science.

And we believe a risk based approach is necessary for a few reasons. Certainly, when you think about 100%, that's a difficult standard for anyone to match. Today, we also heard that we should not rely upon EPA maps for risk, but we should adopt EPA's voluntary standard as a requirement, which is a bit of a predicament.

On top of that, Mr. Hoylman, I respectfully disagree that there's a consensus standard. We have two at HUD alone, one for multifamily and one for seniors housing. Then we have -- the GSEs have their own standards. Some of the states have their own standards, and the private sector has their own. So it's good that we're having this discussion so we can figure out the right approach.

And finally, the new standard calls for 10% testing of units above the ground floor, but at the same time EPA states the testing is unnecessary for residential units above that same second floor. So it's good for us to figure this out and find the right approach home.

The second objective is to create a workable timeline for implementation of any increased radon standards. We recommend creating a timeline that takes into account (a) the increased demand for radon testing standards should enhancements occur, and (b) I agree with Mr. Hoylman, let's allow radon testing and mitigation to occur post-closing.

This allows a few things to happen, regardless of the amount of radon testing that we enhance, this will allow for the industry to build up the capacity of radon testers that are certified, that are necessary to complete it safely, and allow the industry to continue to produce affordable housing that we all know is sorely needed.

Now let me talk a little bit about the implementation issues that we are seeing. And the way we've been able to do this, as you all know is HUD has had this program, even though we disagree with it, in place for about six months, and we've collected some anecdotal information from our lenders.

And unfortunately, Mr. Hoylman some of it disagrees with what you had. We are finding that the average delay in the pipeline is about eight weeks when we're looking for a radon tester. Why is this hard to see? Well right now HUD has as one of the largest pipelines in history due to the economy. They're doing a great job. But we are finding about an eight week delay.

Two, radon testers are in short supply. Let me put this in context. Our data shows that there are less than 300 certified multifamily radon testers for the entire country. Put this in even further context, the states of California, Texas and Florida, there are only 22 trained qualified radon testers.

And finally, while it may not be the greatest cost in the world, we are finding out that since there is increased demand in the HUD product, that the cost of radon testing, the costs are increased by two to three times from \$5,000 to \$20,000, depending on the complexity of the building.

And while I hear Mr. Hoylman at one -- saying it's one cent per day, this is not Sally Struthers, this is cancer. Let's make sure we spend dollars prudently and on a risk based approach.

And then finally, we have found at present no meaningful differences in radon testing. Again, we understand that this is six months of anecdotes. You never put national themes on a small representative sample. But this is why we ask that we continue to collect data from HUDs program and make sure we right size testing going forward.

And finally, what's important about the HUD program is let's remember that it is 1/10 the size of the GSE program. So while we are all for enhanced radon testing, we are all for protecting our tenants, if we implement the standard at HUD it's going to have a 10x effect on the GSEs. Why do I say that? The pipeline is 1/10 the size. HUD is typically around 160,000 units a year, the GSE is around 1.6 million units a year.

So the delays that we are concerned about, the post-closing that we were looking for, and the reason for risk based approach is so that we can do that balance between protecting people as fully as possible, but at the same time allowing us to produce the affordable housing that the Biden Administration and the rest of us believe is necessary.

So in conclusion, and we believe in four things, a risk based approach to testing that aligns with the risk of contracting cancer

over a seven year time horizon that's posed by radon. An approach that is based upon sound science, and we ask you all to pay careful attention to the Earth and Neary studies. A reasonable timeline to implement radon -- enhanced radon standards with the ability to complete radon testing and mitigation post-closing. And the use of HUDs data to inform the process.

We thank you all for holding this hearing. We thank you for everyone's participation. We look forward to working with you going forward and we will -- follow us -- we will send a follow up letter with these recommendations involved in it from the industry so that everybody has a chance to review and make sure we have a transparent process. Thank you very much.

**Mary Owens:**

Great, thank you so much. Our next speaker is Dan Brendes from Berkadia.

**Dan Brendes:**

Good afternoon. My name is Dan Brendes and I am Senior Vice President for GSE Lending with Berkadia, a private commercial mortgage banking investment sales and servicing company and one of the largest Freddie Mac, Fannie Mae and FHA multifamily lenders.

I've served in the real estate finance industry for over 30 years, the last 20 years focused on multifamily. And I am currently a member of the Fannie Mae DUS Advisory Council.

So thank you for allowing me to speak today. I stand behind the goal of effective radon testing and ensuring we are financing safe and affordable housing. Enhanced radon testing is important, but I believe the current proposal calling for 100% testing of ground floor units and 10% of above ground level units actually impairs our ability to effectively address this issue.

The health implications associated with high radon levels is a serious issue. But moving so rapidly to these new protocols ignores a number of real life challenges, which include the following.

First, as a testing industry there are real logistical and capacity issues in meeting the proposed testing requirements. This includes everything from enough canisters, to technicians, to scientists capable of administering, reading and delivering testing results across the country.

Second, radon levels vary widely based on geography. It matters where you are located. EPA's radon maps identify known concentrations and should be used to focus enhance testing efforts.

And third, there will be an immediate and negative impact on the GSEs financing system, in terms of time, cost and process for both property owners and tenants. Consider that FHA finances approximately 160,000 units per year, we are going to overlay this new requirement on a model the FHFA, or excuse me the GSEs, that finances ten times the number of units.

We know there are some issues with the current FHA implement implementation. And I foresee those same issues in a larger testing environment with the GSEs.

We need to focus on the data and use our available resources to mitigate in areas where we have high known radon levels. The recommended testing completely overestimates the industry's ability to administer these new protocols. We can do more to effectively mitigate radon by focusing resources on those areas known to have high radon levels.

It is important to address this issue without paralyzing the industry that is working every day to provide safe and affordable housing. I support a risk based approach to testing. I believe that additional data and study will enable us to formulate a more thoughtful and effective plan for addressing radon levels in this industry. A plan that can be effectively implemented and evaluated over time. This concludes my remarks and thank you for your time.

Mary Owens:

Thank you. Our next speaker is David Wilson, formerly of the U.S. Department of Energy, Oak Ridge Lab.

David Wilson:

Thank you. First slide, please. In a nutshell, I've been doing radon research since about 1986. However, and primarily with the DoD, which has a large number of family housing multifamily predominantly within, both international and domestic. We've also been doing involved in radon mitigation research and about 1,500 multifamily housing units. Next slide, please.

The key consideration here that you need to address, and let me just kind of back up a little bit. A lot of people are unaware of this, but when I first started working at ORL, I was tasked to look at, on the peripherals, of lead based paint and asbestos, sampling strategies within multifamily housing.

What I found out was that if you tested a few units, and you tested positive lead and asbestos, odds are pretty good that most of them did have it. That transitioned me over to doing radon. And what I found out with radon is radon doesn't exactly play by the same rules. Whereas with lead and asbestos, the houses were built at

about the same time, using the same builder, a lot of other considerations. So it makes sense that the same building materials that contain lead and asbestos were incorporated.

Radon is different. It's a micro geology. It's a footprint type argument. And early on in '88 to '92 we worked very closely with the U.S. military, primarily the Navy, in terms of looking at statistical sampling considerations in terms of dealing with multifamily housing.

The problem that we got into is that when you statistically back into a zero, or one unit in a population as having radon, traditional environmental statistics kind of fall apart. There were a series of publications that we put out that described this particular problem.

Ironically, the Monte Carlo method is the best way to model this. For people that were discussing statistics earlier, my recommendation is find ten data sets that you're happy with, and then apply Monte Carlo methods on it. In terms of one -- say one through ten units, 1% to 10% positive. And run through the process in terms of that.

At the conclusion of our studies though, let me just kind of get back on track here. The U.S. Navy and Marine Corps, after we looked at this 90 ways from Sunday, and they are, you know, family housing organization with a finite budget as well, they concluded that you have to test 100%.

Their policy is very clear. They want to protect all people from exposure to elevated radon. If you deviate from that, if you go to a lower number, you need to be honest and upfront with people that we're protecting almost everybody, or a certain number of people, but we're not catching that -- we're not catching it all.

The other thing that we found in working out the DoD data set was the fact that around five years seems to be a good time to do it. You need to be planning on that for the remaining lifetime of the, you know, of the building.

The other thing that you get into sometimes in terms of dealing with in family housing and stuff like that, is that mitigation, oh my God, if I ask the question I have to fix it. How are we going to fix it? Mitigation is very well established. It's been established for over 30 years in terms of the approach with that, you know, in that particular regard.

The current standards addresses a lot of questions both on testing and mitigation that were provided to the industry for answers. In

terms of energy efficiency, in terms of upgrading envelopes, etc., it is a little complicated in terms of going forward. Theoretically, when you reduce the air change by 50% you double the radon levels. In practice it's entirely different.

If you take old housing stock that, and you fix the stack effect, believe it or not you can make the radon levels go down. However, in the newer stock that's being built in low radon areas like zone three that have extremely tight envelopes within say less than 0.3, the radon levels become entirely unpredictable.

The bottom line is the only way to know is to test in this population. With respect to radon resistant new construction with it, there's ancillary data that clearly shows that you put some pipe in, pass some stat, radon levels in the population do appear to be lower.

But no home is ever radon proof. But one thing I can say working with thousands of military homes that had RNC installed, is the fact that the end game, the fix, if the RNC is installed properly, is very predictable. It's a fan. It's a performance indicator, and a post mitigation test when you're done. So that becomes very easy on the on the back side. And for that particular reason the Navy and Marine Corps now require that all installations are RNC incorporated in their family housing. Thank you.

**Mary Owens:**

Thank you. Our next speaker is Ed Hussey from Sabal Capital Partners.

**Ed Hussey:**

Thank you. First, I'd like to thank FHFA for organizing this listening session, and for taking the time to listen to all sides of the opinions on this issue, which is an issue in our industry. My name is Ed Hussey, and I'm the Head of Agency Lending for Sabal Capital Partners. We're both a Freddie Mac, Optigo multifamily lender, including their small balance loan program and a Fannie Mae small balance lender. As you can see, our area of specialty is small balance.

A primary concern to any agency lender, and to our owners, is the safety of our tenants. That is why this is such an important issue. Another concern is affordability of housing. When you look at the small balance, the five to 50 unit programs, that represents close to 50% of the rental units in the country. It also represents a lot of naturally occurring affordable unit. Units that just [inaudible] in the tenants that they are geared towards they represent affordable housing.



They also tend to have more owners that own three to five properties, not large owners in multiple regions. The cost of doing business matters a lot to the small owners. We have to make sure that we continue to provide affordable lending opportunities so that they can maintain and preserve their affordable rental at the housing for these tenants.

So due diligence costs matter a great deal to the small housing owner. We need to make sure that we are doing effective due diligence. We need to make sure that the due diligence is not only cost effective, but scientifically effective in identifying risks associated with it.

That's why we believe that it's important that this new measure being considered be studied thoroughly. And if implemented, implemented in a proven risk base gradual method, not an immediate term. As many have discussed, with HUD implementing this policy there has already been an increase in the amount of time and costs associated with radon testing, due to fewer number of licensed testers and to lack of laboratory capacity to be able to process this.

Also as mentioned, the number of loans multifamily units that HUD is involved with in multi -- in financing, is dramatically less than what the agencies are doing. And should they be added to this process, it would dramatically change the timeline involved with due diligence. That's why we support a reasoned view, an analysis of HUDs experience as they go through this. And we support a post-closing testing and implementation of this should it becomes to pass.

We also support the lenders recommendations already sent to FHFA regarding this. We believe this is an important topic and we want to continue the discussion to make sure that the safety of our tenants is also analyzed with the affordability of their housing. Thank you.

**Mary Owens:**

Thank you. Our next speaker is Daryl Carter from Avanath.

**Daryl Carter:**

Good afternoon everyone. I am Daryl Carter, Founder and CEO of Avanath Capital Management. Director Thompson, I express my gratitude to you and your colleagues at FHFA for convening this very important forum.

Avanath is an owner/operator of 90 apartment communities comprising 12,000 apartment homes. Our properties are in major metropolitan markets, mainly in high cost markets such as Los Angeles, San Francisco, New York, DC and Boston. We own affordable rent regulated properties, low income housing tax credit

properties, project based section eight and other affordable properties.

Fifty percent our residents our section eight voucher recipients, 70% of our properties are located in communities of color. I am also a former chairman of the National Multifamily Housing Council. And I fully echo the comments made earlier by David Borsos.

We've worked diligently to mitigate all environmental hazards in our properties. And we fully support all efforts to make housing safer. Nevertheless creating and preserving affordable housing is incredibly challenging. Excessive protocols and higher due diligence costs impacts housing affordability. And certainly my old friend, Mr. Hussey he just mentioned the additional costs on small owners, but it also happens to impact larger owners.

The other thing is that many on the call are implying that testing is done in a laboratory. And the comment that it would take only 34 days, it is no function of reality. You're not testing in a laboratory, you are entering someone's home, and that is one of the homes of our residents. So the logistics are extremely challenging and make, you know, conflict with local tenant access laws.

You know, I -- we're the first in two hours owner/operator that's actually in the trenches dealing with this when we refinance or are acquiring a property. But there are municipal notice provisions with specific protocols for landlords or consultants to enter tenants

I mean particularly in a place like New York City, these are very, very complicated. And so we may give a tenant notice that they're going to be tested. And if the consultant doesn't show up, then that may - - then we have to do it all over again.

The other thing is placing canisters in apartment is disruptive to residents. And most consultants are ill-equipped to provide the appropriate explanation to our residents.

Also, for liability reasons a consultant cannot enter an apartment without one of our staff members. So testing requires the deployment of one of our onsite team members, which adds additional costs. While that maintenance person is accompanying a consultant all day inspecting 100% of the ground floor units, that is maintenance that they ought to be doing to benefit that apartment community.

Also residents push back and are quite suspicious of canisters left in their homes. Also tests can be disrupted by pets and small children.

If the 100% requirements are to be implemented, there should be provisions for post-closing testing.

One of the things that has been rarely mentioned in, you know, the last two and a half plus hours are mitigations. And the one point I'd like to make that the mitigations, which are some form of venting, is actually very inexpensive. We have performed mitigation on a number of properties. Very few people on this call have discussed mitigation.

There are brilliant scientists, consultants and researchers participating on this forum. Using the comparisons of the pandemic, there seems to be far more focus on testing than creating a vaccine, which is mitigation. We should use some of this brilliance and resource to focus on better and cheaper mitigation methods that, you know, and if we -- that will go along with our testing protocols. Again, I thank FHFA for allowing me to testify and thank you very, very much.

Mary Owens: Thank you. Our next speaker is Bill Tryon from Partner Engineering and Science.

Bill Tryon: Thanks and thanks for the opportunity to provide feedback today. I'm the Chief Strategy Officer for Partner Engineering and Science. And I've been in the environmental industry for over 30 years and have experience on both the lending and consulting side. For 20 years I ran the environmental due diligence operations for Wells Fargo Commercial Real Estate. And for the last ten years I've been in consulting.

Partner Engineering and Science is a major provider of due diligence reports, including environmental engineering, and seismic investigations for commercial real estate. And we have a big practice that supports Fannie Mae, Freddie Mac and HUD loans, in addition to other commercial lenders, investors and owners.

Some of our clients ask us to provide some feedback, since we routinely complete radon assessments in the clients with [inaudible] National Radon Testing Standards now. We have experience with radon testing and multifamily properties, as well as providing appropriate recommendations with our own reports to satisfy HUD and the existing Fannie and Freddie requirements. And we think this gives us a unique perspective on the costs and timing associated with compliance with the revision to the standards.

Just to be clear, we're not for or against a change, we just want to provide information so that people are taking action from a position of knowledge.

I think it's obvious that if you increase testing costs will go up. Currently, Fannie Mae and Freddie Mac radon sampling tends to cost less than \$1,000 per property, as compared to \$5,000 to \$10,000 per property for HUD transactions in the revised protocol.

Plus, about 25% of properties will -- in the HUD protocols have come back with elevated radon concentrations that require additional confirmation sampling and mitigation, which we've seen run in the range of \$2,000 to \$4,000 in the last year, or per unit in the last year. Cost can vary a lot depending on building design and conditions. But that's a typical cost that we're seeing.

We also see some delays in the time to collect samples. As was mentioned earlier, finding the right people to collect samples can be problematic. There is an additional time element to the collection of samples and placement of canisters and collection of the canisters at the end of a project. And in the event that some canisters are destroyed, retesting can be required, which will further extend the requirements for sampling.

We have a lot of licensed professionals on staff. They're all busy, and they will get busier when this is implemented. As someone mentioned earlier, there could be a 10x impact on the extent of sampling involved. And while the laboratories may be capable of handling that volume, we believe that the radon professional industry is not.

At Partner we have a lot of licensed professionals, but we would need time to conduct additional training to staff that needs of revised standards. In zone one areas in the country there are a lot of licensed professionals now. But there's a real shortage in areas with low radon zones, or low radon concentrations like zone three.

We'll commit ourselves to training and certifying a lot of people around the country to meet the demand. But to build capacity the industry will need more time. A phased implementation of changes would allow for a ramp up within the professional community.

Finally, you would think we would be excited about changes to sampling requirements because they would result in increased fees for our firm, but we really have mixed feelings. We're concerned that apartment owners will react negatively to this process, and that we will be caught in the middle.

Our records show that there are plenty of lenders who don't require radon sampling at all. So the change could actually encourage less sampling if borrowers moved to other sources of financing. If there is a change in testing requirements, you can count on us to work hard to educate lenders and borrowers about the process and the value of testing.

Again, thanks for the opportunity to provide some feedback today. And please feel free to reach out if we can help in any other way. Thanks.

**Mary Owens:**

Great, thank you. Our next speaker is David McCarthy from CRE Finance Council.

**David McCarthy:**

Good afternoon. I'm David McCarthy, Senior Director for Policy and Government Relations at the Commercial Real Estate Finance Council, also known as CREFC.

CREFC is a trade organization that represents more than 300 commercial and multifamily lenders, servicers and investors and third party service providers including participants in the enterprise multifamily space. CREFC is dedicated to promoting liquidity, transparency and efficiency in these markets.

Multifamily lenders and investors do not want renters exposed to radon. Affordable and market rate housing should be safe housing. We support an increase in radon testing and we as an industry are committed to implementing the most effective testing protocols.

Our industry stands ready to work to detect and mitigate radon exposure in multifamily properties, and we offer the following four points.

First, testing infrastructure must support an increase in radon testing demand. We have serious concerns that rapid adoption of the proposed standards will create an unprecedented national demand without adequate testing capacity.

Second, increases should be focused and based initially on risk rather than a one size fits all. Increased testing should use available data and science to identify at risk areas and properties to identify and mitigate radon exposure where it is most likely to occur.

Third, our industry is ready to work with FHFA and the Enterprises to implement new testing standards and address operational challenges. And we'll provide some suggestions.

And finally, while the focus here today is on radon in multifamily buildings, we know that radon does not only exist in multifamily units. Government policy should not overlook radon risks in single family homes.

So more detail on our recommendations. First, overburdened testing capacity is a threat. CREFC supports a risk spaced scientific approach that provides time for the testing industry to build capacity to meet demand. A higher radon testing requirement is futile, if it is not supported by a robust testing infrastructure. An Enterprise driven demand increase on testing will have impacts far beyond the Enterprises own operations, as non-Enterprise multifamily properties will still need access to radon testing.

A strain testing infrastructure will siphon testing resources from these high risk areas and quick ramp up without qualified testers could call into question results and exacerbate the situation for at risk tenants.

HUD's adoption of the proposed standards in December 2020 serves as an early warning signal. Environmental testing firms report that the increased thresholds on HUDs requirements have -- for testing have already extended radon testing timelines. And the Enterprises annually produce ten times the number of multifamily units compared to HUD. Testing timelines are expected to increase once the Enterprise increases their testing.

Now while HUD has already implemented the proposed standards, the standards have been in place for less than a year. Utilizing HUD data, FHFA should study the impact from the increased demand and calibrate a phased approach that matches testing supply with demand.

Moving to our second point that testing enhancement should be risk based. Again, affordable housing should be safe. Market rate housing should be safe. A risk based approach focused on testing -- it can focus testing resources to buildings that need it most and allow the testing industry to scale up.

Radon testing is intrusive to tenants and their -- and normal actions such as opening windows or other common activity could invalidate testing results. Thus, it's important to educate and focus resources to overcome these issues.

Several states with higher incidence of radon occurrence have already determined that 100% ground floor testing requirements are necessary, and property owners and lenders work with these

qualified testers in those states to meet those requirements. But a national requirement needs to align with the risk posed. At minimum policymakers should use available and new data records and geological features in formulating a risk based approach.

Finally, our industry is ready to work with FHFA to implement new testing standards and address operational challenges. HUD's experience can serve as a valuable tool in crafting and implementing a testing policy.

A few quick points to note. The nature of a HUD loan has a longer timeframe to complete than an Enterprise loan. Radon testing on HUD properties can be at least a six to eight week process, though HUD allows for a four month window for testing completion.

Meanwhile, the current Enterprise loan closing is 60 to 90 days, and radon testing generally needs to be completed prior to loan closing. Allowing for some post-closing testing as the industry awaits an increase in testing capabilities will alleviate timing pressures.

Finally, FHFA should commit to periodically reviewing the standards as additional data and experience add to our understanding of the radon risk. Thank you for the time and the opportunity to speak and we look forward to continuing this important conversation.

**Mary Owens:**

Thank you. Our next speaker is Rick Wolf from Greystone and Company.

**Rick Wolf:**

Hi my name is Rick Wolf. I'm an EDP at Greystone. I oversee Production, particularly production of the -- our small business. I want to thank FHFA for hosting this forum. This very important topics and appreciate the opportunity and the depths that the speakers have offered here today.

I also want to say that I do, you know, in listening to what Mike and Dan and Ed and Daryl say, I support their comments and can appreciate the need for balance to address this complex issue.

I think the thing that I would want to emphasize is that the -- particularly in a small loan space, we're talking five to 50 units, and I think Ed had mentioned that's roughly 50% of housing stock. There's a lot of units there. And to get into them is a time consuming and logistical, significant effort.

There's also alternative sources of financing in this space. And I want to make sure, if we're solving a problem of health and safety, which I think we all agree and I certainly do, is something that we want to address the need to address.

I think that it's important that we don't simply move people to other sources of financing that don't require this testing. I would recommend and support a balanced approach that is, as Mike said, is a risk based approach. Is based in science where we can look at the data and appropriately calibrate the methodology, and one that has a reasonable timeline for implementation so that we're not simply having people move to a source of financing that does not require testing, or has far more lacks standards.

And maybe offers a financing solution that is not in the best interest of the borrower that may move them to short term financing, that exposes them to other risks like interest rate risk. Which could also impact rents, and also impact the tenants and the quality of the tenants.

Keeping them within a Fannie or Freddie loan is important for a lot of reasons, not just for the interest rate that they may get. The loan product's important, the standard of care, life safety, health safety that the agencies promote, is very important.

And I feel that if we push people away into other sources of financing that don't have a radon standard, we're not helping them in the long run. You're not preserving affordable housing, you're not preserving life safety, and you're not necessarily solving the safety issue that we're talking about here today.

So I would support a balanced approach, a risk based approach, something with a reasonable timeline, and then something with the post-closing requirements to remediate. And so with that, I thank everybody, and again I thank FHFA for this opportunity to speak. I hope we can find a balanced approach here and keep the flow of transactions moving and keep the business moving. Thank you.

**Mary Owens:**

Thank you. Our next speaker is David Pearson, from Related.

**David Pearson:**

Hi good afternoon, and thank you very much to the FHFA for convening this session and allowing me the opportunity to speak. I'm David Pearson. I'm the Senior Vice President for Related Affordable, which is the division of the Related companies that focuses exclusively on the preservation and renovation of existing affordable multifamily and senior apartments throughout the country.

Related Affordable oversees approximately 45,000 units of multifamily affordable properties throughout the country. And certainly providing a quality place for our residents to live that is a healthy environment, is of a topmost priority for us.



But I think what I wanted to reiterate was to echo a lot of what Daryl Carter said, from Avanath, a little bit ago. When a policy is created it certainly needs to recognize the realities on the ground. And the realities on the ground are that doing 100% of units pre-closing is just not going to be feasible at certain of these properties.

For one, sellers will not always allow us to access 100% of the units. Sometimes they don't have keys for 100% of the units. It takes staff time from them, as Darrell mentioned, because we need to be with the testers as they're going in a dropping off canisters in all these units.

There's a lot of logistics around not just radon testing, but all the various environmental testing that goes into the due diligence process, not to mention appraisals and market studies. There are multiple, multiple visits that need to occur at each acquisition or during a refinancing. And adding this additional layer of testing requirements on top of what exists, is going to create a much larger burden.

And the other aspect is that, you know, residents -- certain of the residents are frankly very suspicious of canisters that get left in their units for several days. We find that, you know, a number of them get thrown out the window or thrown in the garbage, damaged by pets, or children accidentally, which requires follow up testing and follow up testing. And after multiple tries, we're still not able to get to 100% compliance to all ground floor units.

So there needs to be some aspects of post-closing requirements to follow up for units that are not able to be obtained prior to closing. And some reasonable level of percentage units that need to be required before closing. Otherwise it's going to result in borrowers having to choose other lenders to ensure that they're able to close out their acquisition in a timely manner and successfully. Because this will just become a non-feasible financing tool for us to use if it puts our capital at risk. So I appreciate the opportunity to speak and look forward to seeing the outcome.

**Mary Owens:**

Thank you. Our next speaker is David Levy from Walker Dunlap.

**David Levy:**

Yes hello, good afternoon. My name is David Levy. I'm the Chief Credit Officer Walker & Dunlop. Walker & Dunlop is the largest Fannie Mae lender and also a top Freddie Mac Optigo seller/servicer. I've been underwriting multifamily loans for over 35 years and thus for have extensive experience in risk evaluation associated with multifamily housing.

And of course, I strongly agree with the intent to protect occupant health and safety in multifamily housing. Everybody here does. But there needs to be a practical approach to accomplish this. Without a one size fits all testing protocol it is infeasible to implement.

I've worked with the Fannie Mae DUS Advisory Council and others to provide written detailed feedback to FHFA on our major concerns. If the anti RS testing protocol was easily implemented in a non-disruptive manner, I would of course be supportive of it. But unfortunately, it is not.

As we mentioned earlier, radon levels vary widely across the country based on variations in geography. And we've proposed an alternative approach that recognizes this, and bridges the gap between where we are today and concerns raised regarding the appropriate level of testing.

Fannie Mae and Freddie Mac are the primary source for financing affordable multifamily housing in the country. These are incredibly important programs that have financed millions of units of affordable housing nationwide. Now more than ever, affordable housing is critically needed, and access to a safe, clean, affordable home is a catalyst for healthier communities.

Can we enhance the way that the agencies currently address radon? Absolutely, but let's do it in a way that follows the science and does not disrupt their mission.

One of the bases for concerns regarding the current testing protocols is the Earth Study. As we have heard, the results were not independently derived, as preference was given to obtaining data that included buildings with already known units with elevated radon.

And additionally, there are very large data gaps in the study as only 3% of the units included, were located in low radon areas. Therefore, in order to determine if changes to current Fannie Mae and Freddie Mac protocols should be made, unbiased and independent studies that are representative of different apartment types across different geographies, and utilizing appropriate follow up testing should be undertaken.

It's very important to this conversation to recognize that the majority of properties financed by Fannie Mae and Freddie Mac are not located in the high radon zones of the country. In fact, their greatest concentrations are in the lowest radon areas where the average radon levels are half of the EPA actual level.

There are also a number of concerns regarding implementation, and they relate to logistics, timing and costs. Adoption of such an expansive change in current radon testing protocols require a transparent review of these issues. And a careful analysis of the implications before implementation.

In regard to logistics and feasibility, in recognition that HUD has recently adopted the NCR protocol it's important to make clear that that lending promo is entirely different than Fannie Mae and Freddie Mac in many ways, but certainly in terms of scale and timing.

In terms of just pure scale, as you heard, Fannie Mae and Freddie Mac finance approximately 1.6 million housing units per year. This compares with HUD at about 160,000 units, or a fraction of that size. That equates to around 1,000 properties for HUD, compared to 10,000 properties for Fannie Mae and Freddie Mac.

If we assume two storeys per building just for relative comparison, HUD ground for testing would cover around 80,000 units per year versus 800,000 for Fannie Mae and Freddie Mac. The capacity and scale of the infrastructure required to support this type of testing does not currently exist. We've provided a detailed review of this deficiency to FHFA.

While recognizing that the HUD program is certainly smaller, prior to enacting any changes for Fannie Mae and Freddie Mac, let's of course perform a detailed review of their experience and findings. As proposed testing protocols even include upper floors of apartment properties, what were those results? What about buildings built over subterranean garages? How do results vary by geography?

**Mary Owens:**

You're at time, sir.

**David Levy:**

So lastly, I just wanted to say that we can certainly eliminate barriers to accessing Fannie Mae and Freddie Mac loan programs and develop a thoughtful alternative that also protects occupant health, we can do both. Thank you.

**Mary Owens:**

Thank you. This concludes our session on the Effects of Radon Testing and Mitigation on the Multifamily and Radon Industries. Our next session is a discussion on Radon Industry Capacity, Certification and Regulatory Environment. Our first speaker is Dallas Jones from the American Association of Radon Scientists and Technologists.

**Dallas Jones:** Thank you for the opportunity. My name again is Dallas Jones, and I am the Executive Director of the American Association of Radon.

**Mary Owens:** Mr. Jones, would you mind speaking up a little bit? It's a little bit hard to hear you.

**Dallas Jones:** Okay. Can you hear me now? Is this better?

**Mary Owens:** It's very faint.

**Dallas Jones:** How about now? Still very faint?

**Mary Owens:** That's a little better.

**Dallas Jones:** A little better. All right. I'll speak as loudly as I can. I don't know why my mic is not working well. So as I was saying, I am the Executive Director of the American Association of Radon Scientists and Technologists, keyword being scientists. We do focus on science.

Our association includes the oversight of the National Radon Proficiency Program, which has its own autonomous certification council, which determines the rules of that program and manages that. And then we also have the AARST Consortium on National Radon Standards, which is accredited and annually audited by the American National Standards Institute.

I personally co-founded my first radon business in 1988, and have about 25 years or more of radon training experience, before coming on board as the Executive Director. Next slide.

**Mary Owens:** Can please mute your phone if you're not speaking. Thank you.

**Dallas Jones:** So one of the arguments we've heard today is that individuals with no radon measurement training should be allowed perhaps to test properties as part of the due diligence process for radon assessment of multifamily properties.

When we look at the short timeframe and the affordability for an individual to receive the necessary training to perform such an important task correctly, there just isn't any reasonable excuse that we can see for using unqualified testers.

If you look here at our graph or the chart, you can see that the cost of the measurement professional exam prep course averages less than \$300 and takes only 16 hours to complete. If you add in the cost of the certification exam, the certification fees and even a copy of the multifamily measurement standard, you'll see that an

individual can complete the whole process in 20 hours for just over \$700, it's likely.

The other thing that I'd like to mention here is that capacity is accomplished by having trainers that are there to make sure that we get people brought up to speed with the skills and the job abilities needed.

So if you see here we have at least eight classroom courses that are NRPP approved for exam prep, and additional 13 NRPP approved courses that are offered on the web. These are either regularly scheduled as live on the web or on demand.

And then we have an additional for home study courses. My staff told me this morning, that in the last ten days we've had two additional applications for courses to be approved. So we're quite confident that we have the structure to train people. If we had six months of lead time from the announcement of AARST radon policy, we're quite confident in we have interviewed and had some conversations with trainers across the country that we could ramp up to meet the demand. Despite what you've been led to believe perhaps my some today. Next slide.

Currently, as far as the capacity, we have almost 2,300 individuals that are certified as radon measurement professionals in the NRPP , you add in almost 450 from the NRSV, and then over 4,000, almost 4,100 that are state licensed.

It's also just important for you to know that testing every ground floor a unit on a property doesn't slow the process any more than testing 10% or 25%. We've had extensive conversations with professionals that are out there doing these jobs. And deployment is still going to be done in a day and retrieval two days later. Yes, they may have to have some additional technicians there on site to get that done, but it's also noticed -- or notable that the industry has had plenty of practice performing the 100% testing standard within the HUD program.

And I think moving forward, it's not going to be a stretch for the industry to accommodate the GSEs with the capacity to move forward. Next slide.

**Mary Owens:**

That's time, if you could please wrap up your comments.

**Dallas Jones:**

Well final thing. Just recently we have done a quick search of the NRPP database. And we have found at least 36, large due diligence firms that are already have plenty of people that are certified. We verified these firms for the type of work they do. They cover over

100 locations across the country. And as many as 140 certified employees certified in radon measurements. The staff have seen a rise in applications for exams.

And again, we can't -- the important thing here is that we can't expect to have the capacity that everyone is wanting without having a policy in place that we can relate to the folks in the areas where we need to build that capacity. Thank you for the opportunity.

**Mary Owens:**

Okay, great, thank you. Our next speaker is Kim Steves from the Conference of Radiation Control Program Directors. And again, I wanted to remind everyone to please mute your phones, if you're not speaking, we're getting a little bit of feedback.

**Kim Steves:**

Do you have slides for me?

**Mary Owens:**

Just a moment, Kim, we're going to pull those up.

**Kim Steves:**

Thank you.

**Mary Owens:**

It appears we're having some technical difficulties. All right.

**Kim Steves:**

Thank you. My name is Kimberly Steves. I am the Director of the Kansas Radiation Control Program at Kansas Department of Health and Environment. And I currently serve on the Board of Directors for the Conference of Radiation Control Program Directors.

I have worked with the health businesses for the state of Kansas since 1988. As the Director of the Radiation Control Program for Kansas, I have been responsible for our state radon program for more than 30 years. This includes the direct leadership of this program during the time in which Kansas developed and worked through the legislative process to have laws approved, requiring the certification of radon professionals in our state, and the mandatory submittal of radon testing and mitigation data to the state. I am trained and certified in radon testing and mitigation. Next slide, please.

I'm speaking today as a representative of the Conference of Radiation Control Program Directors, otherwise known as CRCPD. Our primary membership is made up of radiation professionals in state and local governments. I currently sit on the Board of Directors of the CRCPD as its past chair.

The CRCPDs mission is to promote consistence in addressing and resolving radiation protection issues, to encourage high standards of quality in radiation protection programs, and to provide leadership in radiation safety and education.

CRCPD also provides a forum for centralized communication on radiation protection matters between states and federal governments and between individual states.

The reason I am here presenting to you today during this listening session is because our members have spoken. The state radon programs feel very strongly that adoption of policies utilizing the NCR multifamily radon standards by Freddie Mac and -- Freddie Mac and Fannie Mae is needed. Next slide, please.

Older standards which address radon testing and mitigation in multifamily buildings are no longer being maintained. The NCR multifamily standards are the most accurate and up to date standards current with the most recent science and technology.

Contrary to some of what's been said today, these standards were developed using science based and risk based processes. The consensus process used to develop and maintain the standards is universally accepted. The CRCPD and the state radon programs are committed to the use and adoption of these NCR standards. Next slide.

What I'm sharing here is a table illustrating the states which currently have legal requirements for certified or licensed individuals to provide radon testing and mitigation services. As you can see, the NCR standards are the primary source of protocols for performing radon work. With these states any alteration or modification to the standards would put the radon professional in violation of state law.

In August 2019, EPA issued guidance on the use of voluntary consensus standards for state indoor radon grant recipients to alert the state to the agency, the EPA is recommendations, to reference the most current voluntary consensus based standards when implementing their radon program. The NCR standard, which is the most current, is not an EPA standard.

As I mentioned previously, along with representing CRCPD, I am also representing the program of the Kansas Radiation Control Program. Our program is in the process of updating our own regulations to adopt the NCR standards, instead of the now retired old EPA standards. It is a slow process but moving forward and I know several of the other states on this list are also in that process. Next slide.

We cannot use radon data to determine radon risk. There is no way to know if a building or unit has elevated radon except by

performing a radon test. Radon data only tells us the potential. It is important to emphasize that as more data becomes available, greater potential for elevated radon is being identified throughout the United States. With more energy efficient building practices mandated in code and in lending policy, this trend is expected to continue.

The 20 states which have laws requiring radon professionals to be certified or licensed, also require that radon testing and mitigation data conducted in their state be submitted to the state program. If FHFA wishes to review radon data associated with their previous Fannie Mae and Freddie Mac loans, those 20 states should have been provided that data by the loan lists, and CRCPD is happy to review those loan lists and coordinate with our states to share that data with FHFA. Next slide.

To conclude, the state and the CRCPD the state radon programs and the CRCPD strongly support incorporation of policies requiring that Fannie Mae and Freddie Mac utilize the EMCR radon standards without modification for the testing and mitigation on multifamily buildings. We stand ready to provide expertise from state radon programs to consult in the development of a strong policy towards this goal. Thank you.

**Mary Owens:**

Thank you. Our next speaker is Brian Hanson from Kansas State University.

**Brian Hanson:**

Good afternoon. Thank you, Mary. I appreciate that. And I always hate following Kim because she's always out talks me by a mile. My name is Brian Hansin. I am the Coordinator for the Radon Programs that are housed at -- in the College of Engineering here at Kansas State University.

Since 2009 K-State has housed the national radon program services via cooperative agreement with the U.S. Environmental Protection Agency providing national public risk -- technical assistance on radon risk to all aspects of the public be it the industry, be it the real estate market, be it home buyers and sellers, etc.

Since 2002, I have been the Coordinator for the Kansas Radon Program, again working very closely with Kim Steve's, handling the state level radon technical assistance and public education and professional education here in Kansas.

K-State is also one of the original U.S. founded regional radon training centers from 1988, providing professional entry level and continued education for the radon industry. And since, for the last



four years now, we have housed the only university based secondary radon chamber as certified by the National Radon Proficiency Program.

The current lack of standardization related to radon testing protocols in federally and privately funded multifamily building projects does create substantial challenges for us here at K-State in terms of our provision of technical assistance to the public.

Our programs take weekly calls or more from lenders, buyers, sellers, environmental management companies, radon professionals, related to what the protocol is that they should be following when conducting multifamily measurement activities.

Currently, we have to refer those clients and those technical assistance contacts back to their specific finance agency, because of the lack of consistency of the radon testing protocols for multifamily situations, in order to properly determine what the environmental reporting requirements are going to be for the project in question.

Adoption of the NCR multifamily measurement standard would allow our program to refer those questions to a freely viewable, sole source documents, eliminating that challenge of what protocol am I supposed to be following.

Standardization of the testing protocols would provide multiple benefits. One, all questions concerning which protocol for testing to use would be answerable by reference to a standard. It is what it is in the document.

Two, error rates and measurement results would be greatly reduced due to the standardized deployment procedures, and standardization of quality assurance quality control activities across the industry.

Three, as has been mentioned previously, mitigation activities can be targeted to the elements of this building or buildings in question that actually have radon problems rather than needing to address an entire structure that might, quite frankly, be overkill in terms of radon reduction or control.

And four. standardization of measurement protocols would provide the greatest protection to end users of those spaces in regards to the radon gas exposures, i.e., our tenants. The K-State Radon Programs strongly support the adoption of the NCR multifamily measurement standard by Fannie Mae and Freddie Mac in relation to their multifamily residential finance programs.

I want to thank FHFA for having this meeting today, taking the time to listen to us all. And I would like to relinquish the rest of my time. Thank you.

**Mary Owens:**

Thank you. Our next speaker is Nate Burden from American Association of Radon Scientists and Technologists.

**Nate Burden:**

Hello. Yeah, this is Nate Burden. I want to thank again, the Federal Housing Finance Agency for inviting me to talk at this session. I appreciate that. I'm the current President of the Pennsylvania AARST Chapter, the American Association of Radon Scientists and Technologists.

Pennsylvania has about 40% of their homes have elevated levels above four. In fact, some of the highest radon levels have been found in the state of Pennsylvania. Central PA had radon levels over 3,000 picocuries per liter. Allentown, PA with the X level of four, actually as much as 17,000 picocuries per liter.

The question about zone maps, even in zone three areas such as Philadelphia, we have measured radon levels over 400 picocuries per liter. Therefore, using that map as a reason to concentrate where are you going to be doing radon testing is sort of a misnomer, you know, for that. Obviously with CDC, they are changing that.

As for that also as being a health -- a nuclear physicist and radon scientists, going to Carnegie Mellon, and I guess the concern here is also whether we have the capacity to do that. CPCPD specifically in 2019 trained all of their licensed testers and mitigators.

That's over 400 testers and mitigators just in the state of Pennsylvania, and [inaudible] and, you know, and the AARST NCR multifamily standard for radon measurement and radon mitigation. That was a two day course that was given to every single licensed radon tester that was just in residential, where the EPA felt it was necessary to get ahead of the game by training everyone in their state on multifamily housing, both for measurement and mitigation.

The second thing is having done houses and apartment buildings and things like that, the logistics is already built into the actual standards. There are sections that deal with communication. How that communication is supposed to be done. People are specially trained in that messaging to that. So that's not something that is intrusive I found in doing numerous apartment buildings, where that information is clearly communicated to the tenants, its coordinated where enough time is given that everybody can do what's the required amount in order to get an accurate test. And most tenants

want to know what the radon levels are. So that becomes very important.

Lastly, again it is appropriate and important for the GSE policy to require radon measurements and radon mitigation to adhere to the RS ANSI standards. And that basically, we feel radon induced lung cancer is preventable number one. And that when a good GSC policy that addresses radon actions following these standards, we can actually save lives and reduce the risk to the occupants.

Be aware that even in any zone, there is no specific way to know unless you do radon testing. So that is so critical to be done. As I said, lastly I do not find, at least for the buildings that I've tested, we've tested over 100 buildings, you know, in my career that doing this the correct way, and all of that is included in the actual NCR multifamily standards on communication to the client, to communications to the tenants. All that is carefully done in order to reduce the amount of impact to everyone involved. Thank you very much.

**Mary Owens:** Thank you. Our next speaker, Sara Jensen from the U.S. Department of Housing and Urban Development.

**Sara Jensen:** Hi everyone and Mary, do you have some slides? Yes, you do. Thank you. So food afternoon everyone. My name is Sara Jensen and I'm the --

**Mary Owens:** Sara, you are on mute all of a sudden. You were - there you go.

**Sara Jensen:** Okay, it looks like some -- Okay, well hi again. I'm the Housing Program Environmental Clearance Officer for the Office of Housing at HUD. And I'm here to speak today about housing experience with the radon policies for multifamily FHA, laid out in the map guide. And for healthcare FHA, under the Office of Residential Care Facilities laid out in the 232 handbooks. Next slide, please.

Some short background, in 2011 HUDs Office of Healthy Homes and Lead Hazard Control participated on the federal team led by EPA that developed a federal action plan on radon. The primary goal was incorporating radon testing and mitigation into HUD's programs.

In 2013, multifamily issued a notice called HUD Office of Multifamily Development Radon Policy. HUD reviewed industry practices, including those at Fannie Mae and Freddie Mac, and the resulting policy incorporated best practices for the detection and mitigation of radon.

The notice required NCR's testing standard that allowed 25% sampling of ground level unit, instead of 100% ground floor testing. The notice also encouraged, but did not require testing for 223 SP finance, located in zone three of the EPA zone map if confirmed by available state and local radon data or maps.

In 2016, this guidance was incorporated into NACA directly. In 2017, the Office of Residential Care Facilities incorporated the radon policy into the 232 handbooks. But with one important change. No zone three exception for 223 (f) refinance. This change was driven by EPA guidance and by radon field data showing elevated radon levels in projects located in zone three. HUD also considered that Freddie Mac and Fannie Mae did not allow zone three exception. Next slide, please.

There were some intermediate updates in 2018. But the next big policy change was the 2020 Mac Guide, published in December 2020 and effective March 18, 2021. This update requires 100% ground floor testing following the standard, and removes the zone three exceptions for 223(f) refinance. Both updates were driven by data, the radon field data for the zone three exception and the HUD funded Earth Study for the 100% ground floor testing.

And I do want to note that the Office of Residential Care Facilities is currently updating its 232 handbook with a goal to align the radon requirements with the map guide, with the caveat that map and 232 follow a different radon testing standard. Next slide.

This slide highlights key points of the 2020 map radon policies. For these and other details, please visit HUD's posted webinar on the 2020 Radon Requirements. The link is on the slide, or you can search HUD map webinars and you'll find it. So next slide.

I want to end today by talking about the impact to the FHA platform. There have been three major radon policy changes, the creation of the policy in 2013, the removal of the zone three exception for healthcare FHA in 2017, and the 2020 map guide.

While there may be individual cases of delay, particularly right at the policy transition, HUD has seen no discernible patterns of impact on application numbers for processing timelines at the first two policy change points.

In fact, we have unprecedented numbers of applications for both multifamily and ORCS. Housing does see the potential for delays due to COVID restrictions on site visits, particularly for residential care facilities. And responded with flexibility on radon reports

submission timeline. So HUD is sensitive to potential delays. We're just not seeing them from the radon policy outside the context of the global pandemic.

It is too early to comment on the impact of the 2020 map changes. Multifamily currently has 450 projects in the queue, and so staff are still mostly processing applications submitted under the 2016 map guide. However, we do not anticipate any impact on application numbers for timing from the shift to 100% testing, since the radon professionals already visit the site for 25% sampling.

We actually anticipate that in some cases, the 100% testing requirement may limit the number of times a radon professional has to revisit a site. Because under the 25% sampling policy, any unit had elevated radon, the radon professional had to go back on the site to do 100% radon testing. With the new policy, this will no longer be the case.

We are hearing concerns from lenders about finding radon professionals to make site visits for projects in zone three. However, I would note that HUD heard these same complaints on the ORCS policy in 2017, and did not see any actual impact on application numbers or processing timeframe.

While ORCS is seeing that HUD is happy to share our experiences in more detail with FHFA, Fannie Mae and Freddie Mac, we also support EPA and CDC efforts to collect radon data so that we can all work from the best possible information about radon risk. Thank you for the opportunity to speak today.

**Mary Owens:**

Thank you. All right our next speaker is Robert Hazelton of Dominion Due Diligence Group.

**Robert Hazelton:**

Hello, I'm Rob Hazelton, Founder and CEO of Dominion Due Diligence Group. We're a third party environmental engineering firm that specializes in servicing a HUD FHA housing portfolio, including mortgage insurance products under map, section eight renewal studies, public housing repositioning, RAD, rental demonstration, low income housing tax credits.

I hold a degree from Bucknell University followed by many professional licenses for environmental studies. I started this company 27 years ago and annually we inspect more than 2,200 multifamily and senior living properties in this country. I'm involved with the HUD -- I've been involved with HUD since the inception of the map guide. An active industry participant all subsequent iterations of the guide. Working with Sara many times.

For the past decade, I focused on affordable housing and regulatory barriers which exacerbate our country's growing housing crisis. I'm currently a Board Member of the Federal Home Loan Bank of Atlanta, HSBC, the National Housing Association and National Housing Rehabilitation Association and the Multifamily Lenders Council.

I want to thank FHFA for letting me speak and raise my industry concerns potential unintended consequences and recommendations on radon.

Concern number one I have, in affordable multifamily houses its estimate upwards of 40% of development costs is governmental regulatory barriers. Since the most recent HUD multifamily map guide, my firm's experiencing environmental sampling costs of multifamily properties increased by more than 500%. And all the while the affordable housing crisis grows.

When is excessive testing in the name of risk reduction going to be recognized as another impediment to solving our country's growing workforce and affordable housing crisis?

Concern number two, the EPA mapping data of radon zones is from 1993 and based on 1980 data update. The [inaudible] update the maps, the EPA recommends test everywhere and everything. Listening to today's discussion, it's obvious that many governmental agencies are mining for data and requiring excessive testing of multifamily housing as a means to accumulate data is another tax on the poor of this country. Just adding to the in-affordability of rental housing.

Concern number three, too much weight has been put on the Earth Study which is inherent limitations to the analysis, including its only for New York State. The adoption -- to adopt the conditions in New York State as a nationwide test requirement does not appear statistically viable or prudent.

Concern four, radon testing in multifamily is difficult to schedule, unit access, resident tampering, weather, seasons and not being able to ensure controlled close house or building conditions. Many of the qualified speakers today talk about the practicality and affordability of testing. But I contend, those comments are only accurate in the single failing assessment.

We're with the largest provider of HUD due diligence in the country, and I can unequivocally state that 100% testing is not practical in multifamily housing.

Concern number five, radon exposure is a dose response relationship. And while maybe not exactly linear, it is dose response. This is important understand that the average homeowner is in place for 13.3 years in this country based on the most recent census.

The two radon victims who spoke earlier, my heart goes out to them. But they both talked about being in their houses for 22 and 19 years respectively. If the average multifamily renter stays only three to four years, assisted living facilities that we deal with with HUD a lot, the average day is 2.5 years. And skilled nursing the median stay is under six months. What is their exposure risk rate to radon at that point? Have to ask.

I have concerns that much of the science and risk evaluation being used to justify increased testing in multifamily housing is based upon the single family risk, not the multifamily risk.

Unintended consequences, we got to understand that may happen because of these changes in rules. Number one, there'll be an increased cost burden to multifamily, senior housing which the residents will ultimately pay the bills through increased rents.

Unintended consequence number two, the most recent HUD map standard and by far the most stringent [inaudible] in the country has increased reporting turnaround times. The current HUD radon standard is stretching reporting times within six weeks, which is a volatile market with rising interest rates and ever-growing inflation of disruption costs, presents greater transactional risk.

Consequence number three, currently the radon testing market failures capacity to meet the new HUD lending standards. At this time, should FHFA increase just these standing testing standards that mainly would cause significant backlogs of loan applications. Again, hurting housing in this country.

Consequence number four I see is rural housing [inaudible] a greater burden of cost and time. Any environmental tests in the rural market costs two to three times more due to availability of licensed professionals and the cost for travel. We've got to understand it's going to increase costs for rural even more.

Consequence number five, an increase in greenfield and new construction development can be expected I believe. Reasonable [inaudible] being too burdensome and costly to increase in radon, asbestos, mold, lead testing. I know of affordable housing providers who have stopped looking for acquisition rehab projects using FHA

mortgage insurance, just because of the environmental testing expense. They're abandoning the urban core to build new construction in the suburbs.

Consequence number six, regulatory burden is likely to increase the amount of non HUD or GSE loan lending and other naturally occurring affordable housing, which results in more families living in housing that will have no obligation or requirements to test for radon.

So recommendations, housing types, regards to occupancy should be evaluated differently. More transient housing like AFLF and SNF and senior housing deserves a lesser testing threshold due to reduced risk, I would believe.

New construction design for vapor of radon gas mitigation is a greater means of risk reduction for little incremental costs. I do believe 11 states are requiring this in recent construction. And the HUD mortgage insurance program is required as well. This is a best practice to be carried through all housing programs.

I recommend that FHFA --

**Mary Owens:** [Inaudible] you are at time. Please wrap up your comments.

**Rob Hazelton:** Sure, thank you. I will just say in summary, this country's in an affordable housing crisis and we should create solutions, not impediments. I believe we all have a duty to serve to increase the ability of both safe and affordable housing. Thank you for letting me speak.

**Mary Owens:** Thank you. Our next speaker is Jane Luxton from Lewis, Brisbois, Bisgaard and Smith. Jan, you are on mute. If you are on the line. We cannot hear you. Okay, we're going to move on. Our next speaker is Keith Bartlett from the Building Evaluation Service and Technology.

**Keith Bartlett:** Hi Group. Can everyone hear me? I'm good? I don't know what that was.

**Mary Owens:** That was my dog. Sorry.

**Keith Bartlett:** That's okay. All right. My name is Keith Bartlett. I'm with Building Evaluation Services and Technology. I am President of BEST. I've been performing property condition environmental site assessments for the past 30 years. And that included doing the first Fannie Mae DUS in the country, which was an environmental site assessment which included radon.



At that time, there wasn't much training on radon. So I went through and went through the EPA contract mitigation approval process to learn about radon. So I have been doing radon for lots of years.

The -- since 1992, BEST has performed over 10,000 property condition environmental site assessments on multifamily properties, following guidelines for both Fannie Mae and Freddie Mac. Over that 30 year period anytime it was above four picocuries per liter, we required remediation. So we've been involved with lots of remediation and testing throughout the country.

I was on the ASTM committee for developing environmental site assessments and property conditions. And over the past 30 years I've put on many seminars teaching lenders about property condition and environmental site assessments.

I have three points to make. One, testing in zone three, number two logistics of actually completing this, and three discussing the Earth Study.

Radon in zone three. As a low potential or an [inaudible] indoor radon level of less than two picocuries per liter when remediations at four picocuries per liter and above. EPA did the testing and determined that radon levels were less than two picocuries per liter and has never changed this determination.

Since 1992, BEST has been performing radon testing across the country and on multifamily properties in all zones, and typically have found -- have not found elevated levels of radon in zone three. After testing -- doing longer testing.

This supports EPA's low potential for radon in zone three. Radon in zone three has not been revised by EPA. So most multifamily owners have -- that have sampled in zone -- have not found high levels -- and will find the new proposal for radon testing in zone three, time consuming and expensive.

EPA has not revised remediation above four, but the same standard in zone three will be hard to explain to owners that are knowledgeable of radon, and in their zone. To believe multifamily owners are not aware of radon risk on their property is unrealistic. And since zone three by EPA standards is below two, convincing an owner to substantially testing is going to be difficult.

One example is the Earth Study only tested 3% in zone three. Which five of their study, they didn't sample zone three since it was

considered by EPA a low potential for less than two picocuries per liter. I'll get more into that later.

We're just -- BEST works with hiring local radon testing firms to meet the current radon requirements for both Fannie Mae and Freddie Mac. Roughly 10% of the ground floor units are typically tested for radon and usually it takes many phone calls and emails to get bids to perform the radon testing.

Costs can be increased by 100% to get faster results to meet the Fannie Mae and Freddie Mac requirements. Our problems of getting qualified firms currently is sub -- increasing the requirements will make it even more difficult and costs will increase.

Performing radon testing post-closing is recommended. The timeframe for current radon testing is roughly three weeks. It usually takes a couple days to find a radon consulting firm and weeks -- a week or two to complete the results. And many times the results are late, causing loans to be affecting the loan closing.

Substantially increasing those requirements will increase the timeframes to find qualified radon professionals, due to the increase in testing requirements.

Post-closing will allow more competitive bids since the results will not be needed to close the loan. Costs will be reduced, giving more time to find qualified radon professionals. The current requirements on radon testing on the second floor is not reasonable in a single family home that HVAC system is on the bottom floor and could distribute that air, which may have radon in it.

A second floor of a multifamily property has a separate HVAC system. And there's no way that the floor can bring air to the second floor. So testing on the second floor is not recommended.

With this logistically in zone three since it is considered low potential, the number of qualified radon professionals is small in zone three. So it's hard to find someone in zone three that's qualified. The cost to test for radon is going to increase substantially.

To put it into perspective, BEST typically inspects a property that's 150 to 250 units, roughly. The new guidelines will increase this to 75 to 225 units tested, placing 75 to 125 canisters in a timeframe is going to be intensive and roughly \$100 a canister is going to increase the cost to \$7,500 to \$12,500 on a typical 150 to 250 unit property.

These more costs will be difficult for owners to swallow.

**Mary Owens:** Mr. Bartlett, you were at time, if you could please conclude your comments.

**Keith Bartlett:** Okay. I appreciate being able to speak and I appreciate the Federal Housing Finance Agency making time available for me to speak. Thank you.

**Mary Owens:** Thank you. So that concludes our last session on Radon Industry Capacity Certification and Regulatory Environment. I'm going to pass the mic over to Charles Ostroff with Fannie Mae. He is the Multifamily Chief Credit Officer and he will be providing closing remarks on behalf of the Enterprises. Charles.

**Charles Ostroff:** Thank you Mary. I just wanted to thank FHFA for hosting this listening session. I also wanted to thank the representatives from Freddie Mac that worked with our team in putting this all together.

I think this was a very thoughtful and productive conversation. This was a long session, and we're grateful for all that took the time to participate within this session. I want to add the Enterprises have a long history of proactively addressing health and safety issues for residents in the properties we finance. Residents safety is key to fulfilling our mission and missions with Freddie Mac.

Again, we appreciate your comments very much, and also the input that you did provide today. Today, we you know, today -- your input today will shape Fannie Mae and Freddie Mac's radon testing approach.

We are going to review the feedback we received today, along with any additional written comments submitted to FHFA. I am being told that the email address to submit comments can be found on the bottom of the invitation that you did receive. And again, I just wanted to stress that we are appreciative of everyone's time today. And again, I wanted to say thank you, but especially thank you to FHFA.

**Mary Owens:** Thank you so much, Charles. So that concludes today's session. As Charles mentioned, we are accepting public comments through Friday, August 6th. So there's still time to submit your comments if there are things that you would like to add to this discussion today.

To submit written comments, we encourage you to send them to [www.FHFACommunications@fhfa.gov](mailto:www.FHFACommunications@fhfa.gov). Thank you for all who participated today. We greatly appreciate this discussion and we value your feedback. Thank you.